**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/CA-LACPHL-AF10606/2022 ORF1ab polyprotein (ORF1ab) gene, partial cds; ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), and envelope protein (E) genes, comp...**

GenBank: ON811217.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1" \l "goto2258009415_0)

LOCUS ON811217 29654 bp RNA linear VRL 22-JUN-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/CA-LACPHL-AF10606/2022 ORF1ab polyprotein

(ORF1ab) gene, partial cds; ORF1a polyprotein (ORF1ab), surface

glycoprotein (S), ORF3a protein (ORF3a), and envelope protein (E)

genes, complete cds; membrane glycoprotein (M) and nucleocapsid

phosphoprotein (N) genes, partial cds; and ORF10 protein (ORF10)

gene, complete cds.

ACCESSION ON811217

VERSION ON811217.1

DBLINK BioProject: [PRJNA746690](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA746690)

BioSample: [SAMN29230126](https://www.ncbi.nlm.nih.gov/biosample/SAMN29230126)

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 29654)

AUTHORS Garrigues,J.M., Hemarajata,P. and Green,N.M.

TITLE Direct Submission

JOURNAL Submitted (21-JUN-2022) Los Angeles County Public Health

Laboratories, Los Angeles County Public Health Lab microbial

pathogen submission group, 12750 Erickson Avenue, Downey, CA 90242,

USA

COMMENT ##Assembly-Data-START##

Assembly Method :: Clear Labs BIP-Wv7 v. Clear Labs BIP-Wv7

Sequencing Technology :: ONT

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29654

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/CA-LACPHL-AF10606/2022"

/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="2022-05-07"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=212&to=20607) 212..>20607

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?location=212:13399,13399:20607) join(212..13399,13399..>20607)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[USL65760.1](https://www.ncbi.nlm.nih.gov/protein/2258009417)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVELVAELEGIQYGRSGETL

GVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQENWN

TKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQLD

FIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFPLN

SIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTGDF

VKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESGLK

TILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNLLE

ILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGNFK

VTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAAIT

ILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKLKP

VLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLVNK

FLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEIIFL

EGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEKYC

ALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEKCS

AYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEFKL

ASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPEEE

QEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSGYL

KLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESDDY

IATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLAPL

LSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIAEI

PKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGNLH

PDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKVPT

DNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREMLA

HAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLINTL

NDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSSKT

PEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVITFD

NLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPHNS

HEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIKWA

DNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELGDV

RETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQIP

CTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSKET

LYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYYKK

DNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVTFF

PDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWSTKP

VETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGDII

LKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSVP

WDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIKA

SMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAAL

GVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETIQ

ITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLMW

LIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNLSTCMMCYKRNRATRVECT

TIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPIN

PTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPINV

IVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNTF

SSTFNVPMEKLKTLVATAEAELAKNVFLDNVLSTFISAARQGFVDSDVETKDVVECLK

LSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALIWN

VKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLKQ

LIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFANK

HADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPRV

FSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAYE

SLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGRW

VLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLAY

YFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTNDV

SFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEEA

ALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLAK

ALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGLW

LDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLKL

KVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCGS

VGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNVL

AWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVLD

MCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWLL

LTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLLP

SLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVYDD

GARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIVFM

CVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQE

FRYMNSQGLFPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVLQ

QLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEML

DNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFDR

DAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIINN

ARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKIV

QLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDDN

ALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPKV

KYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKDY

LASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPKG

FCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQSF

LNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDNL

IDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKYT

MADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGER

VRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYYS

LLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHPN

CVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVVH

NQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKPG

NFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLLF

VVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALFA

YTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGATV

VIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTTC

CSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTAN

VNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSDD

AVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTML

VKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQEY

ADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAVG

ACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDVT

QLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAGD

YILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPLN

RNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMPL

SAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFAI

GLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNST

LEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLCAKHYVYIGDPAQLPAPR

TLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKDK

SAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASKI

LGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLYD

KLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLCV

DVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHATR

EAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYKG

LPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDRRA

TCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVASC

DAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPVLH

DIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNCN

VDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPFFY

YSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMISA

GFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTKV

DGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDAP

AHISTIGVCSMTDIAKKPIETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKGL

QPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQM

EIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELED

FIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDYT

EISFMLWCKDGHVETFYPKLQSSQAWQ"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=1&to=178) 212..745

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=179&to=816) 746..2659

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=817&to=2761) 2660..8494

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=2762&to=3261) 8495..9994

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=3262&to=3567) 9995..10912

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=3568&to=3854) 10913..11773

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=3855&to=3937) 11774..12022

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=3938&to=4135) 12023..12616

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=4136&to=4248) 12617..12955

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=4249&to=4387) 12956..13372

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=4388&to=5319) join(13373..13399,13399..16167)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=5320&to=5920) 16168..17970

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=5921&to=6447) 17971..19551

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=6448&to=6793) 19552..20589

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65760.1?from=6794&to=6799) 20590..>20607

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=212&to=13414) 212..13414

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[USL65759.1](https://www.ncbi.nlm.nih.gov/protein/2258009416)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVELVAELEGIQYGRSGETL

GVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQENWN

TKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQLD

FIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFPLN

SIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTGDF

VKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESGLK

TILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNLLE

ILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGNFK

VTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAAIT

ILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKLKP

VLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLVNK

FLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEIIFL

EGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEKYC

ALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEKCS

AYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEFKL

ASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPEEE

QEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSGYL

KLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESDDY

IATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLAPL

LSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIAEI

PKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGNLH

PDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKVPT

DNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREMLA

HAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLINTL

NDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSSKT

PEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVITFD

NLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPHNS

HEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIKWA

DNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELGDV

RETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQIP

CTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSKET

LYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYYKK

DNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVTFF

PDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWSTKP

VETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGDII

LKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSVP

WDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIKA

SMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAAL

GVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETIQ

ITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLMW

LIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNLSTCMMCYKRNRATRVECT

TIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPIN

PTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPINV

IVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNTF

SSTFNVPMEKLKTLVATAEAELAKNVFLDNVLSTFISAARQGFVDSDVETKDVVECLK

LSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALIWN

VKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLKQ

LIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFANK

HADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPRV

FSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAYE

SLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGRW

VLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLAY

YFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTNDV

SFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEEA

ALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLAK

ALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGLW

LDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLKL

KVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCGS

VGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNVL

AWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVLD

MCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWLL

LTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLLP

SLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVYDD

GARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIVFM

CVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQE

FRYMNSQGLFPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVLQ

QLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEML

DNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFDR

DAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIINN

ARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKIV

QLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDDN

ALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPKV

KYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKDY

LASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPKG

FCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQSF

LNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=1&to=178) 212..745

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=179&to=816) 746..2659

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=817&to=2761) 2660..8494

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=2762&to=3261) 8495..9994

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=3262&to=3567) 9995..10912

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=3568&to=3854) 10913..11773

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=3855&to=3937) 11774..12022

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=3938&to=4135) 12023..12616

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=4136&to=4248) 12617..12955

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=4249&to=4387) 12956..13372

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/USL65759.1?from=4388&to=4400) 13373..13411

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=13407&to=13434) 13407..13434

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=13419&to=13473) 13419..13473

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

gap 20608..21493

/estimated\_length=886

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=21494&to=25306) 21494..25306

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=21494&to=25306) 21494..25306

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[USL65761.1](https://www.ncbi.nlm.nih.gov/protein/2258009418)"

/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/ON811217.1?from=25315&to=26142) 25315..26142

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=25315&to=26142) 25315..26142

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[USL65762.1](https://www.ncbi.nlm.nih.gov/protein/2258009419)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDIGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=26167&to=26394) 26167..26394

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=26167&to=26394) 26167..26394

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[USL65763.1](https://www.ncbi.nlm.nih.gov/protein/2258009420)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=26445&to=26757) 26445..>26757

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=26445&to=26757) 26445..>26757

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[USL65764.1](https://www.ncbi.nlm.nih.gov/protein/2258009421)"

/translation="MADSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FA"

gap 26758..28621

/estimated\_length=1864

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=28622&to=29455) <28622..29455

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=28622&to=29455) <28622..29455

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[USL65765.1](https://www.ncbi.nlm.nih.gov/protein/2258009422)"

/translation="KDHIGTRNPANNAAIVLQLPQGTTLPKGFYAEGSRGGSQASSRS

SSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALALLLLDRLNQLESKMSGKGQQQQGQ

TVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGPEQTQGNFGDQELIRQGTDYKHWP

QIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAIKLDDKDPNFKDQVILLNKHIDAY

KTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLLPAADLDDFSKQLQQSMSRADSTQ

A"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=29480&to=29596) 29480..29596

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=29480&to=29596) 29480..29596

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[USL65766.1](https://www.ncbi.nlm.nih.gov/protein/2258009423)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=29531&to=29566) 29531..29566

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=29551&to=29579) 29551..29579

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?from=29650&to=29654) 29650..>29654

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

ORIGIN

1 agatctgttc tctaaacgaa ctttaaaatc tgtgtggctg tcactcggct gcatgcttag

61 tgcactcacg cagtataatt aataactaat tactgtcgtt gacaggacac gagtaactcg

121 tctatcttct gcaggctgct tacggtttcg tccgtgttgc agccgatcat cagcacatct

181 aggttttgtc cgggtgtgac cgaaaggtaa gatggagagc cttgtccctg gtttcaacga

241 gaaaacacac gtccaactca gtttgcctgt tttacaggtt cgcgacgtgc tcgtacgtgg

301 ctttggagac tccgtggagg aggtcttatc agaggcacgt caacatctta aagatggcac

361 ttgtggctta gtagaagttg aaaaaggcgt tttgcctcaa cttgaacagc cctatgtgtt

421 catcaaacgt tcggatgctc gaactgcacc tcatggtcat gttgagctgg tagcagaact

481 cgaaggcatt cagtacggtc gtagtggtga gacacttggt gtccttgttc ctcatgtggg

541 cgaaatacca gtggcttacc gcaaggttct tcttcgtaag aacggtaata aaggagctgg

601 tggccatagg tacggcgccg atctaaagtc atttgactta ggcgacgagc ttggcactga

661 tccttatgaa gattttcaag aaaactggaa cactaaacat agcagtggtg ttacccgtga

721 actcatgcgt gagcttaacg gaggggcata cactcgctat gtcgataaca acttctgtgg

781 ccctgatggc taccctcttg agtgcattaa agaccttcta gcacgtgctg gtaaagcttc

841 atgcactttg tccgaacaac tggactttat tgacactaag aggggtgtat actgctgccg

901 tgaacatgag catgaaattg cttggtacac ggaacgttct gaaaagagct atgaattgca

961 gacacctttt gaaattaaat tggcaaagaa atttgacacc ttcaatgggg aatgtccaaa

1021 ttttgtattt cccttaaatt ccataatcaa gactattcaa ccaagggttg aaaagaaaaa

1081 gcttgatggc tttatgggta gaattcgatc tgtctatcca gttgcgtcac caaatgaatg

1141 caaccaaatg tgcctttcaa ctctcatgaa gtgtgatcat tgtggtgaaa cttcatggca

1201 gacgggcgat tttgttaaag ccacttgcga attttgtggc actgagaatt tgactaaaga

1261 aggtgccact acttgtggtt acttacccca aaatgctgtt gttaaaattt attgtccagc

1321 atgtcacaat tcagaagtag gacctgagca tagtcttgcc gaataccata atgaatctgg

1381 cttgaaaacc attcttcgta agggtggtcg cactattgcc tttggaggct gtgtgttctc

1441 ttatgttggt tgccataaca agtgtgccta ttgggttcca cgtgctagcg ctaacatagg

1501 ttgtaaccat acaggtgttg ttggagaagg ttccgaaggt cttaatgaca accttcttga

1561 aatactccaa aaagagaaag tcaacatcaa tattgttggt gactttaaac ttaatgaaga

1621 gatcgccatt attttggcat ctttttctgc ttccacaagt gcttttgtgg aaactgtgaa

1681 aggtttggat tataaagcat tcaaacaaat tgttgaatcc tgtggtaatt ttaaagttac

1741 aaaaggaaaa gctaaaaaag gtgcctggaa tattggtgaa cagaaatcaa tactgagtcc

1801 tctttatgca tttgcatcag aggctgctcg tgttgtacga tcaattttct cccgcactct

1861 tgaaactgct caaaattctg tgcgtgtttt acagaaggcc gctataacaa tactagatgg

1921 aatttcacag tattcactga gactcattga tgctatgatg ttcacatctg atttggctac

1981 taacaatcta gttgtaatgg cctacattac aggtggtgtt gttcagttga cttcgcagtg

2041 gctaactaac atctttggca ctgtttatga aaaactcaaa cccgtccttg attggcttga

2101 agagaagttt aaggaaggtg tagagtttct tagagacggt tgggaaattg ttaaatttat

2161 ctcaacctgt gcttgtgaaa ttgtcggtgg acaaattgtc acctgtgcaa aggaaattaa

2221 ggagagtgtt cagacattct ttaagcttgt aaataaattt ttggctttgt gtgctgactc

2281 tatcattatt ggtggagcta aacttaaagc cttgaattta ggtgaaacat ttgtcacgca

2341 ctcaaaggga ttgtacagaa agtgtgttaa atccagagaa gaaactggcc tactcatgcc

2401 tctaaaagcc ccaaaagaaa ttatcttctt agagggagaa acacttccca cagaagtgtt

2461 aacagaggaa gttgtcttga aaactggtga tttacaacca ttagaacaac ctactagtga

2521 agctgttgaa gctccattgg ttggtacacc agtttgtatt aacgggctta tgttgctcga

2581 aatcaaagac acagaaaagt actgtgccct tgcacctaat atgatggtaa caaacaatac

2641 cttcacactc aaaggcggtg caccaacaaa ggttactttt ggtgatgaca ctgtgataga

2701 agtgcaaggt tacaagagtg tgaatatcat ttttgaactt gatgaaagga ttgataaagt

2761 acttaatgag aagtgctctg cctatacagt tgaactcggt acagaagtaa atgagttcgc

2821 ctgtgttgtg gcagatgctg tcataaaaac tttgcaacca gtatctgaat tacttacacc

2881 actgggcatt gatttagatg agtggagtat ggctacatac tacttatttg atgagtctgg

2941 tgagtttaaa ttggcttcac atatgtattg ttctttttac cctccagatg aggatgaaga

3001 agaaggtgat tgtgaagaag aagagtttga gccatcaact caatatgagt atggtactga

3061 agatgattac caaggtaaac ctttggaatt tggtgccact tctgctgctc ttcaacctga

3121 agaagagcaa gaagaagatt ggttagatga tgatagtcaa caaactgttg gtcaacaaga

3181 cggcagtgag gacaatcaga caactactat tcaaacaatt gttgaggttc aacctcaatt

3241 agagatggaa cttacaccag ttgttcagac tattgaagtg aatagtttta gtggttattt

3301 aaaacttact gacaatgtat acattaaaaa tgcagacatt gtggaagaag ctaaaaaggt

3361 aaaaccaaca gtggttgtta atgcagccaa tgtttacctt aaacatggag gaggtgttgc

3421 aggagcctta aataaggcta ctaacaatgc catgcaagtt gaatctgatg attacatagc

3481 tactaatgga ccacttaaag tgggtggtag ttgtgtttta agcggacaca atcttgctaa

3541 acactgtctt catgttgtcg gcccaaatgt taacaaaggt gaagacattc aacttcttaa

3601 gagtgcttat gaaaatttta atcagcacga agttctactt gcaccattat tatcagctgg

3661 tatttttggt gctgacccta tacattcttt aagagtttgt gtagatactg ttcgcacaaa

3721 tgtctactta gctgtctttg ataaaaatct ctatgacaaa cttgtttcaa gctttttgga

3781 aatgaagagt gaaaagcaag ttgaacaaaa gatcgctgag attcctaaag aggaagttaa

3841 gccatttata actgaaagta aaccttcagt tgaacagaga aaacaagatg ataagaaaat

3901 caaagcttgt gttgaagaag ttacaacaac tctggaagaa actaagttcc tcacagaaaa

3961 cttgttactt tatattgaca ttaatggcaa tcttcatcca gattctgcca ctcttgttag

4021 tgacattgac atcactttct taaagaaaga tgctccatat atagtgggtg atgttgttca

4081 agagggtgtt ttaactgctg tggttatacc tactaaaaag gctagtggca ctactgaaat

4141 gctagcgaaa gctttgagaa aagtgccaac agacaattat ataaccactt acccgggtca

4201 gggtttaaat ggttacactg tagaggaggc aaagacagtg cttaaaaagt gtaaaagtgc

4261 tttttacatt ctaccatcta ttatctctaa tgagaagcaa gaaattcttg gaactgtttc

4321 ttggaatttg cgagaaatgc ttgcacatgc agaagaaaca cgcaaattaa tgcctgtctg

4381 tgtggaaact aaagccatag tttcaactat acagcgtaaa tataagggta ttaaaataca

4441 agagggtgtg gttgattatg gtgctagatt ttacttttac accagtaaaa caactgtagc

4501 gtcacttatc aacacactta acgatctaaa tgaaactctt gttacaatgc cacttggcta

4561 tgtaacacat ggcttaaatt tggaagaagc tgctcggtat atgagatctc tcaaagtgcc

4621 agctacagtt tctgtttctt cacctgatgc tgttacagcg tataatggtt atcttacttc

4681 ttcttctaaa acacctgaag aacattttat tgaaaccatc tcacttgctg gttcctataa

4741 agattggtcc tattctggac aatctacaca actaggtata gaatttctta agagaggtga

4801 taaaagtgta tattacacta gtaatcctac cacattccac ctagatggtg aagttatcac

4861 ctttgacaat cttaagacac ttctttcttt gagagaagtg aggactatta aggtgtttac

4921 aacagtagac aacattaacc tccacacgca agttgtggac atgtcaatga catatggaca

4981 acagtttggt ccaacttatt tggatggagc tgatgttact aaaataaaac ctcataattc

5041 acatgaaggt aaaacatttt atgttttacc taatgatgac actctacgtg ttgaggcttt

5101 tgagtactac cacacaactg atcctagttt tctgggtagg tacatgtcag cattaaatca

5161 cactaaaaag tggaaatacc cacaagttaa tggtttaact tctattaaat gggcagataa

5221 caactgttat cttgccactg cattgttaac actccaacaa atagagttga agtttaatcc

5281 acctgctcta caagatgctt attacagagc aagggctggt gaagctgcta acttttgtgc

5341 acttatctta gcctactgta ataagacagt aggtgagtta ggtgatgtta gagaaacaat

5401 gagttacttg tttcaacatg ccaatttaga ttcttgcaaa agagtcttga acgtggtgtg

5461 taaaacttgt ggacaacagc agacaaccct taagggtgta gaagctgtta tgtacatggg

5521 cacactttct tatgaacaat ttaagaaagg tgttcagata ccttgtacgt gtggtaaaca

5581 agctacaaaa tatctagtac aacaggagtc accttttgtt atgatgtcag caccacctgc

5641 tcagtatgaa cttaagcatg gtacatttac ttgtgctagt gagtacactg gtaattacca

5701 gtgtggtcac tataaacata taacttctaa agaaactttg tattgcatag acggtgcttt

5761 acttacaaag tcctcagaat acaaaggtcc tattacggat gttttctaca aagaaaacag

5821 ttacacaaca accataaaac cagttactta taaattggat ggtgttgttt gtacagaaat

5881 tgaccctaag ttggacaatt attataagaa agacaattct tatttcacag agcaaccaat

5941 tgatcttgta ccaaaccaac catatccaaa cgcaagcttc gataatttta agtttgtatg

6001 tgataatatc aaatttgctg atgatttaaa ccagttaact ggttataaga aacctgcttc

6061 aagagagctt aaagttacat ttttccctga cttaaatggt gatgtggtgg ctattgatta

6121 taaacactac acaccctctt ttaagaaagg agctaaattg ttacataaac ctattgtttg

6181 gcatgttaac aatgcaacta ataaagccac gtataaacca aatacctggt gtatacgttg

6241 tctttggagc acaaaaccag ttgaaacatc aaattcgttt gatgtactga agtcagagga

6301 cgcgcaggga atggataatc ttgcctgcga agatctaaaa ccagtctctg aagaagtagt

6361 ggaaaatcct accatacaga aagacgttct tgagtgtaat gtgaaaacta ccgaagttgt

6421 aggagacatt atacttaaac cagcaaataa tagtttaaaa attacagaag aggttggcca

6481 cacagatcta atggctgctt atgtagacaa ttctagtctt actattaaga aacctaatga

6541 attatctaga gtattaggtt tgaaaaccct tgctactcat ggtttagctg ctgttaatag

6601 tgtcccttgg gatactatag ctaattatgc taagcctttt cttaacaaag ttgttagtac

6661 aactactaac atagttacac ggtgtttaaa ccgtgtttgt actaattata tgccttattt

6721 ctttacttta ttgctacaat tgtgtacttt tactagaagt acaaattcta gaattaaagc

6781 atctatgccg actactatag caaagaatac tgttaagagt gtcggtaaat tttgtctaga

6841 ggcttcattt aattatttga agtcacctaa tttttctaaa ctgataaata ttataatttg

6901 gtttttacta ttaagtgttt gcctaggttc tttaatctac tcaaccgctg ctttaggtgt

6961 tttaatgtct aatttaggca tgccttctta ctgtactggt tacagagaag gctatttgaa

7021 ctctactaat gtcactattg caacctactg tactggttct ataccttgta gtgtttgtct

7081 tagtggttta gattctttag acacctatcc ttctttagaa actatacaaa ttaccatttc

7141 atcttttaaa tgggatttaa ctgcttttgg cttagttgca gagtggtttt tggcatatat

7201 tcttttcact aggtttttct atgtacttgg attggctgca atcatgcaat tgtttttcag

7261 ctattttgca gtacatttta ttagtaattc ttggcttatg tggttaataa ttaatcttgt

7321 acaaatggcc ccgatttcag ctatggttag aatgtacatc ttctttgcat cattttatta

7381 tgtatggaaa agttatgtgc atgttgtaga cggttgtaat ttatcaactt gtatgatgtg

7441 ttacaaacgt aatagagcaa caagagtcga atgtacaact attgttaatg gtgttagaag

7501 gtccttttat gtctatgcta atggaggtaa aggcttttgc aaactacaca attggaattg

7561 tgttaattgt gatacattct gtgctggtag tacatttatt agtgatgaag ttgcgagaga

7621 cttgtcacta cagtttaaaa gaccaataaa tcctactgac cagtcttctt acatcgttga

7681 tagtgttaca gtgaagaatg gttccatcca tctttacttt gataaagctg gtcaaaagac

7741 ttatgaaaga cattctctct ctcattttgt taacttagac aacctgagag ctaataacac

7801 taaaggttca ttgcctatta atgttatagt ttttgatggt aaatcaaaat gtgaagaatc

7861 atctgcaaaa tcagcgtctg tttactacag tcagcttatg tgtcaaccta tactgttact

7921 agatcaggca ttagtgtctg atgttggtga tagtgcggaa gttgcagtta aaatgtttga

7981 tgcttacgtt aatacgtttt catcaacttt taacgtacca atggaaaaac tcaaaacact

8041 agttgcaact gcagaagctg aacttgcaaa gaatgtgttc ttagacaatg tcttatctac

8101 ttttatttca gcagctcggc aagggtttgt tgattcagat gtagaaacta aagatgttgt

8161 tgaatgtctt aaattgtcac atcaatctga catagaagtt actggcgata gttgtaataa

8221 ctatatgctc acctataaca aagttgaaaa catgacaccc cgtgaccttg gtgcttgtat

8281 tgactgtagt gcgcgtcata ttaatgcgca ggtagcaaaa agtcacaaca ttgctttgat

8341 atggaacgtt aaagatttca tgtcattgtc tgaacaacta cgaaaacaaa tacgtagtgc

8401 tgctaaaaag aataacttac cttttaagtt gacatgtgca actactagac aagttgttaa

8461 tgttgtaaca acaaagatag cacttaaggg tggtaaaatt gttaataatt ggttgaagca

8521 gttaattaaa gttacacttg tgttcctttt tgttgctgct attttctatt taataacacc

8581 tgttcatgtc atgtctaaac atactgactt ttcaagtgaa atcataggat acaaggctat

8641 tgatggtggt gtcactcgtg acatagcatc tacagatact tgttttgcta acaaacatgc

8701 tgattttgac acatggttta gccagcgtgg tggtagttat actaatgaca aagcttgccc

8761 attgattgct gcagtcataa caagagaagt gggttttgtc gtgcctggtt tgcctggcac

8821 gatattacgc acaactaatg gtgacttttt gcatttctta cctagagttt ttagtgcagt

8881 tggtaacatc tgttacacac catcaaaact tatagagtac actgactttg caacatcagc

8941 ttgtgttttg gctgctgaat gtacaatttt taaagatgct tctggtaagc cagtaccata

9001 ttgttatgat accaatgtac tagaaggttc tgttgcttat gaaagtttac gccctgacac

9061 acgttatgtg ctcatggatg gctctattat tcaatttcct aacacctacc ttgaaggttc

9121 tgttagagtg gtaacaactt ttgattctga gtactgtagg cacggcactt gtgaaagatc

9181 agaagctggt gtttgtgtat ctactagtgg tagatgggta cttaacaatg attattacag

9241 atctttacca ggagttttct gtggtgtaga tgctgtaaat ttatttacta atatgtttac

9301 accactaatt caacctattg gtgctttgga catatcagca tctatagtag ctggtggtat

9361 tgtggctatc gtagtaacat gccttgccta ctattttatg aggtttagaa gagcttttgg

9421 tgaatacagt catgtagttg cctttaatac tttactattc cttatgtcat tcattgtact

9481 ctgtttaaca ccagtttact cattcttacc tggtgtttat tctgttattt acttgtactt

9541 gacattttat cttactaatg atgtttcttt tttagcacat attcagtgga tggttatgtt

9601 cacaccttta gtacctttct ggataacaat tgcttatatc atttgtattt ccacaaagca

9661 tttctattgg ttctttagta attacctaaa gagacgtgta gtctttaatg gtgtttcctt

9721 tagtactttt gaagaagctg cgctgtgcac ctttttgtta aataaagaaa tgtatctaaa

9781 gttgcgtagt gatgtgctat taccttttac gcaatataat agatacttag ctctttataa

9841 taagtacaag tattttagtg gagcaatgga tacaactagc tacagagaag ctgcttgttg

9901 tcatctcgca aaggctctca atgacttcag taactcaggt tctgatgttc tttaccaacc

9961 accacaaatc tctatcacct cagctgtttt gcagagtggt tttagaaaaa tggcattccc

10021 atctggtaaa gttgagggtt gtatggtaca agtaacttgt ggtacaacta cacttaacgg

10081 tctttggctt gatgacgtag tttactgtcc aagacatgtg atctgcacct ctgaagatat

10141 gcttaaccct aattatgaag atttactcat tcgtaagtct aatcataatt tcttggtaca

10201 ggctggtaat gttcaactca gggttattgg acattctatg caaaattgtg tacttaagct

10261 taaggttgat acagccaatc ctaagacacc taagtataag tttgttcgca ttcaaccagg

10321 acagactttt tcagtgttag cttgttacaa tggttcacca tctggtgttt accaatgtgc

10381 tatgagacac aatttcacta ttaagggttc attccttaat ggttcatgtg gtagtgttgg

10441 ttttaacata gattatgact gtgtctcttt ttgttacatg caccatatgg aattaccaac

10501 tggagttcat gctggcacag acttagaagg taacttttat ggaccttttg ttgacaggca

10561 aacagcacaa gcagctggta cggacacaac tattacagtt aatgttttag cttggttgta

10621 cgctgctgtt ataaatggag acaggtggtt tctcaatcga tttaccacaa ctcttaatga

10681 ctttaacctt gtggctatga agtacaatta tgaacctcta acacaagacc atgttgacat

10741 actaggacct ctttctgctc aaactggaat tgccgtttta gatatgtgtg cttcattaaa

10801 agaattactg caaaatggta tgaatggacg taccatattg ggtagtgctt tattagaaga

10861 tgaatttaca ccttttgatg ttgttagaca atgctcaggt gttactttcc aaagtgcagt

10921 gaaaagaaca atcaagggta cacaccactg gttgttactc acaattttga cttcactttt

10981 agttttagtc cagagtactc aatggtcttt gttctttttt ttgtatgaaa atgccttttt

11041 accttttgct atgggtatta ttgctatgtc tgcttttgca atgatgtttg tcaaacataa

11101 gcatgcattt ctctgtttgt ttttgttacc ttctcttgcc actgtagctt attttaatat

11161 ggtctatatg cctgctagtt gggtgatgcg tattatgaca tggttggata tggttgatac

11221 tagtttgaag ctaaaagact gtgttatgta tgcatcagct gtagtgttac taatccttat

11281 gacagcaaga actgtgtatg atgatggtgc taggagagtg tggacactta tgaatgtctt

11341 gacactcgtt tataaagttt attatggtaa tgctttagat caagccattt ccatgtgggc

11401 tcttataatc tctgttactt ctaactactc aggtgtagtt acaactgtca tgtttttggc

11461 cagaggtatt gtttttatgt gtgttgagta ttgccctatt ttcttcataa ctggtaatac

11521 acttcagtgt ataatgctag tttattgttt cttaggctat ttttgtactt gttactttgg

11581 cctcttttgt ttactcaacc gctactttag actgactctt ggtgtttatg attacttagt

11641 ttctacacag gagtttagat atatgaattc acagggacta ttcccaccca agaatagcat

11701 agatgccttc aaactcaaca ttaaattgtt gggtgttggt ggcaaacctt gtatcaaagt

11761 agccactgta cagtctaaaa tgtcagatgt aaagtgcaca tcagtagtct tactctcagt

11821 tttgcaacaa ctcagagtag aatcatcatc taaattgtgg gctcaatgtg tccagttaca

11881 caatgacatt ctcttagcta aagatactac tgaagccttt gaaaaaatgg tttcactact

11941 ttctgttttg ctttccatgc agggtgctgt agacataaac aagctttgtg aagaaatgct

12001 ggacaacagg gcaaccttac aagctatagc ctcagagttt agttcccttc catcatatgc

12061 agcttttgct actgctcaag aagcttatga gcaggctgtt gctaatggtg attctgaagt

12121 tgttcttaaa aagttgaaga agtctttgaa tgtggctaaa tctgaatttg accgtgatgc

12181 agccatgcaa cgtaagttgg aaaagatggc tgatcaagct atgacccaaa tgtataaaca

12241 ggctagatct gaggacaaga gggcaaaagt tactagtgct atgcagacaa tgcttttcac

12301 tatgcttaga aagttggata atgatgcact caacaacatt atcaacaatg caagagatgg

12361 ttgtgttccc ttgaacataa tacctcttac aacagcagcc aaactaatgg ttgtcatacc

12421 agactataac acatataaaa atacgtgtga tggtacaaca tttacttatg catcagcatt

12481 gtgggaaatc caacaggttg tagatgcaga tagtaaaatt gttcaactta gtgaaattag

12541 tatggacaat tcacctaatt tagcatggcc tcttattgta acagctttaa gggccaattc

12601 tgctgtcaaa ttacagaata atgagcttag tcctgttgca ctacgacaga tgtcttgtgc

12661 tgccggtact acacaaactg cttgcactga tgacaatgcg ttagcttact acaacacaac

12721 aaagggaggt aggtttgtac ttgcactgtt atccgattta caggatttga aatgggctag

12781 attccctaag agtgatggaa ctggtactat ttatacagaa ctggaaccac cttgtaggtt

12841 tgttacagac acacctaaag gtcctaaagt gaagtattta tactttatta aaggattaaa

12901 caacctaaat agaggtatgg tacttggtag tttagctgcc acagtacgtc tacaagctgg

12961 taatgcaaca gaagtgcctg ccaattcaac tgtattatct ttctgtgctt ttgctgtaga

13021 tgctgctaaa gcttacaaag attatctagc tagtggggga caaccaatca ctaattgtgt

13081 taagatgttg tgtacacaca ctggtactgg tcaggcaata acagttacac cggaagccaa

13141 tatggatcaa gaatcctttg gtggtgcatc gtgttgtctg tactgccgtt gccacataga

13201 tcatccaaat cctaaaggat tttgtgactt aaaaggtaag tatgtacaaa tacctacaac

13261 ttgtgctaat gaccctgtgg gttttacact taaaaacaca gtctgtaccg tctgcggtat

13321 gtggaaaggt tatggctgta gttgtgatca actccgcgaa cccatgcttc agtcagctga

13381 tgcacaatcg tttttaaacg ggtttgcggt gtaagtgcag cccgtcttac accgtgcggc

13441 acaggcacta gtactgatgt cgtatacagg gcttttgaca tctacaatga taaagtagct

13501 ggttttgcta aattcctaaa aactaattgt tgtcgcttcc aagaaaagga cgaagatgac

13561 aatttaattg attcttactt tgtagttaag agacacactt tctctaacta ccaacatgaa

13621 gaaacaattt ataatttact taaggattgt ccagctgttg ctaaacatga cttctttaag

13681 tttagaatag acggtgacat ggtaccacat atatcacgtc aacgtcttac taaatacaca

13741 atggcagacc tcgtctatgc tttaaggcat tttgatgaag gtaattgtga cacattaaaa

13801 gaaatacttg tcacatacaa ttgttgtgat gatgattatt tcaataaaaa ggactggtat

13861 gattttgtag aaaacccaga tatattacgc gtatacgcca acttaggtga acgtgtacgc

13921 caagctttgt taaaaacagt acaattctgt gatgccatgc gaaatgctgg tattgttggt

13981 gtactgacat tagataatca agatctcaat ggtaactggt atgatttcgg tgatttcata

14041 caaaccacgc caggtagtgg agttcctgtt gtagattctt attattcatt gttaatgcct

14101 atattaacct tgaccagggc tttaactgca gagtcacatg ttgacactga cttaacaaag

14161 ccttacatta agtgggattt gttaaaatat gacttcacgg aagagaggtt aaaactcttt

14221 gaccgttatt ttaaatattg ggatcagaca taccacccaa attgtgttaa ctgtttggat

14281 gacagatgca ttctgcattg tgcaaacttt aatgttttat tctctacagt gttcccactt

14341 acaagttttg gaccactagt gagaaaaata tttgttgatg gtgttccatt tgtagtttca

14401 actggatacc acttcagaga gctaggtgtt gtacataatc aggatgtaaa cttacatagc

14461 tctagactta gttttaagga attacttgtg tatgctgctg accctgctat gcacgctgct

14521 tctggtaatc tattactaga taaacgcact acgtgctttt cagtagctgc acttactaac

14581 aatgttgctt ttcaaactgt caaacccggt aattttaaca aagacttcta tgactttgct

14641 gtgtctaagg gtttctttaa ggaaggaagt tctgttgaat taaaacactt cttctttgct

14701 caggatggta atgctgctat cagcgattat gactactatc gttataatct accaacaatg

14761 tgtgatatca gacaactact atttgtagtt gaagttgttg ataagtactt tgattgttac

14821 gatggtggct gtattaatgc taaccaagtc atcgtcaaca acctagacaa atcagctggt

14881 tttccattta ataaatgggg taaggctaga ctttattatg attcaatgag ttatgaggat

14941 caagatgcac ttttcgcata tacaaaacgt aatgtcatcc ctactataac tcaaatgaat

15001 cttaagtatg ccattagtgc aaagaataga gctcgcaccg tagctggtgt ctctatctgt

15061 agtactatga ccaatagaca gtttcatcaa aaattattga aatcaatagc cgccactaga

15121 ggagctactg tagtaattgg aacaagcaaa ttctatggtg gttggcacaa catgttaaaa

15181 actgtttata gtgatgtaga aaaccctcac cttatgggtt gggattatcc taaatgtgat

15241 agagccatgc ctaacatgct tagaattatg gcctcacttg ttcttgctcg caaacataca

15301 acgtgttgta gcttgtcaca ccgtttctat agattagcta atgagtgtgc tcaagtattg

15361 agtgaaatgg tcatgtgtgg cggttcacta tatgttaaac caggtggaac ctcatcagga

15421 gatgccacaa ctgcttatgc taatagtgtt tttaacattt gtcaagctgt cacggccaat

15481 gttaatgcac ttttatctac tgatggtaac aaaattgccg ataagtatgt ccgcaattta

15541 caacacagac tttatgagtg tctctataga aatagagatg ttgacacaga ctttgtgaat

15601 gagttttacg catatttgcg taaacatttc tcaatgatga tactttctga cgatgctgtt

15661 gtgtgtttca atagcactta tgcatctcaa ggtctagtgg ctagcataaa gaactttaag

15721 tcagttcttt attatcaaaa caatgttttt atgtctgaag caaaatgttg gactgagact

15781 gaccttacta aaggacctca tgaattttgc tctcaacata caatgctagt taaacagggt

15841 gatgattatg tgtaccttcc ttacccagat ccatcaagaa tcctaggggc cggctgtttt

15901 gtagatgata tcgtaaaaac agatggtaca cttatgattg aacggttcgt gtctttagct

15961 atagatgctt acccacttac taaacatcct aatcaggagt atgctgatgt ctttcatttg

16021 tacttacaat acataagaaa gctacatgat gagttaacag gacacatgtt agacatgtat

16081 tctgttatgc ttactaatga taacacttca aggtattggg aacctgagtt ttatgaggct

16141 atgtacacac cgcatacagt cttacaggct gttggggctt gtgttctttg caattcacag

16201 acttcattaa gatgtggtgc ttgcatacgt agaccattct tatgttgtaa atgctgttac

16261 gaccatgtca tatcaacatc acataaatta gtcttgtctg ttaatccgta tgtttgcaat

16321 gctccaggtt gtgatgtcac agatgtgact caactttact taggaggtat gagctattat

16381 tgtaaatcac ataaaccacc cattagtttt ccattgtgtg ctaatggaca agtttttggt

16441 ttatataaaa atacatgtgt tggtagcgat aatgttactg actttaatgc aattgcaaca

16501 tgtgactgga caaatgctgg tgattacatt ttagctaaca cctgtactga aagactcaag

16561 ctttttgcag cagaaacgct caaagctact gaggagacat ttaaactgtc ttatggtatt

16621 gctactgtac gtgaagtgct gtctgacaga gaattacatc tttcatggga agttggtaaa

16681 cctagaccac cacttaaccg aaattatgtc tttactggtt atcgtgtaac taaaaacagt

16741 aaagtacaaa taggagagta cacctttgaa aaaggtgact atggtgatgc tgttgtttac

16801 cgaggtacaa caacttacaa attaaatgtt ggtgattatt ttgtgctgac atcacataca

16861 gtaatgccat taagtgcacc tacactagtg ccacaagagc actatgttag aattactggc

16921 ttatacccaa cactcaatat ctcagatgag ttttctagca atgttgcaaa ttatcaaaag

16981 gttggtatgc aaaagtattc tacactccag ggaccacctg gtactggtaa gagtcatttt

17041 gctattggcc tagctctcta ctacccttct gctcgcatag tgtatacagc ttgctctcat

17101 gccgctgttg atgcactatg tgagaaggca ttaaaatatt tgcctataga taaatgtagt

17161 agaattatac ctgcacgtgc tcgtgtagag tgttttgata aattcaaagt gaattcaaca

17221 ttagaacagt atgtcttttg tactgtaaat gcattgcctg agacgacagc agatatagtt

17281 gtctttgatg aaatttcaat ggccacaaat tatgatttga gtgttgtcaa tgccagatta

17341 tgtgctaagc actatgtgta cattggcgac cctgctcaat tacctgcacc acgcacattg

17401 ctaactaagg gcacactaga accagaatat ttcaattcag tgtgtagact tatgaaaact

17461 ataggtccag acatgttcct cggaacttgt cggcgttgtc ctgctgaaat tgttgacact

17521 gtgagtgctt tggtttatga taataagctt aaagcacata aagacaaatc agctcaatgc

17581 tttaaaatgt tttataaggg tgttatcacg catgatgttt catctgcaat taacaggcca

17641 caaataggcg tggtaagaga attccttaca cgtaaccctg cttggagaaa agctgtcttt

17701 atttcacctt ataattcaca gaatgctgta gcctcaaaga ttttgggact accaactcaa

17761 actgttgatt catcacaggg ctcagaatat gactatgtca tattcactca aaccactgaa

17821 acagctcact cttgtaatgt aaacagattt aatgttgcta ttaccagagc aaaagtaggc

17881 atactttgca taatgtctga tagagacctt tatgacaagt tgcaatttac aagtcttgaa

17941 attccacgta ggaatgtggc aactttacaa gctgaaaatg taacaggact ctttaaagat

18001 tgtagtaagg taatcactgg gttacatcct acacaggcac ctacacacct cagtgttgac

18061 actaaattca aaactgaagg tttatgtgtt gacgtacctg gcatacctaa ggacatgacc

18121 tatagaagac tcatctctat gatgggtttt aaaatgaatt atcaagttaa tggttaccct

18181 aacatgttta tcacccgcga agaagctata agacatgtac gtgcatggat tggcttcgat

18241 gtcgaggggt gtcatgctac tagagaagct gttggtacca atttaccttt acagctaggt

18301 ttttctacag gtgttaacct agttgctgta cctacaggtt atgttgatac acctaataat

18361 acagattttt ccagagttag tgctaaacca ccgcctggag atcaatttaa acacctcata

18421 ccacttatgt acaaaggact tccttggaat gtagtgcgta taaagattgt acaaatgtta

18481 agtgacacac ttaaaaatct ctctgacaga gtcgtatttg tcttatgggc acatggcttt

18541 gagttgacat ctatgaagta ttttgtgaaa ataggacctg agcgcacctg ttgtctatgt

18601 gatagacgtg ccacatgctt ttccactgct tcagacactt atgcctgttg gcatcattct

18661 attggatttg attacgtcta taatccgttt atgattgatg ttcaacaatg gggttttaca

18721 ggtaacctac aaagcaacca tgatctgtat tgtcaagtcc atggtaatgc acatgtagct

18781 agttgtgatg caatcatgac taggtgtcta gctgtccacg agtgctttgt taagcgtgtt

18841 gactggacta ttgaatatcc tataattggt gatgaactga agattaatgc ggcttgtaga

18901 aaggttcaac acatggttgt taaagctgca ttattagcag acaaattccc agttcttcac

18961 gacattggta accctaaagc tattaagtgt gtacctcaag ctgatgtaga atggaagttc

19021 tatgatgcac agccttgtag tgacaaagct tataaaatag aagaattatt ctattcttat

19081 gccacacatt ctgacaaatt cacagatggt gtatgcctat tttggaattg caatgtcgat

19141 agatatcctg ctaattccat tgtttgtaga tttgacacta gagtgctatc taaccttaac

19201 ttgcctggtt gtgatggtgg cagtttgtat gtaaataaac atgcattcca cacaccagct

19261 tttgataaaa gtgcttttgt taatttaaaa caattaccat ttttctatta ctctgacagt

19321 ccatgtgagt ctcatggaaa acaagtagtg tcagatatag attatgtacc actaaagtct

19381 gctacgtgta taacacgttg caatttaggt ggtgctgtct gtagacatca tgctaatgag

19441 tacagattgt atctcgatgc ttataacatg atgatctcag ctggctttag cttgtgggtt

19501 tacaaacaat ttgatactta taacctctgg aacactttta caagacttca gagtttagaa

19561 aatgtggctt ttaatgttgt aaataaggga cactttgatg gacaacaggg tgaagtacca

19621 gtttctatca ttaataacac tgtttacaca aaagttgatg gtgttgatgt agaattgttt

19681 gaaaataaaa caacattacc tgttaatgta gcatttgagc tttgggctaa gcgcaacatt

19741 aaaccagtac cagaggtgaa aatactcaat aatttgggtg tggacattgc tgctaatact

19801 gtgatctggg actacaaaag agatgctcca gcacatatat ctactattgg tgtttgttct

19861 atgactgaca tagccaagaa accaattgaa acgatttgtg caccactcac tgtctttttt

19921 gatggtagag ttgatggtca agtagactta tttagaaatg cccgtaatgg tgttcttatt

19981 acagagggta gtgttaaagg tttacaacca tctgtaggtc ccaaacaagc tagtcttaat

20041 ggagtcacat taattggaga agccgtaaaa acacagttca attattataa gaaagttgat

20101 ggtgttgtcc aacaattacc tgaaacttac tttactcaga gtagaaattt acaagaattt

20161 aaacccagga gtcaaatgga aattgatttc ttagaattag ctatggatga attcattgaa

20221 cggtataaat tagaaggcta tgccttcgaa catatcgttt atggagattt tagtcatagt

20281 cagttaggtg gtttacatct actgattgga ctagctaaac gttttaagga atcacctttt

20341 gaattagaag attttattcc tatggacagt acagttaaaa actatttcat aacagatgcg

20401 caaacaggtt catctaagtg tgtgtgttct gttattgatt tattacttga tgattttgtt

20461 gaaataataa aatcccaaga tttatctgta gtttctaagg ttgtcaaagt gactattgac

20521 tatacagaaa tttcatttat gctttggtgt aaagatggcc atgtagaaac attttaccca

20581 aaattacaat ctagtcaagc gtggcaa

[gap 886 bp] [Expand Ns](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?expand-gaps=on)

21494 atgtttg tttttcttgt tttattgcca ctagtctcta gtcagtgtgt

21541 taatcttaca accagaactc aatcatacac taattctttc acacgtggtg tttattaccc

21601 ngacaaagtt ttcagatcct cagttttaca ttcaactcag gacttgttct tacctttctt

21661 ttccaatgtt acttggttcc atgctataca tgtctctggg accaatggta ctaagaggtt

21721 tgataaccct gtcctaccat ttaatgatgg tgtttatttt gcttccactg agaagtctaa

21781 cataataaga ggctggattt ttggtactac tttagattcg aagacccagt ccctacttat

21841 tgttaataac gctactaatg ttgttattaa agtctgtgaa tttcaatttt gtaatgatcc

21901 atttttggat gtttattacc acaaaaacaa caaaagttgg atggaaagtg agttcagagt

21961 ttattctagt gcgaataatt gcacttttga atatgtctct cagccttttc ttatggacct

22021 tgaaggaaaa cagggtaatt tcaaaaatct tagggaattt gtgtttaaga atattgatgg

22081 ttattttaaa atatattcta agcacacgcc tattaattta gggcgtgatc tccctcaggg

22141 tttttcggct ttagaaccat tggtagattt gccaataggt attaacatca ctaggtttca

22201 aactttactt gctttacata gaagttattt gactcctggt gattcttctt caggttggac

22261 agctggtgct gcagcttatt atgtgggtta tcttcaacct aggacttttc tattaaaata

22321 taatgaaaat ggaaccatta cagatgctgt agactgtgca cttgaccctc tctcagaaac

22381 aaagtgtacg ttgaaatcct tcactgtaga aaaaggaatc tatcaaactt ctaactttag

22441 agtccaacca acagaatcta ttgttagatt tcctaatatt acaaacttgt gcccttttga

22501 tgaagttttt aacgccacca gatttgcatc tgtttatgct tggaacagga agagaatcag

22561 caactgtgtt gctgattatt ctgtcctata taatttcgca ccatttttcg cttttaagtg

22621 ttatggagtg tctcctacta aattaaatga tctctgcttt actaatgtct atgcagattc

22681 atttgtaatt agaggtaatg aagtcagcca aatcgctcca gggcaaactg gaaatattgc

22741 tgattataat tataaattac cagatgattt tacaggctgc gttatagctt ggaattctaa

22801 caagcttgat tctaaggttg gtggtaatta taattacctg tatagattgt ttaggaagtc

22861 taatctcaaa ccttttgaga gagatatttc aactgaaatc tatcaggccg gtaacaaacc

22921 ttgtaatggt gttgcaggtt ttaattgtta ctttccttta cgatcatatg gtttccgacc

22981 cacttatggt gttggtcacc aaccatacag agtagtagta ctttcttttg aacttctaca

23041 tgcaccagca actgtttgtg gacctaaaaa gtctactaat ttggttaaaa acaaatgtgt

23101 caatttcaac ttcaatggtt taacaggcac aggtgttctt actgagtcta acaaaaagtt

23161 tctgcctttc caacaatttg gcagagacat tgctgacact actgatgctg tccgtgatcc

23221 acagacactt gagattcttg acattacacc atgttctttt ggtggtgtca gtgttataac

23281 accaggaaca aatacttcta accaggttgc tgttctttat cagggtgtta actgcacaga

23341 agtccctgtt gctattcatg cagatcaact tactcctact tggcgtgttt attctacagg

23401 ttctaatgtt tttcaaacac gtgcaggctg tttaataggg gctgaatatg tcaacaactc

23461 atatgagtgt gacataccca ttggtgcagg tatatgcgct agttatcaga ctcagactaa

23521 gtctcatcgg cgggcacgta gtgtagctag tcaatccatc attgcctaca ctatgtcact

23581 tggtgcagaa aattcagttg cttactctaa taactctatt gccataccca caaattttac

23641 tattagtgtt accacagaaa ttctaccagt gtctatgacc aagacatcag tagattgtac

23701 aatgtacatt tgtggtgatt caactgaatg cagcaatctt ttgttgcaat atggcagttt

23761 ttgtacacaa ttaaaacgtg ctttaactgg aatagctgtt gaacaagaca aaaacaccca

23821 agaagttttt gcacaagtca aacaaattta caaaacacca ccaattaaat attttggtgg

23881 ttttaatttt tcacaaatat taccagatcc atcaaaacca agcaagaggt catttattga

23941 agatctactt ttcaacaaag tgacacttgc agatgctggc ttcatcaaac aatatggtga

24001 ttgccttggt gatattgctg ctagagacct catttgtgca caaaagttta acggccttac

24061 tgttttgcca cctttgctca cagatgaaat gattgctcaa tacacttctg cactgttagc

24121 gggtacaatc acttctggtt ggacctttgg tgcaggtgct gcattacaaa taccatttgc

24181 tatgcaaatg gcttataggt ttaatggtat tggagttaca cagaatgttc tctatgagaa

24241 ccaaaaattg attgccaacc aatttaatag tgctattggc aaaattcaag actcactttc

24301 ttccacagca agtgcacttg gaaaacttca agatgtggtc aaccataatg cacaagcttt

24361 aaacacgctt gttaaacaac ttagctccaa atttggtgca atttcaagtg ttttaaatga

24421 tatcctttca cgtcttgaca aagttgaggc tgaagtgcaa attgataggt tgatcacagg

24481 cagacttcaa agtttgcaga catatgtgac tcaacaatta attagagctg cagaaatcag

24541 agcttctgct aatcttgctg ctactaaaat gtcagagtgt gtacttggac aatcaaaaag

24601 agttgatttt tgtggaaagg gctatcatct tatgtccttc cctcagtcag cacctcatgg

24661 tgtagtcttc ttgcatgtga cttatgtccc tgcacaagaa aagaacttca caactgctcc

24721 tgccatttgt catgatggaa aagcacactt tcctcgtgaa ggtgtctttg tttcaaatgg

24781 cacacactgg tttgtaacac aaaggaattt ttatgaacca caaatcatta ctacagacaa

24841 cacatttgtg tctggtaact gtgatgttgt aataggaatt gtcaacaaca cagtttatga

24901 tcctttgcaa cctgaattag attcattcaa ggaggagtta gataaatatt ttaagaatca

24961 tacatcacca gatgttgatt taggtgacat ctctggcatt aatgcttcag ttgtaaacat

25021 tcaaaaagaa attgaccgcc tcaatgaggt tgccaagaat ttaaatgaat ctctcatcga

25081 tctccaagaa cttggaaagt atgagcagta tataaaatgg ccatggtaca tttggctagg

25141 ttttatagct ggcttgattg ccatagtaat ggtgacaatt atgctttgct gtatgaccag

25201 ttgctgtagt tgtctcaagg gctgttgttc ttgtggatcc tgctgcaaat ttgatgaaga

25261 cgactctgag ccagtgctca aaggagtcaa attacattac acataaacga acttatggat

25321 ttgtttatga gaatcttcac aattggaact gtaactttga agcaaggtga aatcaaggat

25381 gctactcctt cagattttgt tcgcgctact gcaacgatac cgatacaagc ctcactccct

25441 ttcggatggc ttattgttgg cgttgcactt cttgctgttt ttcagagcgc ttccaaaatc

25501 ataactctca aaaagagatg gcaactagca ctctccaagg gtgttcactt tgtttgcaac

25561 ttgctgttgt tgtttgtaac agtttactca caccttttgc tcgttgctgc tggccttgaa

25621 gccccttttc tctatcttta tgctttagtc tacttcttgc agagtataaa ctttgtaaga

25681 ataataatga ggctttggct ttgctggaaa tgccgttcca aaaacccatt actttatgat

25741 gccaactatt ttctttgctg gcatactaat tgttacgact attgtatacc ttacaatagt

25801 gtaacttctt caattgtcat tacttcaggt gatggcacaa caagtcctat ttctgaacat

25861 gactaccaga ttggtggtta tactgaaaaa tgggaatctg gagtaaaaga ctgtgttgta

25921 ttacacagtt acttcacttc agactattac cagctgtact caactcaatt gagtacagac

25981 attggtgttg aacatgttac cttcttcatc tacaataaaa ttgttgatga gcctgaagaa

26041 catgtccaaa ttcacacaat cgacggttca tccggagttg ttaatccagt aatggaacca

26101 atttatgatg aaccgacgac gactactagc gtgcctttgt aagcacaagc tgatgagtac

26161 gaacttatgt actcattcgt ttcggaagag ataggtacgt taatagttaa tagcgtactt

26221 ctttttcttg ctttcgtggt attcttgcta gttacactag ccatccttac tgcgcttcga

26281 ttgtgtgcgt actgctgcaa tattgttaac gtgagtcttg taaaaccttc tttttacgtt

26341 tactctcgtg ttaaaaatct gaattcttct agagttcctg atcttctggt ctaaacgaac

26401 taaatattat attagttttt ctgtttggaa ctttaatttt agccatggca gattccaacg

26461 gtactattac cgttgaagag cttaaaaagc tccttgaaga atggaaccta gtaataggtt

26521 tcctattcct tacatggatt tgtcttctac aatttgccta tgccaacagg aataggtttt

26581 tgtatataat taagttaatt ttcctctggc tgttatggcc agtaacttta acttgttttg

26641 tgcttgctgc tgtttacaga ataaattgga tcaccggtgg aattgctatc gcaatggctt

26701 gtcttgtagg cttgatgtgg ctcagctact tcattgcttc tttcagactg tttgcgc

[gap 1864 bp] [Expand Ns](https://www.ncbi.nlm.nih.gov/nuccore/ON811217.1?expand-gaps=on)

28622 aaagatcac attggcaccc gcaatcctgc taacaatgct gcaatcgtgc tacaacttcc

28681 tcaaggaaca acattgccaa aaggcttcta cgcagaaggg agcagaggcg gcagtcaagc

28741 ctcttctcgt tcctcatcac gtagtcgcaa cagttcaaga aattcaactc caggcagcag

28801 taaacgaact tctcctgcta gaatggctgg caatggcggt gatgctgctc ttgctttgct

28861 gctgcttgac agattgaacc agcttgagag caaaatgtct ggtaaaggcc aacaacaaca

28921 aggccaaact gtcactaaga aatctgctgc tgaggcttct aagaagcctc ggcaaaaacg

28981 tactgccact aaagcataca atgtaacaca agctttcggc agacgtggtc cagaacaaac

29041 ccaaggaaat tttggggacc aggaactaat cagacaagga actgattaca aacattggcc

29101 gcaaattgca caatttgccc ccagcgcttc agcgttcttc ggaatgtcgc gcattggcat

29161 ggaagtcaca ccttcgggaa cgtggttgac ctacacaggt gccatcaaat tggatgacaa

29221 agatccaaat ttcaaagatc aagtcatttt gctgaataag catattgacg catacaaaac

29281 attcccacca acagagccta aaaaggacaa aaagaagaag gctgatgaaa ctcaagcctt

29341 accgcagaga cagaagaaac agcaaactgt gactcttctt cctgctgcag atttggatga

29401 tttctccaaa caattgcaac aatccatgag ccgtgctgac tcaactcagg cctaaactca

29461 tgcagaccac acaaggcaga tgggctatat aaacgttttc gcttttccgt ttacgatata

29521 tagtctactc ttgtgcagaa tgaattctcg taactacata gcacaagtag atgtagttaa

29581 ctttaatctc acatagcaat ctttaatcag tgtgtaacat tagggaggac ttgaaagagc

29641 caccacattt tcac

//