**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/MN-CDC-IBX352441390588/2022 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein (M), ...**

GenBank: OM781641.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1" \l "goto2198360930_0)

LOCUS OM781641 29750 bp RNA linear VRL 23-FEB-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/MN-CDC-IBX352441390588/2022 ORF1ab polyprotein

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

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

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

ORF8 protein (ORF8), nucleocapsid phosphoprotein (N), and ORF10

protein (ORF10) genes, complete cds.

ACCESSION OM781641

VERSION OM781641.1

DBLINK BioProject: [PRJNA731149](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA731149)

BioSample: [SAMN26182355](https://www.ncbi.nlm.nih.gov/biosample/SAMN26182355)

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 29750)

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., Bixby,C.,

Wang,Y., Schultz,J., Goswami,C., Hager,R., Grimwood,R., Paden,C.R.

and MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29750)

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., Bixby,C.,

Wang,Y., Schultz,J., Goswami,C., Hager,R., Grimwood,R., Paden,C.R.

and MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (23-FEB-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 :: DRAGEN Covid Lineage App V3.5.6

Sequencing Technology :: Illumina NovaSeq 6000

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29750

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/MN-CDC-

IBX352441390588/2022"

/isolation\_source="nasal swab"

/host="Homo sapiens"

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

/country="USA: Minnesota"

/collection\_date="2022-02-09"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=228&to=21508) 228..21508

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?location=228:13421,13421:21508) join(228..13421,13421..21508)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[ULN91440.1](https://www.ncbi.nlm.nih.gov/protein/2198360931)"

/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

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTA

ALGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLET

IQITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

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/ULN91440.1?from=1&to=180) 228..767

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=181&to=818) 768..2681

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=819&to=2763) 2682..8516

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=2764&to=3263) 8517..10016

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=3264&to=3569) 10017..10934

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=3570&to=3856) 10935..11795

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=3857&to=3939) 11796..12044

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=3940&to=4137) 12045..12638

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=4138&to=4250) 12639..12977

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=4251&to=4389) 12978..13394

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=4390&to=5321) join(13395..13421,13421..16189)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=5322&to=5922) 16190..17992

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=5923&to=6449) 17993..19573

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=6450&to=6795) 19574..20611

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91440.1?from=6796&to=7093) 20612..21505

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=228&to=13436) 228..13436

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[ULN91441.1](https://www.ncbi.nlm.nih.gov/protein/2198360932)"

/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

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTA

ALGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLET

IQITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

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/ULN91441.1?from=1&to=180) 228..767

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=181&to=818) 768..2681

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=819&to=2763) 2682..8516

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=2764&to=3263) 8517..10016

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=3264&to=3569) 10017..10934

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=3570&to=3856) 10935..11795

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=3857&to=3939) 11796..12044

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=3940&to=4137) 12045..12638

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=4138&to=4250) 12639..12977

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=4251&to=4389) 12978..13394

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/ULN91441.1?from=4390&to=4402) 13395..13433

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=13429&to=13456) 13429..13456

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=13441&to=13495) 13441..13495

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=21516&to=25328) 21516..25328

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=21516&to=25328) 21516..25328

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[ULN91442.1](https://www.ncbi.nlm.nih.gov/protein/2198360933)"

/translation="MFVFLVLLPLVSSQCVNLITRTQSYTNSFTRGVYYPDKVFRSSV

LHSTQDLFLPFFSNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWI

FGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDVYYHKNNKSWMESEFRVYSSA

NNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLGRDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNFAPFFAFKCYGVSPTKLNDLCFTNV

YADSFVIRGNEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVGGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYGFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=25337&to=26164) 25337..26164

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=25337&to=26164) 25337..26164

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[ULN91443.1](https://www.ncbi.nlm.nih.gov/protein/2198360934)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDIGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=26189&to=26416) 26189..26416

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=26189&to=26416) 26189..26416

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[ULN91444.1](https://www.ncbi.nlm.nih.gov/protein/2198360935)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=26467&to=27135) 26467..27135

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=26467&to=27135) 26467..27135

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[ULN91445.1](https://www.ncbi.nlm.nih.gov/protein/2198360936)"

/translation="MADSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXSDNIA

LLVQ"

gap 26912..27103

/estimated\_length=192

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27146&to=27331) 27146..27331

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27146&to=27331) 27146..27331

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[ULN91446.1](https://www.ncbi.nlm.nih.gov/protein/2198360937)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEIL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27338&to=27703) 27338..27703

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27338&to=27703) 27338..27703

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[ULN91447.1](https://www.ncbi.nlm.nih.gov/protein/2198360938)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27700&to=27831) 27700..27831

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27700&to=27831) 27700..27831

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[ULN91448.1](https://www.ncbi.nlm.nih.gov/protein/2198360939)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27838&to=28203) 27838..28203

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=27838&to=28203) 27838..28203

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[ULN91449.1](https://www.ncbi.nlm.nih.gov/protein/2198360940)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=28218&to=29468) 28218..29468

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=28218&to=29468) 28218..29468

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[ULN91450.1](https://www.ncbi.nlm.nih.gov/protein/2198360941)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSRADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=29493&to=29609) 29493..29609

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=29493&to=29609) 29493..29609

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[ULN91451.1](https://www.ncbi.nlm.nih.gov/protein/2198360942)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=29544&to=29579) 29544..29579

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=29564&to=29592) 29564..29592

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?from=29663&to=29677) 29663..29677

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

ORIGIN

1 acttttgatc tcttgtagat ctgttctcta aacgaacttt aaaatctgtg tggctgtcac

61 tcggctgcat gcttagtgca ctcacgcagt ataattaata actaattact gtcgttgaca

121 ggacacgagt aactcgtcta tcttctgcag gctgcttacg gtttcgtccg tgttgcagcc

181 gatcatcagc acatctaggt tttgtccggg tgtgaccgaa aggtaagatg gagagccttg

241 tccctggttt caacgagaaa acacacgtcc aactcagttt gcctgtttta caggttcgcg

301 acgtgctcgt acgtggcttt ggagactccg tggaggaggt cttatcagag gcacgtcaac

361 atcttaaaga tggcacttgt ggcttagtag aagttgaaaa aggcgttttg cctcaacttg

421 aacagcccta tgtgttcatc aaacgttcgg atgctcgaac tgcacctcat ggtcatgtta

481 tggttgagct ggtagcagaa ctcgaaggca ttcagtacgg tcgtagtggt gagacacttg

541 gtgtccttgt ccctcatgtg ggcgaaatac cagtggctta ccgcaaggtt cttcttcgta

601 agaacggtaa taaaggagct ggtggccata ggtacggcgc cgatctaaag tcatttgact

661 taggcgacga gcttggcact gatccttatg aagattttca agaaaactgg aacactaaac

721 atagcagtgg tgttacccgt gaactcatgc gtgagcttaa cggaggggca tacactcgct

781 atgtcgataa caacttctgt ggccctgatg gctaccctct tgagtgcatt aaagaccttc

841 tagcacgtgc tggtaaagct tcatgcactt tgtccgaaca actggacttt attgacacta

901 agaggggtgt atactgctgc cgtgaacatg agcatgaaat tgcttggtac acggaacgtt

961 ctgaaaagag ctatgaattg cagacacctt ttgaaattaa attggcaaag aaatttgaca

1021 ccttcaatgg ggaatgtcca aattttgtat ttcccttaaa ttccataatc aagactattc

1081 aaccaagggt tgaaaagaaa aagcttgatg gctttatggg tagaattcga tctgtctatc

1141 cagttgcgtc accaaatgaa tgcaaccaaa tgtgcctttc aactctcatg aagtgtgatc

1201 attgtggtga aacttcatgg cagacgggcg attttgttaa agccacttgc gaattttgtg

1261 gcactgagaa tttgactaaa gaaggtgcca ctacttgtgg ttacttaccc caaaatgctg

1321 ttgttaaaat ttattgtcca gcatgtcaca attcagaagt aggacctgag catagtcttg

1381 ccgaatacca taatgaatct ggcttgaaaa ccattcttcg taagggtggt cgcactattg

1441 cctttggagg ctgtgtgttc tcttatgttg gttgccataa caagtgtgcc tattgggttc

1501 cacgtgctag cgctaacata ggttgtaacc atacaggtgt tgttggagaa ggttccgaag

1561 gtcttaatga caaccttctt gaaatactcc aaaaagagaa agtcaacatc aatattgttg

1621 gtgactttaa acttaatgaa gagatcgcca ttattttggc atctttttct gcttccacaa

1681 gtgcttttgt ggaaactgtg aaaggtttgg attataaagc attcaaacaa attgttgaat

1741 cctgtggtaa ttttaaagtt acaaaaggaa aagctaaaaa aggtgcctgg aatattggtg

1801 aacagaaatc aatactgagt cctctttatg catttgcatc agaggctgct cgtgttgtac

1861 gatcaatttt ctcccgcact cttgaaactg ctcaaaattc tgtgcgtgtt ttacagaagg

1921 ccgctataac aatactagat ggaatttcac agtattcact gagactcatt gatgctatga

1981 tgttcacatc tgatttggct actaacaatc tagttgtaat ggcctacatt acaggtggtg

2041 ttgttcagtt gacttcgcag tggctaacta acatctttgg cactgtttat gaaaaactca

2101 aacccgtcct tgattggctt gaagagaagt ttaaggaagg tgtagagttt cttagagacg

2161 gttgggaaat tgttaaattt atctcaacct gtgcttgtga aattgtcggt ggacaaattg

2221 tcacctgtgc aaaggaaatt aaggagagtg ttcagacatt ctttaagctt gtaaataaat

2281 ttttggcttt gtgtgctgac tctatcatta ttggtggagc taaacttaaa gccttgaatt

2341 taggtgaaac atttgtcacg cactcaaagg gattgtacag aaagtgtgtt aaatccagag

2401 aagaaactgg cctactcatg cctctaaaag ccccaaaaga aattatcttc ttagagggag

2461 aaacacttcc cacagaagtg ttaacagagg aagttgtctt gaaaactggt gatttacaac

2521 cattagaaca acctactagt gaagctgttg aagctccatt ggttggtaca ccagtttgta

2581 ttaacgggct tatgttgctc gaaatcaaag acacagaaaa gtactgtgcc cttgcaccta

2641 atatgatggt aacaaacaat accttcacac tcaaaggcgg tgcaccaaca aaggttactt

2701 ttggtgatga cactgtgata gaagtgcaag gttacaagag tgtgaatatc atttttgaac

2761 ttgatgaaag gattgataaa gtacttaatg agaagtgctc tgcctataca gttgaactcg

2821 gtacagaagt aaatgagttc gcctgtgttg tggcagatgc tgtcataaaa actttgcaac

2881 cagtatctga attacttaca ccactgggca ttgatttaga tgagtggagt atggctacat

2941 actacttatt tgatgagtct ggtgagttta aattggcttc acatatgtat tgttcttttt

3001 accctccaga tgaggatgaa gaagaaggtg attgtgaaga agaagagttt gagccatcaa

3061 ctcaatatga gtatggtact gaagatgatt accaaggtaa acctttggaa tttggtgcca

3121 cttctgctgc tcttcaacct gaagaagagc aagaagaaga ttggttagat gatgatagtc

3181 aacaaactgt tggtcaacaa gacggcagtg aggacaatca gacaactact attcaaacaa

3241 ttgttgaggt tcaacctcaa ttagagatgg aacttacacc agttgttcag actattgaag

3301 tgaatagttt tagtggttat ttaaaactta ctgacaatgt atacattaaa aatgcagaca

3361 ttgtggaaga agctaaaaag gtaaaaccaa cagtggttgt taatgcagcc aatgtttacc

3421 ttaaacatgg aggaggtgtt gcaggagcct taaataaggc tactaacaat gccatgcaag

3481 ttgaatctga tgattacata gctactaatg gaccacttaa agtgggtggt agttgtgttt

3541 taagcggaca caatcttgct aaacactgtc ttcatgttgt cggcccaaat gttaacaaag

3601 gtgaagacat tcaacttctt aagagtgctt atgaaaattt taatcagcac gaagttctac

3661 ttgcaccatt attatcagct ggtatttttg gtgctgaccc tatacattct ttaagagttt

3721 gtgtagatac tgttcgcaca aatgtctact tagctgtctt tgataaaaat ctctatgaca

3781 aacttgtttc aagctttttg gaaatgaaga gtgaaaagca agttgaacaa aagatcgctg

3841 agattcctaa agaggaagtt aagccattta taactgaaag taaaccttca gttgaacaga

3901 gaaaacaaga tgataagaaa atcaaagctt gtgttgaaga agttacaaca actctggaag

3961 aaactaagtt cctcacagaa aacttgttac tttatattga cattaatggc aatcttcatc

4021 cagattctgc cactcttgtt agtgacattg acatcacttt cttaaagaaa gatgctccat

4081 atatagtggg tgatgttgtt caagagggtg ttttaactgc tgtggttata cctactaaaa

4141 aggctagtgg cactactgaa atgctagcga aagctttgag aaaagtgcca acagacaatt

4201 atataaccac ttacccgggt cagggtttaa atggttacac tgtagaggag gcaaagacag

4261 tgcttaaaaa gtgtaaaagt gctttttaca ttctaccatc tattatctct aatgagaagc

4321 aagaaattct tggaactgtt tcttggaatt tgcgagaaat gcttgcacat gcagaagaaa

4381 cacgcaaatt aatgcctgtc tgtgtggaaa ctaaagccat agtttcaact atacagcgta

4441 aatataaggg tattaaaata caagagggtg tggttgatta tggtgctaga ttttactttt

4501 acaccagtaa aacaactgta gcgtcactta tcaacacact taacgatcta aatgaaactc

4561 ttgttacaat gccacttggc tatgtaacac atggcttaaa tttggaagaa gctgctcggt

4621 atatgagatc tctcaaagtg ccagctacag tttctgtttc ttcacctgat gctgttacag

4681 cgtataatgg ttatcttact tcttcttcta aaacacctga agaacatttt attgaaacca

4741 tctcacttgc tggttcctat aaagattggt cctattctgg acaatctaca caactaggta

4801 tagaatttct taagagaggt gataaaagtg tatattacac tagtaatcct accacattcc

4861 acctagatgg tgaagttatc acctttgaca atcttaagac acttctttct ttgagagaag

4921 tgaggactat taaggtgttt acaacagtag acaacattaa cctccacacg caagttgtgg

4981 acatgtcaat gacatatgga caacagtttg gtccaactta tttggatgga gctgatgtta

5041 ctaaaataaa acctcataat tcacatgaag gtaaaacatt ttatgtttta cctaatgatg

5101 acactctacg tgttgaggct tttgagtact accacacaac tgatcctagt tttctgggta

5161 ggtacatgtc agcattaaat cacactaaaa agtggaaata cccacaagtt aatggtttaa

5221 cttctattaa atgggcagat aacaactgtt atcttgccac tgcattgtta acactccaac

5281 aaatagagtt gaagtttaat ccacctgctc tacaagatgc ttattacaga gcaagggctg

5341 gtgaagctgc taacttttgt gcacttatct tagcctactg taataagaca gtaggtgagt

5401 taggtgatgt tagagaaaca atgagttact tgtttcaaca tgccaattta gattcttgca

5461 aaagagtctt gaacgtggtg tgtaaaactt gtggacaaca gcagacaacc cttaagggtg

5521 tagaagctgt tatgtacatg ggcacacttt cttatgaaca atttaagaaa ggtgttcaga

5581 taccttgtac gtgtggtaaa caagctacaa aatatctagt acaacaggag tcaccttttg

5641 ttatgatgtc agcaccacct gctcagtatg aacttaagca tggtacattt acttgtgcta

5701 gtgagtacac tggtaattac cagtgtggtc actataaaca tataacttct aaagaaactt

5761 tgtattgcat agacggtgct ttacttacaa agtcctcaga atacaaaggt cctattacgg

5821 atgttttcta caaagaaaac agttacacaa caaccataaa accagttact tataaattgg

5881 atggtgttgt ttgtacagaa attgacccta agttggacaa ttattataag aaagacaatt

5941 cttatttcac agagcaacca attgatcttg taccaaacca accatatcca aacgcaagct

6001 tcgataattt taagtttgta tgtgataata tcaaatttgc tgatgattta aaccagttaa

6061 ctggttataa gaaacctgct tcaagagagc ttaaagttac atttttccct gacttaaatg

6121 gtgatgtggt ggctattgat tataaacact acacaccctc ttttaagaaa ggagctaaat

6181 tgttacataa acctattgtt tggcatgtta acaatgcaac taataaagcc acgtataaac

6241 caaatacctg gtgtatacgt tgtctttgga gcacaaaacc agttgaaaca tcaaattcgt

6301 ttgatgtact gaagtcagag gacgcgcagg gaatggataa tcttgcctgc gaagatctaa

6361 aaccagtctc tgaagaagta gtggaaaatc ctaccataca gaaagacgtt cttgagtgta

6421 atgtgaaaac taccgaagtt gtaggagaca ttatacttaa accagcaaat aatagtttaa

6481 aaattacaga agaggttggc cacacagatc taatggctgc ttatgtagac aattctagtc

6541 ttactattaa gaaacctaat gaattatcta gagtattagg tttgaaaacc cttgctactc

6601 atggtttagc tgctgttaat agtgtccctt gggatactat agctaattat gctaagcctt

6661 ttcttaacaa agttgttagt acaactacta acatagttac acggtgttta aaccgtgttt

6721 gtactaatta tatgccttat ttctttactt tattgctaca attgtgtact tttactagaa

6781 gtacaaattc tagaattaaa gcatctatgc cgactactat agcaaagaat actgttaaga

6841 gtgtcggtaa attttgtcta gaggcttcat ttaattattt gaagtcacct aatttttcta

6901 aactgataaa tattataatt tggtttttac tattaagtgt ttgcctaggt tctttaatct

6961 actcaaccgc tgctttaggt gttttaatgt ctaatttagg catgccttct tactgtactg

7021 gttacagaga aggctatttg aactctacta atgtcactat tgcaacctac tgtactggtt

7081 ctataccttg tagtgtttgt cttagtggtt tagattcttt agacacctat ccttctttag

7141 aaactataca aattaccatt tcatctttta aatgggattt aactgctttt ggcttagttg

7201 cagagtggtt tttggcatat attcttttca ctaggttttt ctatgtactt ggattggctg

7261 caatcatgca attgtttttc agctattttg cagtacattt tattagtaat tcttggctta

7321 tgtggttaat aattaatctt gtacaaatgg ccccgatttc agctatggtt agaatgtaca

7381 tcttctttgc atcattttat tatgtatgga aaagttatgt gcatgttgta gacggttgta

7441 attcatcaac ttgtatgatg tgttacaaac gtaatagagc aacaagagtc gaatgtacaa

7501 ctattgttaa tggtgttaga aggtcctttt atgtctatgc taatggaggt aaaggctttt

7561 gcaaactaca caattggaat tgtgttaatt gtgatacatt ctgtgctggt agtacattta

7621 ttagtgatga agttgcgaga gacttgtcac tacagtttaa aagaccaata aatcctactg

7681 accagtcttc ttacatcgtt gatagtgtta cagtgaagaa tggttccatc catctttact

7741 ttgataaagc tggtcaaaag acttatgaaa gacattctct ctctcatttt gttaacttag

7801 acaacctgag agctaataac actaaaggtt cattgcctat taatgttata gtttttgatg

7861 gtaaatcaaa atgtgaagaa tcatctgcaa aatcagcgtc tgtttactac agtcagctta

7921 tgtgtcaacc tatactgtta ctagatcagg cattagtgtc tgatgttggt gatagtgcgg

7981 aagttgcagt taaaatgttt gatgcttacg ttaatacgtt ttcatcaact tttaacgtac

8041 caatggaaaa actcaaaaca ctagttgcaa ctgcagaagc tgaacttgca aagaatgtgt

8101 ccttagacaa tgtcttatct acttttattt cagcagctcg gcaagggttt gttgattcag

8161 atgtagaaac taaagatgtt gttgaatgtc ttaaattgtc acatcaatct gacatagaag

8221 ttactggcga tagttgtaat aactatatgc tcacctataa caaagttgaa aacatgacac

8281 cccgtgacct tggtgcttgt attgactgta gtgcgcgtca tattaatgcg caggtagcaa

8341 aaagtcacaa cattgctttg atatggaacg ttaaagattt catgtcattg tctgaacaac

8401 tacgaaaaca aatacgtagt gctgctaaaa agaataactt accttttaag ttgacatgtg

8461 caactactag acaagttgtt aatgttgtaa caacaaagat agcacttaag ggtggtaaaa

8521 ttgttaataa ttggttgaag cagttaatta aagttacact tgtgttcctt tttgttgctg

8581 ctattttcta tttaataaca cctgttcatg tcatgtctaa acatactgac ttttcaagtg

8641 aaatcatagg atacaaggct attgatggtg gtgtcactcg tgacatagca tctacagata

8701 cttgttttgc taacaaacat gctgattttg acacatggtt tagccagcgt ggtggtagtt

8761 atactaatga caaagcttgc ccattgattg ctgcagtcat aacaagagaa gtgggttttg

8821 tcgtgcctgg tttgcctggc acgatattac gcacaactaa tggtgacttt ttgcatttct

8881 tacctagagt ttttagtgca gttggtaaca tctgttacac accatcaaaa cttatagagt

8941 acactgactt tgcaacatca gcttgtgttt tggctgctga atgtacaatt tttaaagatg

9001 cttctggtaa gccagtacca tattgttatg ataccaatgt actagaaggt tctgttgctt

9061 atgaaagttt acgccctgac acacgttatg tgctcatgga tggctctatt attcaatttc

9121 ctaacaccta ccttgaaggt tctgttagag tggtaacaac ttttgattct gagtactgta

9181 ggcacggcac ttgtgaaaga tcagaagctg gtgtttgtgt atctactagt ggtagatggg

9241 tacttaacaa tgattattac agatctttac caggagtttt ctgtggtgta gatgctgtaa

9301 atttatttac taatatgttt acaccactaa ttcaacctat tggtgctttg gacatatcag

9361 catctatagt agctggtggt attgtggcta tcgtagtaac atgccttgcc tactatttta

9421 tgaggtttag aagagctttt ggtgaataca gtcatgtagt tgcctttaat actttactat

9481 tccttatgtc attcattgta ctctgtttaa caccagttta ctcattctta cctggtgttt

9541 attctgttat ttacttgtac ttgacatttt atcttactaa tgatgtttct tttttagcac

9601 atattcagtg gatggttatg ttcacacctt tagtaccttt ctggataaca attgcttata

9661 tcatttgtat ttccacaaag catttctatt ggttctttag taattaccta aagagacgtg

9721 tagtctttaa tggtgtttcc tttagtactt ttgaagaagc tgcgctgtgc acctttttgt

9781 taaataaaga aatgtatcta aagttgcgta gtgatgtgct attacctttt acgcaatata

9841 atagatactt agctctttat aataagtaca agtattttag tggagcaatg gatacaacta

9901 gctacagaga agctgcttgt tgtcatctcg caaaggctct caatgacttc agtaactcag

9961 gttctgatgt tctttaccaa ccaccacaaa tctctatcac ctcagctgtt ttgcagagtg

10021 gttttagaaa aatggcattc ccatctggta aagttgaggg ttgtatggta caagtaactt

10081 gtggtacaac tacacttaac ggtctttggc ttgatgacgt agtttactgt ccaagacatg

10141 tgatctgcac ctctgaagat atgcttaacc ctaattatga agatttactc attcgtaagt

10201 ctaatcataa tttcttggta caggctggta atgttcaact cagggttatt ggacattcta

10261 tgcaaaattg tgtacttaag cttaaggttg atacagccaa tcctaagaca cctaagtata

10321 agtttgttcg cattcaacca ggacagactt tttcagtgtt agcttgttac aatggttcac

10381 catctggtgt ttaccaatgt gctatgagac acaatttcac tattaagggt tcattcctta

10441 atggttcatg tggtagtgtt ggttttaaca tagattatga ctgtgtctct ttttgttaca

10501 tgcaccatat ggaattacca actggagttc atgctggcac agacttagaa ggtaactttt

10561 atggaccttt tgttgacagg caaacagcac aagcagctgg tacggacaca actattacag

10621 ttaatgtttt agcttggttg tacgctgctg ttataaatgg agacaggtgg tttctcaatc

10681 gatttaccac aactcttaat gactttaacc ttgtggctat gaagtacaat tatgaacctc

10741 taacacaaga ccatgttgac atactaggac ctctttctgc tcaaactgga attgccgttt

10801 tagatatgtg tgcttcatta aaagaattac tgcaaaatgg tatgaatgga cgtaccatat

10861 tgggtagtgc tttattagaa gatgaattta caccttttga tgttgttaga caatgctcag

10921 gtgttacttt ccaaagtgca gtgaaaagaa caatcaaggg tacacaccac tggttgttac

10981 tcacaatttt gacttcactt ttagttttag tccagagtac tcaatggtct ttgttctttt

11041 ttttgtatga aaatgccttt ttaccttttg ctatgggtat tattgctatg tctgcttttg

11101 caatgatgtt tgtcaaacat aagcatgcat ttctctgttt gtttttgtta ccttctcttg

11161 ccactgtagc ttattttaat atggtctata tgcctgctag ttgggtgatg cgtattatga

11221 catggttgga tatggttgat actagtttga agctaaaaga ctgtgttatg tatgcatcag

11281 ctgtagtgtt actaatcctt atgacagcaa gaactgtgta tgatgatggt gctaggagag

11341 tgtggacact tatgaatgtc ttgacactcg tttataaagt ttattatggt aatgctttag

11401 atcaagccat ttccatgtgg gctcttataa tctctgttac ttctaactac tcaggtgtag

11461 ttacaactgt catgtttttg gccagaggta ttgtttttat gtgtgttgag tattgcccta

11521 ttttcttcat aactggtaat acacttcagt gtataatgct agtttattgt ttcttaggct

11581 atttttgtac ttgttacttt ggcctctttt gtttactcaa ccgctacttt agactgactc

11641 ttggtgttta tgattactta gtttctacac aggagtttag atatatgaat tcacagggac

11701 tactcccacc caagaatagc atagatgcct tcaaactcaa cattaaattg ttgggtgttg

11761 gtggcaaacc ttgtatcaaa gtagccactg tacagtctaa aatgtcagat gtaaagtgca

11821 catcagtagt cttactctca gttttgcaac aactcagagt agaatcatca tctaaattgt

11881 gggctcaatg tgtccagtta cacaatgaca ttctcttagc taaagatact actgaagcct

11941 ttgaaaaaat ggtttcacta ctttctgttt tgctttccat gcagggtgct gtagacataa

12001 acaagctttg tgaagaaatg ctggacaaca gggcaacctt acaagctata gcctcagagt

12061 ttagttccct tccatcatat gcagcttttg ctactgctca agaagcttat gagcaggctg

12121 ttgctaatgg tgattctgaa gttgttctta aaaagttgaa gaagtctttg aatgtggcta

12181 aatctgaatt tgaccgtgat gcagccatgc aacgtaagtt ggaaaagatg gctgatcaag

12241 ctatgaccca aatgtataaa caggctagat ctgaggacaa gagggcaaaa gttactagtg

12301 ctatgcagac aatgcttttc actatgctta gaaagttgga taatgatgca ctcaacaaca

12361 ttatcaacaa tgcaagagat ggttgtgttc ccttgaacat aatacctctt acaacagcag

12421 ccaaactaat ggttgtcata ccagactata acacatataa aaatacgtgt gatggtacaa

12481 catttactta tgcatcagca ttgtgggaaa tccaacaggt tgtagatgca gatagtaaaa

12541 ttgttcaact tagtgaaatt agtatggaca attcacctaa tttagcatgg cctcttattg

12601 taacagcttt aagggccaat tctgctgtca aattacagaa taatgagctt agtcctgttg

12661 cactacgaca gatgtcttgt gctgccggta ctacacaaac tgcttgcact gatgacaatg

12721 cgttagctta ctacaacaca acaaagggag gtaggtttgt acttgcactg ttatccgatt

12781 tacaggattt gaaatgggct agattcccta agagtgatgg aactggtact atttatacag

12841 aactggaacc accttgtagg tttgttacag acacacctaa aggtcctaaa gtgaagtatt

12901 tatactttat taaaggatta aacaacctaa atagaggtat ggtacttggt agtttagctg

12961 ccacagtacg tctacaagct ggtaatgcaa cagaagtgcc tgccaattca actgtattat

13021 ctttctgtgc ttttgctgta gatgctgcta aagcttacaa agattatcta gctagtgggg

13081 gacaaccaat cactaattgt gttaagatgt tgtgtacaca cactggtact ggtcaggcaa

13141 taacagttac accggaagcc aatatggatc aagaatcctt tggtggtgca tcgtgttgtc

13201 tgtactgccg ttgccacata gatcatccaa atcctaaagg attttgtgac ttaaaaggta

13261 agtatgtaca aatacctaca acttgtgcta atgaccctgt gggttttaca cttaaaaaca

13321 cagtctgtac cgtctgcggt atgtggaaag gttatggctg tagttgtgat caactccgcg

13381 aacccatgct tcagtcagct gatgcacaat cgtttttaaa cgggtttgcg gtgtaagtgc

13441 agcccgtctt acaccgtgcg gcacaggcac tagtactgat gtcgtataca gggcttttga

13501 catctacaat gataaagtag ctggttttgc taaattccta aaaactaatt gttgtcgctt

13561 ccaagaaaag gacgaagatg acaatttaat tgattcttac tttgtagtta agagacacac

13621 tttctctaac taccaacatg aagaaacaat ttataattta cttaaggatt gtccagctgt

13681 tgctaaacat gacttcttta agtttagaat agacggtgac atggtaccac atatatcacg

13741 tcaacgtctt actaaataca caatggcaga cctcgtctat gctttaaggc attttgatga

13801 aggtaattgt gacacattaa aagaaatact tgtcacatac aattgttgtg atgatgatta

13861 tttcaataaa aaggactggt atgattttgt agaaaaccca gatatattac gcgtatacgc

13921 caacttaggt gaacgtgtac gccaagcttt gttaaaaaca gtacaattct gtgatgccat

13981 gcgaaatgct ggtattgttg gtgtactgac attagataat caagatctca atggtaactg

14041 gtatgatttc ggtgatttca tacaaaccac gccaggtagt ggagttcctg ttgtagattc

14101 ttattattca ttgttaatgc ctatattaac cttgaccagg gctttaactg cagagtcaca

14161 tgttgacact gacttaacaa agccttacat taagtgggat ttgttaaaat atgacttcac

14221 ggaagagagg ttaaaactct ttgaccgtta ttttaaatat tgggatcaga cataccaccc

14281 aaattgtgtt aactgtttgg atgacagatg cattctgcat tgtgcaaact ttaatgtttt

14341 attctctaca gtgttcccac ttacaagttt tggaccacta gtgagaaaaa tatttgttga

14401 tggtgttcca tttgtagttt caactggata ccacttcaga gagctaggtg ttgtacataa

14461 tcaggatgta aacttacata gctctagact tagttttaag gaattacttg tgtatgctgc

14521 tgaccctgct atgcacgctg cttctggtaa tctattacta gataaacgca ctacgtgctt

14581 ttcagtagct gcacttacta acaatgttgc ttttcaaact gtcaaacccg gtaattttaa

14641 caaagacttc tatgactttg ctgtgtctaa gggtttcttt aaggaaggaa gttctgttga

14701 attaaaacac ttcttctttg ctcaggatgg taatgctgct atcagcgatt atgactacta

14761 tcgttataat ctaccaacaa tgtgtgatat cagacaacta ctatttgtag ttgaagttgt

14821 tgataagtac tttgattgtt acgatggtgg ctgtattaat gctaaccaag tcatcgtcaa

14881 caacctagac aaatcagctg gttttccatt taataaatgg ggtaaggcta gactttatta

14941 tgattcaatg agttatgagg atcaagatgc acttttcgca tatacaaaac gtaatgtcat

15001 ccctactata actcaaatga atcttaagta tgccattagt gcaaagaata gagctcgcac

15061 cgtagctggt gtctctatct gtagtactat gaccaataga cagtttcatc aaaaattatt

15121 gaaatcaata gccgccacta gaggagctac tgtagtaatt ggaacaagca aattctatgg

15181 tggttggcac aacatgttaa aaactgttta tagtgatgta gaaaaccctc accttatggg

15241 ttgggattat cctaaatgtg atagagccat gcctaacatg cttagaatta tggcctcact

15301 tgttcttgct cgcaaacata caacgtgttg tagcttgtca caccgtttct atagattagc

15361 taatgagtgt gctcaagtat tgagtgaaat ggtcatgtgt ggcggttcac tatatgttaa

15421 accaggtgga acctcatcag gagatgccac aactgcttat gctaatagtg tttttaacat

15481 ttgtcaagct gtcacggcca atgttaatgc acttttatct actgatggta acaaaattgc

15541 cgataagtat gtccgcaatt tacaacacag actttatgag tgtctctata gaaatagaga

15601 tgttgacaca gactttgtga atgagtttta cgcatatttg cgtaaacatt tctcaatgat

15661 gatactttct gacgatgctg ttgtgtgttt caatagcact tatgcatctc aaggtctagt

15721 ggctagcata aagaacttta agtcagttct ttattatcaa aacaatgttt ttatgtctga

15781 agcaaaatgt tggactgaga ctgaccttac taaaggacct catgaatttt gctctcaaca

15841 tacaatgcta gttaaacagg gtgatgatta tgtgtacctt ccttacccag atccatcaag

15901 aatcctaggg gccggctgtt ttgtagatga tatcgtaaaa acagatggta cacttatgat

15961 tgaacggttc gtgtctttag ctatagatgc ttacccactt actaaacatc ctaatcagga

16021 gtatgctgat gtctttcatt tgtacttaca atacataaga aagctacatg atgagttaac

16081 aggacacatg ttagacatgt attctgttat gcttactaat gataacactt caaggtattg

16141 ggaacctgag ttttatgagg ctatgtacac accgcataca gtcttacagg ctgttggggc

16201 ttgtgttctt tgcaattcac agacttcatt aagatgtggt gcttgcatac gtagaccatt

16261 cttatgttgt aaatgctgtt acgaccatgt catatcaaca tcacataaat tagtcttgtc

16321 tgttaatccg tatgtttgca atgctccagg ttgtgatgtc acagatgtga ctcaacttta

16381 cttaggaggt atgagctatt attgtaaatc acataaacca cccattagtt ttccattgtg

16441 tgctaatgga caagtttttg gtttatataa aaatacatgt gttggtagcg ataatgttac

16501 tgactttaat gcaattgcaa catgtgactg gacaaatgct ggtgattaca ttttagctaa

16561 cacctgtact gaaagactca agctttttgc agcagaaacg ctcaaagcta ctgaggagac

16621 atttaaactg tcttatggta ttgctactgt acgtgaagtg ctgtctgaca gagaattaca

16681 tctttcatgg gaagttggta aacctagacc accacttaac cgaaattatg tctttactgg

16741 ttatcgtgta actaaaaaca gtaaagtaca aataggagag tacacctttg aaaaaggtga

16801 ctatggtgat gctgttgttt accgaggtac aacaacttac aaattaaatg ttggtgatta

16861 ttttgtgctg acatcacata cagtaatgcc attaagtgca cctacactag tgccacaaga

16921 gcactatgtt agaattactg gcttataccc aacactcaat atctcagatg agttttctag

16981 caatgttgca aattatcaaa aggttggtat gcaaaagtat tctacactcc agggaccacc

17041 tggtactggt aagagtcatt ttgctattgg cctagctctc tactaccctt ctgctcgcat

17101 agtgtataca gcttgctctc atgccgctgt tgatgcacta tgtgagaagg cattaaaata

17161 tttgcctata gataaatgta gtagaattat acctgcacgt gctcgtgtag agtgttttga

17221 taaattcaaa gtgaattcaa cattagaaca gtatgtcttt tgtactgtaa atgcattgcc

17281 tgagacgaca gcagatatag ttgtctttga tgaaatttca atggccacaa attatgattt

17341 gagtgttgtc aatgccagat tatgtgctaa gcactatgtg tacattggcg accctgctca

17401 attacctgca ccacgcacat tgctaactaa gggcacacta gaaccagaat atttcaattc

17461 agtgtgtaga cttatgaaaa ctataggtcc agacatgttc ctcggaactt gtcggcgttg

17521 tcctgctgaa attgttgaca ctgtgagtgc tttggtttat gataataagc ttaaagcaca

17581 taaagacaaa tcagctcaat gctttaaaat gttttataag ggtgttatca cgcatgatgt

17641 ttcatctgca attaacaggc cacaaatagg cgtggtaaga gaattcctta cacgtaaccc

17701 tgcttggaga aaagctgtct ttatttcacc ttataattca cagaatgctg tagcctcaaa

17761 gattttggga ctaccaactc aaactgttga ttcatcacag ggctcagaat atgactatgt

17821 catattcact caaaccactg aaacagctca ctcttgtaat gtaaacagat ttaatgttgc

17881 tattaccaga gcaaaagtag gcatactttg cataatgtct gatagagacc tttatgacaa

17941 gttgcaattt acaagtcttg aaattccacg taggaatgtg gcaactttac aagctgaaaa

18001 tgtaacagga ctctttaaag attgtagtaa ggtaatcact gggttacatc ctacacaggc

18061 acctacacac ctcagtgttg acactaaatt caaaactgaa ggtttatgtg ttgacgtacc

18121 tggcatacct aaggacatga cctatagaag actcatctct atgatgggtt ttaaaatgaa

18181 ttatcaagtt aatggttacc ctaacatgtt tatcacccgc gaagaagcta taagacatgt

18241 acgtgcatgg attggcttcg atgtcgaggg gtgtcatgct actagagaag ctgttggtac

18301 caatttacct ttacagctag gtttttctac aggtgttaac ctagttgctg tacctacagg

18361 ttatgttgat acacctaata atacagattt ttccagagtt agtgctaaac caccgcctgg

18421 agatcaattt aaacacctca taccacttat gtacaaagga cttccttgga atgtagtgcg

18481 tataaagatt gtacaaatgt taagtgacac acttaaaaat ctctctgaca gagtcgtatt

18541 tgtcttatgg gcacatggct ttgagttgac atctatgaag tattttgtga aaataggacc

18601 tgagcgcacc tgttgtctat gtgatagacg tgccacatgc ttttccactg cttcagacac

18661 ttatgcctgt tggcatcatt ctattggatt tgattacgtc tataatccgt ttatgattga

18721 tgttcaacaa tggggtttta caggtaacct acaaagcaac catgatctgt attgtcaagt

18781 ccatggtaat gcacatgtag ctagttgtga tgcaatcatg actaggtgtc tagctgtcca

18841 cgagtgcttt gttaagcgtg ttgactggac tattgaatat cctataattg gtgatgaact

18901 gaagattaat gcggcttgta gaaaggttca acacatggtt gttaaagctg cattattagc

18961 agacaaattc ccagttcttc acgacattgg taaccctaaa gctattaagt gtgtacctca

19021 agctgatgta gaatggaagt tctatgatgc acagccttgt agtgacaaag cttataaaat

19081 agaagaatta ttctattctt atgccacaca ttctgacaaa ttcacagatg gtgtatgcct

19141 attttggaat tgcaatgtcg atagatatcc tgctaattcc attgtttgta gatttgacac

19201 tagagtgcta tctaacctta acttgcctgg ttgtgatggt ggcagtttgt atgtaaataa

19261 acatgcattc cacacaccag cttttgataa aagtgctttt gttaatttaa aacaattacc

19321 atttttctat tactctgaca gtccatgtga gtctcatgga aaacaagtag tgtcagatat

19381 agattatgta ccactaaagt ctgctacgtg tataacacgt tgcaatttag gtggtgctgt

19441 ctgtagacat catgctaatg agtacagatt gtatctcgat gcttataaca tgatgatctc

19501 agctggcttt agcttgtggg tttacaaaca atttgatact tataacctct ggaacacttt

19561 tacaagactt cagagtttag aaaatgtggc ttttaatgtt gtaaataagg gacactttga

19621 tggacaacag ggtgaagtac cagtttctat cattaataac actgtttaca caaaagttga

19681 tggtgttgat gtagaattgt ttgaaaataa aacaacatta cctgttaatg tagcatttga

19741 gctttgggct aagcgcaaca ttaaaccagt accagaggtg aaaatactca ataatttggg

19801 tgtggacatt gctgctaata ctgtgatctg ggactacaaa agagatgctc cagcacatat

19861 atctactatt ggtgtttgtt ctatgactga catagccaag aaaccaattg aaacgatttg

19921 tgcaccactc actgtctttt ttgatggtag agttgatggt caagtagact tatttagaaa

19981 tgcccgtaat ggtgttctta ttacagaggg tagtgttaaa ggtttacaac catctgtagg

20041 tcccaaacaa gctagtctta atggagtcac attaattgga gaagccgtaa aaacacagtt

20101 caattattat aagaaagttg atggtgttgt ccaacaatta cctgaaactt actttactca

20161 gagtagaaat ttacaagaat ttaaacccag gagtcaaatg gaaattgatt tcttagaatt

20221 agctatggat gaattcattg aacggtataa attagaaggc tatgccttcg aacatatcgt

20281 ttatggagat tttagtcata gtcagttagg tggtttacat ctactgattg gactagctaa

20341 acgttttaag gaatcacctt ttgaattaga agattttatt cctatggaca gtacagttaa

20401 aaactatttc ataacagatg cgcaaacagg ttcatctaag tgtgtgtgtt ctgttattga

20461 tttattactt gatgattttg ttgaaataat aaaatcccaa gatttatctg tagtttctaa

20521 ggttgtcaaa gtgactattg actatacaga aatttcattt atgctttggt gtaaagatgg

20581 ccatgtagaa acattttacc caaaattaca atctagtcaa gcgtggcaac cgggtgttgc

20641 tatgcctaat ctttacaaaa tgcaaagaat gctattagaa aagtgtgacc ttcaaaatta

20701 tggtgatagt gcaacattac ctaaaggcat aatgatgaat gtcgcaaaat atactcaact

20761 gtgtcaatat ttaaacacat taacattagc tgtaccctat aatatgagag ttatacattt

20821 tggtgctggt tctgataaag gagttgcacc aggtacagct gttttaagac agtggttgcc

20881 tacgggtacg ctgcttgtcg attcagatct taatgacttt gtctctgatg cagattcaac

20941 tttgattggt gattgtgcaa ctgtacatac agctaataaa tgggatctca ttattagtga

21001 tatgtacgac cctaagacta aaaatgttac aaaagaaaat gactctaaag agggtttttt

21061 cacttacatt tgtgggttta tacaacaaaa gctagctctt ggaggttccg tggctataaa

21121 gataacagaa cattcttgga atgctgatct ttataagctc atgggacact tcgcatggtg

21181 gacagccttt gttactaatg tgaatgcgtc atcatctgaa gcatttttaa ttggatgtaa

21241 ttatcttggc aaaccacgcg aacaaataga tggttatgtc atgcatgcaa attacatatt

21301 ttggaggaat acaaatccaa ttcagttgtc ttcctattct ttatttgaca tgagtaaatt

21361 tccccttaaa ttaaggggta ctgctgttat gtctttaaaa gaaggtcaaa tcaatgatat

21421 gattttatct cttcttagta aaggtagact tataattaga gaaaacaaca gagttgttat

21481 ttctagtgat gttcttgtta acaactaaac gaacaatgtt tgtttttctt gttttattgc

21541 cactagtctc tagtcagtgt gttaatctta taaccagaac tcaatcatac actaattctt

21601 tcacacgtgg tgtttattac cctgacaaag ttttcagatc ctcagtttta cattcaactc

21661 aggacttgtt cttacctttc ttttccaatg ttacttggtt ccatgctata catgtctctg

21721 ggaccaatgg tactaagagg tttgataacc ctgtcctacc atttaatgat ggtgtttatt

21781 ttgcttccac tgagaagtct aacataataa gaggctggat ttttggtact actttagatt

21841 cgaagaccca gtccctactt attgttaata acgctactaa tgttgttatt aaagtctgtg

21901 aatttcaatt ttgtaatgat ccatttttgg atgtttatta ccacaaaaac aacaaaagtt

21961 ggatggaaag tgagttcaga gtttattcta gtgcgaataa ttgcactttt gaatatgtct

22021 ctcagccttt tcttatggac cttgaaggaa aacagggtaa tttcaaaaat cttagggaat

22081 ttgtgtttaa gaatattgat ggttatttta aaatatattc taagcacacg cctattaatt

22141 tagggcgtga tctccctcag ggtttttcgg ctttagaacc attggtagat ttgccaatag

22201 gtattaacat cactaggttt caaactttac ttgctttaca tagaagttat ttgactcctg

22261 gtgattcttc ttcaggttgg acagctggtg ctgcagctta ttatgtgggt tatcttcaac

22321 ctaggacttt tctattaaaa tataatgaaa atggaaccat tacagatgct gtagactgtg

22381 cacttgaccc tctctcagaa acaaagtgta cgttgaaatc cttcactgta gaaaaaggaa

22441 tctatcaaac ttctaacttt agagtccaac caacagaatc tattgttaga tttcctaata

22501 ttacaaactt gtgccctttt gatgaagttt ttaacgccac cagatttgca tctgtttatg

22561 cttggaacag gaagagaatc agcaactgtg ttgctgatta ttctgtccta tataatttcg

22621 caccattttt cgcttttaag tgttatggag tgtctcctac taaattaaat gatctctgct

22681 ttactaatgt ctatgcagat tcatttgtaa ttagaggtaa tgaagtcaga caaatcgctc

22741 cagggcaaac tggaaatatt gctgattata attataaatt accagatgat tttacaggct

22801 gcgttatagc ttggaattct aacaagcttg attctaaggt tggtggtaat tataattacc

22861 tgtatagatt gtttaggaag tctaatctca aaccttttga gagagatatt tcaactgaaa

22921 tctatcaggc cggtaacaaa ccttgtaatg gtgttgcagg ttttaattgt tactttcctt

22981 tacgatcata tggtttccga cccacttatg gtgttggtca ccaaccatac agagtagtag

23041 tactttcttt tgaacttcta catgcaccag caactgtttg tggacctaaa aagtctacta

23101 atttggttaa aaacaaatgt gtcaatttca acttcaatgg tttaacaggc acaggtgttc

23161 ttactgagtc taacaaaaag tttctgcctt tccaacaatt tggcagagac attgctgaca

23221 ctactgatgc tgtccgtgat ccacagacac ttgagattct tgacattaca ccatgttctt

23281 ttggtggtgt cagtgttata acaccaggaa caaatacttc taaccaggtt gctgttcttt

23341 atcagggtgt taactgcaca gaagtccctg ttgctattca tgcagatcaa cttactccta

23401 cttggcgtgt ttattctaca ggttctaatg tttttcaaac acgtgcaggc tgtttaatag

23461 gggctgaata tgtcaacaac tcatatgagt gtgacatacc cattggtgca ggtatatgcg

23521 ctagttatca gactcagact aagtctcatc ggcgggcacg tagtgtagct agtcaatcca

23581 tcattgccta cactatgtca cttggtgcag aaaattcagt tgcttactct aataactcta

23641 ttgccatacc cacaaatttt actattagtg ttaccacaga aattctacca gtgtctatga

23701 ccaagacatc agtagattgt acaatgtaca tttgtggtga ttcaactgaa tgcagcaatc

23761 ttttgttgca atatggcagt ttttgtacac aattaaaacg tgctttaact ggaatagctg

23821 ttgaacaaga caaaaacacc caagaagttt ttgcacaagt caaacaaatt tacaaaacac

23881 caccaattaa atattttggt ggttttaatt tttcacaaat attaccagat ccatcaaaac

23941 caagcaagag gtcatttatt gaagatctac ttttcaacaa agtgacactt gcagatgctg

24001 gcttcatcaa acaatatggt gattgccttg gtgatattgc tgctagagac ctcatttgtg

24061 cacaaaagtt taacggcctt actgttttgc cacctttgct cacagatgaa atgattgctc

24121 aatacacttc tgcactgtta gcgggtacaa tcacttctgg ttggaccttt ggtgcaggtg

24181 ctgcattaca aataccattt gctatgcaaa tggcttatag gtttaatggt attggagtta

24241 cacagaatgt tctctatgag aaccaaaaat tgattgccaa ccaatttaat agtgctattg

24301 gcaaaattca agactcactt tcttccacag caagtgcact tggaaaactt caagatgtgg

24361 tcaaccataa tgcacaagct ttaaacacgc ttgttaaaca acttagctcc aaatttggtg

24421 caatttcaag tgttttaaat gatatccttt cacgtcttga caaagttgag gctgaagtgc

24481 aaattgatag gttgatcaca ggcagacttc aaagtttgca gacatatgtg actcaacaat

24541 taattagagc tgcagaaatc agagcttctg ctaatcttgc tgctactaaa atgtcagagt

24601 gtgtacttgg acaatcaaaa agagttgatt tttgtggaaa gggctatcat cttatgtcct

24661 tccctcagtc agcacctcat ggtgtagtct tcttgcatgt gacttatgtc cctgcacaag

24721 aaaagaactt cacaactgct cctgccattt gtcatgatgg aaaagcacac tttcctcgtg

24781 aaggtgtctt tgtttcaaat ggcacacact ggtttgtaac acaaaggaat ttttatgaac

24841 cacaaatcat tactacagac aacacatttg tgtctggtaa ctgtgatgtt gtaataggaa

24901 ttgtcaacaa cacagtttat gatcctttgc aacctgaatt agattcattc aaggaggagt

24961 tagataaata ttttaagaat catacatcac cagatgttga tttaggtgac atctctggca

25021 ttaatgcttc agttgtaaac attcaaaaag aaattgaccg cctcaatgag gttgccaaga

25081 atttaaatga atctctcatc gatctccaag aacttggaaa gtatgagcag tatataaaat

25141 ggccatggta catttggcta ggttttatag ctggcttgat tgccatagta atggtgacaa

25201 ttatgctttg ctgtatgacc agttgctgta gttgtctcaa gggctgttgt tcttgtggat

25261 cctgctgcaa atttgatgaa gacgactctg agccagtgct caaaggagtc aaattacatt

25321 acacataaac gaacttatgg atttgtttat gagaatcttc acaattggaa ctgtaacttt

25381 gaagcaaggt gaaatcaagg atgctactcc ttcagatttt gttcgcgcta ctgcaacgat

25441 accgatacaa gcctcactcc ctttcggatg gcttattgtt ggcgttgcac ttcttgctgt

25501 ttttcagagc gcttccaaaa tcataactct caaaaagaga tggcaactag cactctccaa

25561 gggtgttcac tttgtttgca acttgctgtt gttgtttgta acagtttact cacacctttt

25621 gctcgttgct gctggccttg aagccccttt tctctatctt tatgctttag tctacttctt

25681 gcagagtata aactttgtaa gaataataat gaggctttgg ctttgctgga aatgccgttc

25741 caaaaaccca ttactttatg atgccaacta ttttctttgc tggcatacta attgttacga

25801 ctattgtata ccttacaata gtgtaacttc ttcaattgtc attacttcag gtgatggcac

25861 aacaagtcct atttctgaac atgactacca gattggtggt tatactgaaa aatgggaatc

25921 tggagtaaaa gactgtgttg tattacacag ttacttcact tcagactatt accagctgta

25981 ctcaactcaa ttgagtacag acattggtgt tgaacatgtt accttcttca tctacaataa

26041 aattgttgat gagcctgaag aacatgtcca aattcacaca atcgacggtt catccggagt

26101 tgttaatcca gtaatggaac caatttatga tgaaccgacg acgactacta gcgtgccttt

26161 gtaagcacaa gctgatgagt acgaacttat gtactcattc gtttcggaag agataggtac

26221 gttaatagtt aatagcgtac ttctttttct tgctttcgtg gtattcttgc tagttacact

26281 agccatcctt actgcgcttc gattgtgtgc gtactgctgc aatattgtta acgtgagtct

26341 tgtaaaacct tctttttacg tttactctcg tgttaaaaat ctgaattctt ctagagttcc

26401 tgatcttctg gtctaaacga actaaatatt atattagttt ttctgtttgg aactttaatt

26461 ttagccatgg cagattccaa cggtactatt accgttgaag agcttaaaaa gctccttgaa

26521 gaatggaacc tagtaatagg tttcctattc cttacatgga tttgtcttct acaatttgcc

26581 tatgccaaca ggaataggtt tttgtatata attaagttaa ttttcctctg gctgttatgg

26641 ccagtaactt taacttgttt tgtgcttgct gctgtttaca gaataaattg gatcaccggt

26701 ggaattgcta tcgcaatggc ttgtcttgta ggcttgatgt ggctcagcta cttcattgct

26761 tctttcagac tgtttgcgcg tacgcgttcc atgtggtcat ttaatccaga aactaacatt

26821 cttctcaacg tgccactcca tggcactatt ctgaccagac cgcttctaga aagtgaactc

26881 gtaatcggag ctgtgatcct tcgtggacat c

[gap 192 bp] [Expand Ns](https://www.ncbi.nlm.nih.gov/nuccore/OM781641.1?expand-gaps=on)

27104 gcagtga caatattgct

27121 ttgcttgtac agtaagtgac aacagatgtt tcatctcgtt gactttcagg ttactatagc

27181 agagatatta ctaattatta tgcggacttt taaagtttcc atttggaatc ttgattacat

27241 cataaacctc ataattaaaa atttatctaa gtcactaact gagaataaat attctcaatt

27301 agatgaagag caaccaatgg agattctcta aacgaacatg aaaattattc ttttcttggc

27361 actgataaca ctcgctactt gtgagcttta tcactaccaa gagtgtgtta gaggtacaac

27421 agtactttta aaagaacctt gctcttctgg aacatacgag ggcaattcac catttcatcc

27481 tctagctgat aacaaatttg cactgacttg ctttagcact caatttgctt ttgcttgtcc

27541 tgacggcgta aaacacgtct atcagttacg tgccagatca gtttcaccta aactgttcat

27601 cagacaagag gaagttcaag aactttactc tccaattttt cttattgttg cggcaatagt

27661 gtttataaca ctttgcttca cactcaaaag aaagacagaa tgattgaact ttcattaatt

27721 gacttctatt tgtgcttttt agcctttctg ttattccttg ttttaattat gcttattatc

27781 ttttggttct cacttgaact gcaagatcat aatgaaactt gtcacgccta aacgaacatg

27841 aaatttcttg ttttcttagg aatcatcaca actgtagctg catttcacca agaatgtagt

27901 ttacagtcat gtactcaaca tcaaccatat gtagttgatg acccgtgtcc tattcacttc

27961 tattctaaat ggtatattag agtaggagct agaaaatcag cacctttaat tgaattgtgc

28021 gtggatgagg ctggttctaa atcacccatt cagtacatcg atatcggtaa ttatacagtt

28081 tcctgtttac cttttacaat taattgccag gaacctaaat tgggtagtct tgtagtgcgt

28141 tgttcgttct atgaagactt tttagagtat catgacgttc gtgttgtttt agatttcatc

28201 taaacgaaca aacttaaatg tctgataatg gaccccaaaa tcagcgaaat gcactccgca

28261 ttacgtttgg tggaccctca gattcaactg gcagtaacca gaatggtggg gcgcgatcaa

28321 aacaacgtcg gccccaaggt ttacccaata atactgcgtc ttggttcacc gctctcactc

28381 aacatggcaa ggaagacctt aaattccctc gaggacaagg cgttccaatt aacaccaata

28441 gcagtccaga tgaccaaatt ggctactacc gaagagctac cagacgaatt cgtggtggtg

28501 acggtaaaat gaaagatctc agtccaagat ggtatttcta ctacctagga actgggccag

28561 aagctggact tccctatggt gctaacaaag acggcatcat atgggttgca actgagggag

28621 ccttgaatac accaaaagat cacattggca cccgcaatcc tgctaacaat gctgcaatcg

28681 tgctacaact tcctcaagga acaacattgc caaaaggctt ctacgcagaa gggagcagag

28741 gcggcagtca agcctcttct cgttcctcat cacgtagtcg caacagttca agaaattcaa

28801 ctccaggcag cagtaaacga acttctcctg ctagaatggc tggcaatggc ggtgatgctg

28861 ctcttgcttt gctgctgctt gacagattga accagcttga gagcaaaatg tctggtaaag

28921 gccaacaaca acaaggccaa actgtcacta agaaatctgc tgctgaggct tctaagaagc

28981 ctcggcaaaa acgtactgcc actaaagcat acaatgtaac acaagctttc ggcagacgtg

29041 gtccagaaca aacccaagga aattttgggg accaggaact aatcagacaa ggaactgatt

29101 acaaacattg gccgcaaatt gcacaatttg cccccagcgc ttcagcgttc ttcggaatgt

29161 cgcgcattgg catggaagtc acaccttcgg gaacgtggtt gacctacaca ggtgccatca

29221 aattggatga caaagatcca aatttcaaag atcaagtcat tttgctgaat aagcatattg

29281 acgcatacaa aacattccca ccaacagagc ctaaaaagga caaaaagaag aaggctgatg

29341 aaactcaagc cttaccgcag agacagaaga aacagcaaac tgtgactctt cttcctgctg

29401 cagatttgga tgatttctcc aaacaattgc aacaatccat gagccgtgct gactcaactc

29461 aggcctaaac tcatgcagac cacacaaggc agatgggcta tataaacgtt ttcgcttttc

29521 cgtttacgat atatagtcta ctcttgtgca gaatgaattc tcgtaactac atagcacaag

29581 tagatgtagt taactttaat ctcacatagc aatctttaat cagtgtgtaa cattagggag

29641 gacttgaaag agccaccaca ttttcaccta cagtgaacaa tgctagggag agctgcctat

29701 atggaagagc cctaatgtgt aaaattaatt ttagtagtgc tatccccatg

//