**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/MD-CDC-LC0548614/2022 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein (M), ORF6 p...**

GenBank: OM942313.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?expand-gaps=on" \l "goto2205583214_0)

LOCUS OM942313 29592 bp RNA linear VRL 08-MAR-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/MD-CDC-LC0548614/2022 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 OM942313

VERSION OM942313.1

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

BioSample: [SAMN26519539](https://www.ncbi.nlm.nih.gov/biosample/SAMN26519539)

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 29592)

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

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

Caban Figueroa,V., Morrison,S., Gulvick,C., Agarwal,M., Almasri,E.,

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

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

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

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

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

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

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

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

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

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

MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29592)

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

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

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

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

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

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

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

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

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

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

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

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

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

MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (08-MAR-2022) Respiratory Viruses Branch, Division of

Viral Diseases, Centers for Disease Control and Prevention, 1600

Clifton Rd, Atlanta, GA 30329, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: CLC Genomics

Sequencing Technology :: PacBio Sequel II

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29592

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/MD-CDC-LC0548614/2022"

/isolation\_source="Nasal Swabs"

/host="Homo sapiens"

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

/country="USA: Maryland"

/collection\_date="2022-02-23"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=131&to=21408) 131..21408

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?location=131:13321,13321:21408) join(131..13321,13321..21408)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UMX29524.1](https://www.ncbi.nlm.nih.gov/protein/2205583215)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDN

LIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKY

TMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGE

RVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYY

SLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

NCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVV

HNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKP

GNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLL

FVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALF

AYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGAT

VVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTT

CCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTA

NVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSD

DAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTM

LVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQE

YADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAV

GACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDV

TQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAG

DYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPL

NRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMP

LSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFA

IGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS

TLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLRAKHYVYIGDPAQLPAP

RTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKD

KSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASK

ILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLY

DKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLC

VDVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHAT

REAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYK

GLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDRR

ATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVAS

CDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPVL

HDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNC

NVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPFF

YYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMIS

AGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTK

VDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDA

PAHISTIGVCSMTDIAKKPTETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKG

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=1&to=180) 131..670

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=181&to=818) 671..2584

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=819&to=2762) 2585..8416

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=2763&to=3262) 8417..9916

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=3263&to=3568) 9917..10834

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=3569&to=3855) 10835..11695

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=3856&to=3938) 11696..11944

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=3939&to=4136) 11945..12538

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=4137&to=4249) 12539..12877

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=4250&to=4388) 12878..13294

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=4389&to=5320) join(13295..13321,13321..16089)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=5321&to=5921) 16090..17892

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=5922&to=6448) 17893..19473

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=6449&to=6794) 19474..20511

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29524.1?from=6795&to=7092) 20512..21405

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=131&to=13336) 131..13336

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UMX29525.1](https://www.ncbi.nlm.nih.gov/protein/2205583216)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=1&to=180) 131..670

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=181&to=818) 671..2584

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=819&to=2762) 2585..8416

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=2763&to=3262) 8417..9916

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=3263&to=3568) 9917..10834

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=3569&to=3855) 10835..11695

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=3856&to=3938) 11696..11944

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=3939&to=4136) 11945..12538

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=4137&to=4249) 12539..12877

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=4250&to=4388) 12878..13294

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMX29525.1?from=4389&to=4401) 13295..13333

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=13329&to=13356) 13329..13356

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=13341&to=13395) 13341..13395

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=21416&to=25225) 21416..25225

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=21416&to=25225) 21416..25225

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UMX29526.1](https://www.ncbi.nlm.nih.gov/protein/2205583217)"

/translation="MFVFLVLLPLVSSQCVNLITRTQSYTNSFTRGVYYPDKVFRSSV

LHSTQDLFLPFFSNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWI

FGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANNC

TFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFSA

LEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYN

ENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCPF

DEVFNATRFASVYAWNRKRISNCVADYSVLYNFAPFFAFKCYGVSPTKLNDLCFTNVY

ADSFVIRGNEVSQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVGGNYNYLYR

LFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYGFRPTYGVGHQPYRVVV

LSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDIA

DTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHADQ

LTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRARS

VASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICG

DSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFNF

SQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTV

LPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYE

NQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISSV

LNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVL

GQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPRE

GVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFKE

ELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQ

YIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVLK

GVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=25234&to=26061) 25234..26061

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=25234&to=26061) 25234..26061

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UMX29527.1](https://www.ncbi.nlm.nih.gov/protein/2205583218)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDIGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=26086&to=26313) 26086..26313

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=26086&to=26313) 26086..26313

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UMX29528.1](https://www.ncbi.nlm.nih.gov/protein/2205583219)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=26364&to=27032) 26364..27032

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=26364&to=27032) 26364..27032

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UMX29529.1](https://www.ncbi.nlm.nih.gov/protein/2205583220)"

/translation="MADSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27043&to=27228) 27043..27228

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27043&to=27228) 27043..27228

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UMX29530.1](https://www.ncbi.nlm.nih.gov/protein/2205583221)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27235&to=27600) 27235..27600

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27235&to=27600) 27235..27600

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UMX29531.1](https://www.ncbi.nlm.nih.gov/protein/2205583222)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27597&to=27728) 27597..27728

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27597&to=27728) 27597..27728

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UMX29532.1](https://www.ncbi.nlm.nih.gov/protein/2205583223)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27735&to=28100) 27735..28100

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=27735&to=28100) 27735..28100

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UMX29533.1](https://www.ncbi.nlm.nih.gov/protein/2205583224)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=28115&to=29365) 28115..29365

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=28115&to=29365) 28115..29365

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UMX29534.1](https://www.ncbi.nlm.nih.gov/protein/2205583225)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

gap 28388..28493

/estimated\_length=106

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=29390&to=29506) 29390..29506

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=29390&to=29506) 29390..29506

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UMX29535.1](https://www.ncbi.nlm.nih.gov/protein/2205583226)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=29441&to=29476) 29441..29476

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=29461&to=29489) 29461..29489

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM942313.1?from=29560&to=29574) 29560..29574

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

ORIGIN

1 ataactaatt actgtcgttg acaggacacg agtaactcgt ctatcttctg caggctgctt

61 acggtttcgt ccgtgttgca gccgatcatc agcacatcta ggttttgtcc gggtgtgacc

121 gaaaggtaag atggagagcc ttgtccctgg tttcaacgag aaaacacacg tccaactcag

181 tttgcctgtt ttacaggttc gcgacgtgct cgtacgtggc tttggagact ccgtggagga

241 ggtcttatca gaggcacgtc aacatcttaa agatggcact tgtggcttag tagaagttga

301 aaaaggcgtt ttgcctcaac ttgaacagcc ctatgtgttc atcaaacgtt cggatgctcg

361 aactgcacct catggtcatg ttatggttga gctggtagca gaactcgaag gcattcagta

421 cggtcgtagt ggtgagacac ttggtgtcct tgtccctcat gtgggcgaaa taccagtggc

481 ttaccgcaag gttcttcttc gtaagaacgg taataaagga gctggtggcc atagttacgg

541 cgccgatcta aagtcatttg acttaggcga cgagcttggc actgatcctt atgaagattt

601 tcaagaaaac tggaacacta aacatagcag tggtgttacc cgtgaactca tgcgtgagct

661 taacggaggg gcatacactc gctatgtcga taacaacttc tgtggccctg atggctaccc

721 tcttgagtgc attaaagacc ttctagcacg tgctggtaaa gcttcatgca ctttgtccga

781 acaactggac tttattgaca ctaagagggg tgtatactgc tgccgtgaac atgagcatga

841 aattgcttgg tacacggaac gttctgaaaa gagctatgaa ttgcagacac cttttgaaat

901 taaattggca aagaaatttg acaccttcaa tggggaatgt ccaaattttg tatttccctt

961 aaattccata atcaagacta ttcaaccaag ggttgaaaag aaaaagcttg atggctttat

1021 gggtagaatt cgatctgtct atccagttgc gtcaccaaat gaatgcaacc aaatgtgcct

1081 ttcaactctc atgaagtgtg atcattgtgg tgaaacttca tggcagacgg gcgattttgt

1141 taaagccact tgcgaatttt gtggcactga gaatttgact aaagaaggtg ccactacttg

1201 tggttactta ccccaaaatg ctgttgttaa aatttattgt ccagcatgtc acaattcaga

1261 agtaggacct gagcatagtc ttgccgaata ccataatgaa tctggcttga aaaccattct

1321 tcgtaagggt ggtcgcacta ttgcctttgg aggctgtgtg ttctcttatg ttggttgcca

1381 taacaagtgt gcctattggg ttccacgtgc tagcgctaac ataggttgta accatacagg

1441 tgttgttgga gaaggttccg aaggtcttaa tgacaacctt cttgaaatac tccaaaaaga

1501 gaaagtcaac atcaatattg ttggtgactt taaacttaat gaagagatcg ccattatttt

1561 ggcatctttt tctgcttcca caagtgcttt tgtggaaact gtgaaaggtt tggattataa

1621 agcattcaaa caaattgttg aatcctgtgg taattttaaa gttacaaaag gaaaagctaa

1681 aaaaggtgcc tggaatattg gtgaacagaa atcaatactg agtcctcttt atgcatttgc

1741 atcagaggct gctcgtgttg tacgatcaat tttctcccgc actcttgaaa ctgctcaaaa

1801 ttctgtgcgt gttttacaga aggccgctat aacaatacta gatggaattt cacagtattc

1861 actgagactc attgatgcta tgatgttcac atctgatttg gctactaaca atctagttgt

1921 aatggcctac attacaggtg gtgttgttca gttgacttcg cagtggctaa ctaacatctt

1981 tggcactgtt tatgaaaaac tcaaacccgt ccttgattgg cttgaagaga agtttaagga

2041 aggtgtagag tttcttagag acggttggga aattgttaaa tttatctcaa cctgtgcttg

2101 tgaaattgtc ggtggacaaa ttgtcacctg tgcaaaggaa attaaggaga gtgttcagac

2161 attctttaag cttgtaaata aatttttggc tttgtgtgct gactctatca ttattggtgg

2221 agctaaactt aaagccttga atttaggtga aacatttgtc acgcactcaa agggattgta

2281 cagaaagtgt gttaaatcca gagaagaaac tggcctactc atgcctctaa aagccccaaa

2341 agaaattatc ttcttagagg gagaaacact tcccacagaa gtgttaacag aggaagttgt

2401 cttgaaaact ggtgatttac aaccattaga acaacctact agtgaagctg ttgaagctcc

2461 attggttggt acaccagttt gtattaacgg gcttatgttg ctcgaaatca aagacacaga

2521 aaagtactgt gcccttgcac ctaatatgat ggtaacaaac aataccttca cactcaaagg

2581 cggtgcacca acaaaggtta cttttggtga tgacactgtg atagaagtgc aaggttacaa

2641 gagtgtgaat atcatttttg aacttgatga aaggattgat aaagtactta atgagaggtg

2701 ctctgcctat acagttgaac tcggtacaga agtaaatgag ttcgcctgtg ttgtggcaga

2761 tgctgtcata aaaactttgc aaccagtatc tgaattactt acaccactgg gcattgattt

2821 agatgagtgg agtatggcta catactactt atttgatgag tctggtgagt ttaaattggc

2881 ttcacatatg tattgttctt tttaccctcc agatgaggat gaagaagaag gtgattgtga

2941 agaagaagag tttgagccat caactcaata tgagtatggt actgaagatg attaccaagg

3001 taaacctttg gaatttggtg ccacttctgc tgctcttcaa cctgaagaag agcaagaaga

3061 agattggtta gatgatgata gtcaacaaac tgttggtcaa caagacggca gtgaggacaa

3121 tcagacaact actattcaaa caattgttga ggttcaacct caattagaga tggaacttac

3181 accagttgtt cagactattg aagtgaatag ttttagtggt tatttaaaac ttactgacaa

3241 tgtatacatt aaaaatgcag acattgtgga agaagctaaa aaggtaaaac caacagtggt

3301 tgttaatgca gccaatgttt accttaaaca tggaggaggt gttgcaggag ccttaaataa

3361 ggctactaac aatgccatgc aagttgaatc tgatgattac atagctacta atggaccact

3421 taaagtgggt ggtagttgtg ttttaagcgg acacaatctt gctaaacact gtcttcatgt

3481 tgtcggccca aatgttaaca aaggtgaaga cattcaactt cttaagagtg cttatgaaaa

3541 ttttaatcag cacgaagttc tacttgcacc attattatca gctggtattt ttggtgctga

3601 ccctatacat tctttaagag tttgtgtaga tactgttcgc acaaatgtct acttagctgt

3661 ctttgataaa aatctctatg acaaacttgt ttcaagcttt ttggaaatga agagtgaaaa

3721 gcaagttgaa caaaagatcg ctgagattcc taaagaggaa gttaagccat ttataactga

3781 aagtaaacct tcagttgaac agagaaaaca agatgataag aaaatcaaag cttgtgttga

3841 agaagttaca acaactctgg aagaaactaa gttcctcaca gaaaacttgt tactttatat

3901 tgacattaat ggcaatcttc atccagattc tgccactctt gttagtgaca ttgacatcac

3961 tttcttaaag aaagatgctc catatatagt gggtgatgtt gttcaagagg gtgttttaac

4021 tgctgtggtt atacctacta aaaaggctgg tggcactact gaaatgctag cgaaagcttt

4081 gagaaaagtg ccaacagaca attatataac cacttacccg ggtcagggtt taaatggtta

4141 cactgtagag gaggcaaaga cagtgcttaa aaagtgtaaa agtgcttttt acattctacc

4201 atctattatc tctaatgaga agcaagaaat tcttggaact gtttcttgga atttgcgaga

4261 aatgcttgca catgcagaag aaacacgcaa attaatgcct gtctgtgtgg aaactaaagc

4321 catagtttca actatacagc gtaaatataa gggtattaaa atacaagagg gtgtggttga

4381 ttatggtgct agattttact tttacaccag taaaacaact gtagcgtcac ttatcaacac

4441 acttaacgat ctaaatgaaa ctcttgttac aatgccactt ggctatgtaa cacatggctt

4501 aaatttggaa gaagctgctc ggtatatgag atctctcaaa gtgccagcta cagtttctgt

4561 ttcttcacct gatgctgtta cagcgtataa tggttatctt acttcttctt ctaaaacacc

4621 tgaagaacat tttattgaaa ccatctcact tgctggttcc tataaagatt ggtcctattc

4681 tggacaatct acacaactag gtatagaatt tcttaagaga ggtgataaaa gtgtatatta

4741 cactagtaat cctaccacat tccacctaga tggtgaagtt atcacctttg acaatcttaa

4801 gacacttctt tctttgagag aagtgaggac tattaaggtg tttacaacag tagacaacat

4861 taacctccac acgcaagttg tggacatgtc aatgacatat ggacaacagt ttggtccaac

4921 ttatttggat ggagctgatg ttactaaaat aaaacctcat aattcacatg aaggtaaaac

4981 attttatgtt ttacctaatg atgacactct acgtgttgag gcttttgagt actaccacac

5041 aactgatcct agttttctgg gtaggtacat gtcagcatta aatcacacta aaaagtggaa

5101 atacccacaa gttaatggtt taacttctat taaatgggca gataacaact gttatcttgc

5161 cactgcattg ttaacactcc aacaaataga gttgaagttt aatccacctg ctctacaaga

5221 tgcttattac agagcaaggg ctggtgaagc ggctaacttt tgtgcactta tcttagccta

5281 ctgtaataag acagtaggtg agttaggtga tgttagagaa acaatgagtt acttgtttca

5341 acatgccaat ttagattctt gcaaaagagt cttgaacgtg gtgtgtaaaa cttgtggaca

5401 acagcagaca acccttaagg gtgtagaagc tgttatgtac atgggcacac tttcttatga

5461 acaatttaag aaaggtgttc agataccttg tacgtgtggt aaacaagcta caaaatatct

5521 agtacaacag gagtcacctt ttgttatgat gtcagcacca cctgctcagt atgaacttaa

5581 gcatggtaca tttacttgtg ctagtgagta cactggtaat taccagtgtg gtcactataa

5641 acatataact tctaaagaaa ctttgtattg catagacggt gctttactta caaagtcctc

5701 agaatacaaa ggtcctatta cggatgtttt ctacaaagaa aacagttaca caacaaccat

5761 aaaaccagtt acttataaat tggatggtgt tgtttgtaca gaaattgacc ctaagttgga

5821 caattattat aagaaagaca attcttattt cacagagcaa ccaattgatc ttgtaccaaa

5881 ccaaccatat ccaaacgcaa gcttcgataa ttttaagttt gtatgtgata atatcaaatt

5941 tgctgatgat ttaaaccagt taactggtta taagaaacct gcttcaagag agcttaaagt

6001 tacatttttc cctgacttaa atggtgatgt ggtggctatt gattataaac actacacacc

6061 ctcttttaag aaaggagcta aattgttaca taaacctatt gtttggcatg ttaacaatgc

6121 aactaataaa gccacgtata aaccaaatac ctggtgtata cgttgtcttt ggagcacaaa

6181 accagttgaa acatcaaatt cgtttgatgt actgaagtca gaggacgcgc agggaatgga

6241 taatcttgcc tgcgaagatc taaaaccagt ctctgaagaa gtagtggaaa atcctaccat

6301 acagaaagac gttcttgagt gtaatgtgaa aactaccgaa gttgtaggag acattatact

6361 taaaccagca aataatataa aaattacaga agaggttggc cacacagatc taatggctgc

6421 ttatgtagac aattctagtc ttactattaa gaaacctaat gaattatcta gagtattagg

6481 tttgaaaacc cttgctactc atggtttagc tgctgttaat agtgtccctt gggatactat

6541 agctaattat gctaagcctt ttcttaacaa agttgttagt acaactacta acatagttac

6601 acggtgttta aaccgtgttt gtactaatta tatgccttat ttctttactt tattgctaca

6661 attgtgtact tttactagaa gtacaaattc tagaattaaa gcatctatgc cgactactat

6721 agcaaagaat actgttaaga gtgtcggtaa attttgtcta gaggcttcat ttaattattt

6781 gaagtcacct aatttttcta aactgataaa tattataatt tggtttttac tattaagtgt

6841 ttgcctaggt tctttaatct actcaaccgc tgctttaggt gttttaatgt ctaatttagg

6901 catgccttct tactgtactg gttacagaga aggctatttg aactctacta atgtcactat

6961 tgcaacctac tgtactggtt ctataccttg tagtgtttgt cttagtggtt tagattcttt

7021 agacacctat ccttctttag aaactataca aattaccatt tcatctttta aatgggattt

7081 aactgctttt ggcttagttg cagagtggtt tttggcatat attcttttca ctaggttttt

7141 ctatgtactt ggattggctg caatcatgca attgtttttc agctattttg cagtacattt

7201 tattagtaat tcttggctta tgtggttaat aattaatctt gtacaaatgg ccccgatttc

7261 agctatggtt agaatgtaca tcttctttgc atcattttat tatgtatgga aaagttatgt

7321 gcatgttgta gacggttgta attcatcaac ttgtatgatg tgttacaaac gtaatagagc

7381 aacaagagtc gaatgtacaa ctattgttaa tggtgttaga aggtcctttt atgtctatgc

7441 taatggaggt aaaggctttt gcaaactaca caattggaat tgtgttaatt gtgatacatt

7501 ctgtgctggt agtacattta ttagtgatga agttgcgaga gacttgtcac tacagtttaa

7561 aagaccaata aatcctactg accagtcttc ttacatcgtt gatagtgtta cagtgaagaa

7621 tggttccatc catctttact ttgataaagc tggtcaaaag acttatgaaa gacattctct

7681 ctctcatttt gttaacttag acaacctgag agctaataac actaaaggtt cattgcctat

7741 taatgttata gtttttgatg gtaaatcaaa atgtgaagaa tcatctgcaa aatcagcgtc

7801 tgtttactac agtcagctta tgtgtcaacc tatactgtta ctagatcagg cattagtgtc

7861 tgatgttggt gatagtgcgg aagttgcagt taaaatgttt gatgcttacg ttaatacgtt

7921 ttcatcaact tttaacgtac caatggaaaa actcaaaaca ctagttgcaa ctgcagaagc

7981 tgaacttgca aagaatgtgt ccttagacaa tgtcttatct acttttattt cagcagctcg

8041 gcaagggttt gttgattcag atgtagaaac taaagatgtt gttgaatgtc ttaaattgtc

8101 acatcaatct gacatagaag ttactggcga tagttgtaat aactatatgc tcacctataa

8161 caaagttgaa aacatgacac cccgtgacct tggtgcttgt attgactgta gtgcgcgtca

8221 tattaatgcg caggtagcaa aaagtcacaa cattactttg atatggaacg ttaaagattt

8281 catgtcattg tctgaacaac tacgaaaaca aatacgtagt gctgctaaaa agaataactt

8341 accttttaag ttgacatgtg caactactag acaagttgtt aatgttgtaa caacaaagat

8401 agcacttaag ggtggtaaaa ttgttaataa ttggttgaag cagttaatta aagttacact

8461 tgtgttcctt tttgttgctg ctattttcta tttaataaca cctgttcatg tcatgtctaa

8521 acatactgac ttttcaagtg aaatcatagg atacaaggct attgatggtg gtgtcactcg

8581 tgacatagca tctacagata cttgttttgc taacaaacat gctgattttg acacatggtt

8641 tagccagcgt ggtggtagtt atactaatga caaagcttgc ccattgattg ctgcagtcat

8701 aacaagagaa gtgggttttg tcgtgcctgg tttgcctggc acgatattac gcacaactaa

8761 tggtgacttt ttgcatttct tacctagagt ttttagtgca gttggtaaca tctgttacac

8821 accatcaaaa cttatagagt acactgactt tgcaacatca gcttgtgttt tggctgctga

8881 atgtacaatt tttaaagatg cttctggtaa gccagtacca tattgttatg ataccaatgt

8941 actagaaggt tctgttgctt atgaaagttt acgccctgac acacgttatg tgctcatgga

9001 tggctctatt attcaatttc ctaacaccta ccttgaaggt tctgttagag tggtaacaac

9061 ttttgattct gagtactgta ggcacggcac ttgtgaaaga tcagaagctg gtgtttgtgt

9121 atctactagt ggtagatggg tacttaacaa tgattattac agatctttac caggagtttt

9181 ctgtggtgta gatgctgtaa atttacttac taatatgttt acaccactaa ttcaacctat

9241 tggtgctttg gacatatcag catctatagt agctggtggt attgtggcta tcgtagtaac

9301 atgccttgcc tactatttta tgaggtttag aagagctttt ggtgaataca gtcatgtagt

9361 tgcctttaat actttactat tccttatgtc attcactgta ctctgtttaa caccagttta

9421 ctcattctta cctggtgttt attctgttat ttacttgtac ttgacatttt atcttactaa

9481 tgatgtttct tttttagcac atattcagtg gatggttatg ttcacacctt tagtaccttt

9541 ctggataaca attgcttata tcatttgtat ttccacaaag catttctatt ggttctttag

9601 taattaccta aagagacgtg tagtctttaa tggtgtttcc tttagtactt ttgaagaagc

9661 tgcgctgtgc acctttttgt taaataaaga aatgtatcta aagttgcgta gtgatgtgct

9721 attacctctt acgcaatata atagatactt agctctttat aataagtaca agtattttag

9781 tggagcaatg gatacaacta gctacagaga agctgcttgt tgtcatctcg caaaggctct

9841 caatgacttc agtaactcag gttctgatgt tctttaccaa ccaccacaaa tctctatcac

9901 ctcagctgtt ttgcagagtg gttttagaaa aatggcattc ccatctggta aagttgaggg

9961 ttgtatggta caagtaactt gtggtacaac tacacttaac ggtctttggc ttgatgacgt

10021 agtttactgt ccaagacatg tgatctgcac ctctgaagac atgcttaacc ctaattatga

10081 agatttactc attcgtaagt ctaatcataa tttcttggta caggctggta atgttcaact

10141 cagggttatt ggacattcta tgcaaaattg tgtacttaag cttaaggttg atacagccaa

10201 tcctaagaca cctaagtata agtttgttcg cattcaacca ggacagactt tttcagtgtt

10261 agcttgttac aatggttcac catctggtgt ttaccaatgt gctatgaggc acaatttcac

10321 tattaagggt tcattcctta atggttcatg tggtagtgtt ggttttaaca tagattatga

10381 ctgtgtctct ttttgttaca tgcaccatat ggaattacca actggagttc atgctggcac

10441 agacttagaa ggtaactttt atggaccttt tgttgacagg caaacagcac aagcagctgg

10501 tacggacaca actattacag ttaatgtttt agcttggttg tacgctgctg ttataaatgg

10561 agacaggtgg tttctcaatc gatttaccac aactcttaat gactttaacc ttgtggctat

10621 gaagtacaat tatgaacctc taacacaaga ccatgttgac atactaggac ctctttctgc

10681 tcaaactgga attgccgttt tagatatgtg tgcttcatta aaagaattac tgcaaaatgg

10741 tatgaatgga cgtaccatat tgggtagtgc tttattagaa gatgaattta caccttttga

10801 tgttgttaga caatgctcag gtgttacttt ccaaagtgca gtgaaaagaa caatcaaggg

10861 tacacaccac tggttgttac tcacaatttt gacttcactt ttagttttag tccagagtac

10921 tcaatggtct ttgttctttt ttttgtatga aaatgccttt ttaccttttg ctatgggtat

10981 tattgctatg tctgcttttg caatgatgtt tgtcaaacat aagcatgcat ttctctgttt

11041 gtttttgtta ccttctcttg ccactgtagc ttattttaat atggtctata tgcctgctag

11101 ttgggtgatg cgtattatga catggttgga tatggttgat actagtttga agctaaaaga

11161 ctgtgttatg tatgcatcag ctgtagtgtt actaatcctt atgacagcaa gaactgtgta

11221 tgatgatggt gctaggagag tgtggacact tatgaatgtc ttgacactcg tttataaagt

11281 ttattatggt aatgctttag atcaagccat ttccatgtgg gctcttataa tctctgttac

11341 ttctaactac tcaggtgtag ttacaactgt catgtttttg gccagaggtg ttgtttttat

11401 gtgtgttgag tattgcccta ttttcttcat aactggtaat acacttcagt gtataatgct

11461 agtttattgt ttcttaggct atttttgtac ttgttacttt ggcctctttt gtttactcaa

11521 ccgctacttt agactgactc ttggtgttta tgattactta gtttctacac aggagtttag

11581 atatatgaat tcacagggac tactcccacc caagaatagc atagatgcct tcaaactcaa

11641 cattaaattg ttgggtgttg gtggcaaacc ttgtatcaaa gtagccactg tacagtctaa

11701 aatgtcagat gtaaagtgca catcagtagt cttactctca gttttgcaac aactcagagt

11761 agaatcatca tctaaattgt gggctcaatg tgtccagtta cacaatgaca ttctcttagc

11821 taaagatact actgaagcct ttgaaaaaat ggtttcacta ctttctgttt tgctttccat

11881 gcagggtgct gtagacataa acaagctttg tgaagaaatg ctggacaaca gggcaacctt

11941 acaagctata gcctcagagt ttagttccct tccatcatat gcagcttttg ctactgctca

12001 agaagcttat gagcaggctg ttgctaatgg tgattctgaa gttgttctta aaaagttgaa

12061 gaagtctttg aatgtggcta aatctgaatt tgaccgtgat gcagccatgc aacgtaagtt

12121 ggaaaagatg gctgatcaag ctatgaccca aatgtataaa caggctagat ctgaggacaa

12181 gagggcaaaa gttactagtg ctatgcagac aatgcttttc actatgctta gaaagttgga

12241 taatgatgca ctcaacaaca ttatcaacaa tgcaagagat ggttgtgttc ccttgaacat

12301 aatacctctt acaacagcag ccaaactaat ggttgtcata ccagactata acacatataa

12361 aaatacgtgt gatggtacaa catttactta tgcatcagca ttgtgggaaa tccaacaggt

12421 tgtagatgca gatagtaaaa ttgttcaact tagtgaaatt agtatggaca attcacctaa

12481 tttagcatgg cctcttattg taacagcttt aagggccaat tctgctgtca aattacagaa

12541 taatgagctt agtcctgttg cactacgaca gatgtcttgt gctgccggta ctacacaaac

12601 tgcttgcact gatgacaatg cgttagctta ctacaacaca acaaagggag gtaggtttgt

12661 acttgcactg ttatccgatt tacaggattt gaaatgggct agattcccta agagtgatgg

12721 aactggtact atctatacag aactggaacc accttgtagg tttgttacag acacacctaa

12781 aggtcctaaa gtgaagtatt tatactttat taaaggatta aacaacctaa atagaggtat

12841 ggtacttggt agtttagctg ccacagtacg tctacaagct ggtaatgcaa cagaagtgcc

12901 tgccaattca actgtattat ctttctgtgc ttttgctgta gatgctgcta aagcttacaa

12961 agattatcta gctagtgggg gacaaccaat cactaattgt gttaagatgt tgtgtacaca

13021 cactggtact ggtcaggcaa taacagtcac accggaagcc aatatggatc aagaatcctt

13081 tggtggtgca tcgtgttgtc tgtactgccg ttgccacata gatcatccaa atcctaaagg

13141 attttgtgac ttaaaaggta agtatgtaca aatacctaca acttgtgcta atgaccctgt

13201 gggttttaca cttaaaaaca cagtctgtac cgtctgcggt atgtggaaag gttatggctg

13261 tagttgtgat caactccgcg aacccatgct tcagtcagct gatgcacaat cgtttttaaa

13321 cgggtttgcg gtgtaagtgc agcccgtctt acaccgtgcg gcacaggcac tagtactgat

13381 gtcgtataca gggcttttga catctacaat gataaagtag ctggttttgc taaattccta

13441 aaaactaatt gttgtcgctt ccaagaaaag gacgaagatg acaatttaat tgattcttac

13501 tttgtagtta agagacacac tttctctaac taccaacatg aagaaacaat ttataattta

13561 cttaaggatt gtccagctgt tgctaaacat gacttcttta agtttagaat agacggtgac

13621 atggtaccac atatatcacg tcaacgtctt actaaataca caatggcaga cctcgtctat

13681 gctttaaggc attttgatga aggtaattgt gacacattaa aagaaatact tgtcacatac

13741 aattgttgtg atgatgatta tttcaataaa aaggactggt atgattttgt agaaaaccca

13801 gatatattac gcgtatacgc caacttaggt gaacgtgtac gccaagcttt gttaaaaaca

13861 gtacaattct gtgatgccat gcgaaatgct ggtattgttg gtgtactgac attagataat

13921 caagatctca atggtaactg gtatgatttc ggtgatttca tacaaaccac gccaggtagt

13981 ggagttcctg ttgtagattc ttattattca ttgttaatgc ctatattaac cttgaccagg

14041 gctttaactg cagagtcaca tgttgacact gacttaacaa agccttacat taagtgggat

14101 ttgttaaaat atgacttcac ggaagagagg ttaaaactct ttgaccgtta ttttaaatat

14161 tgggatcaga cataccaccc aaattgtgtt aactgtttgg atgacagatg cattctgcat

14221 tgtgcaaact ttaatgtttt attctctaca gtgttcccac ttacaagttt tggaccacta

14281 gtgagaaaaa tatttgttga tggtgttcca tttgtagttt caactggata ccacttcaga

14341 gagctaggtg ttgtacataa tcaggatgta aacttacata gctctagact tagttttaag

14401 gaattacttg tgtatgctgc tgaccctgct atgcacgctg cttctggtaa tctattacta

14461 gataaacgca ctacgtgctt ttcagtagct gcacttacta acaatgttgc ttttcaaact

14521 gtcaaacccg gtaattttaa caaagacttc tatgactttg ctgtgtctaa gggtttcttt

14581 aaggaaggaa gttctgttga attaaaacac ttcttctttg ctcaggatgg taatgctgct

14641 atcagcgatt atgactacta tcgttataat ctaccaacaa tgtgtgatat cagacaacta

14701 ctatttgtag ttgaagttgt tgataagtac tttgattgtt acgatggtgg ctgtattaat

14761 gctaaccaag tcatcgtcaa caacctagac aaatcagctg gttttccatt taataaatgg

14821 ggtaaggcta gactttatta tgattcaatg agttatgagg atcaagatgc acttttcgca

14881 tatacaaaac gtaatgtcat ccctactata actcaaatga atcttaagta tgccattagt

14941 gcaaagaata gagctcgcac cgtagctggt gtctctatct gtagtactat gaccaataga

15001 cagtttcatc aaaaattatt gaaatcaata gccgccacta gaggagctac tgtagtaatt

15061 ggaacaagca aattctatgg tggttggcac aatatgttaa aaactgttta tagtgatgta

15121 gaaaaccctc accttatggg ttgggattat cctaaatgtg atagagccat gcctaacatg

15181 cttagaatta tggcctcact tgttcttgct cgcaaacata caacgtgttg tagcttgtca

15241 caccgtttct atagattagc taatgagtgt gctcaagtat tgagtgaaat ggtcatgtgt

15301 ggcggttcac tatatgttaa accaggtgga acctcatcag gagatgccac aactgcttat

15361 gctaatagtg tttttaacat ttgtcaagct gtcacggcca atgttaatgc acttttatct

15421 actgatggta acaaaattgc cgataagtat gtccgcaatt tacaacacag actttatgag

15481 tgtctctata gaaatagaga tgttgacaca gactttgtga atgagtttta cgcatatttg

15541 cgtaaacatt tctcaatgat gatactctct gacgatgctg ttgtgtgttt caatagcact

15601 tatgcatctc aaggtctagt ggctagcata aagaacttta agtcagttct ttattatcaa

15661 aacaatgttt ttatgtctga agcaaaatgt tggactgaga ctgaccttac taaaggacct

15721 catgaatttt gctctcaaca tacaatgcta gttaaacagg gtgatgatta tgtgtacctt

15781 ccttacccag atccatcaag aatcctaggg gccggctgtt ttgtagatga tatcgtaaaa

15841 acagatggta cacttatgat tgaacggttc gtgtctttag ctatagatgc ttacccactt

15901 actaaacatc ctaatcagga gtatgctgat gtctttcatt tgtacttaca atacataaga

15961 aagctacatg atgagttaac aggacacatg ttagacatgt attctgttat gcttactaat

16021 gataacactt caaggtattg ggaacctgag ttttatgagg ctatgtacac accgcataca

16081 gtcttacagg ctgttggggc ttgtgttctt tgcaattcac agacttcatt aagatgtggt

16141 gcttgcatac gtagaccatt cttatgttgt aaatgctgtt acgaccatgt catatcaaca

16201 tcacataaat tagtcttgtc tgttaatccg tatgtttgca atgctccagg ttgtgatgtc

16261 acagatgtga ctcaacttta cttaggaggt atgagctatt attgtaaatc acataaacca

16321 cccattagtt ttccattgtg tgctaatgga caagtttttg gtttatataa aaatacatgt

16381 gttggtagcg ataatgttac tgactttaat gcaattgcaa catgtgactg gacaaatgct

16441 ggtgattaca ttttagctaa cacctgtact gaaagactca agctttttgc agcagaaacg

16501 ctcaaagcta ctgaggagac atttaaactg tcttatggta ttgctactgt acgtgaagtg

16561 ctgtctgaca gagaattaca tctttcatgg gaagttggta aacctagacc accacttaac

16621 cgaaattatg tctttactgg ttatcgtgta actaaaaaca gtaaagtaca aataggagag

16681 tacacctttg aaaaaggtga ctatggtgat gctgttgttt accgaggtac aacaacttac

16741 aaattaaatg ttggtgatta ttttgtgctg acatcacata cagtaatgcc attaagtgca

16801 cctacactag tgccacaaga gcactatgtt agaattactg gcttataccc aacactcaat

16861 atctcagatg agttttctag caatgttgca aattatcaaa aggttggtat gcaaaagtat

16921 tctacactcc agggaccacc tggtactggt aagagtcatt ttgctattgg cctagctctc

16981 tactaccctt ctgctcgcat agtgtataca gcttgctctc atgccgctgt tgatgcacta

17041 tgtgagaagg cattaaaata tttgcctata gataaatgta gtagaattat acctgcacgt

17101 gctcgtgtag agtgttttga taaattcaaa gtgaattcaa cattagaaca gtatgtcttt

17161 tgtactgtaa atgcattgcc tgagacgaca gcagatatag ttgtctttga tgaaatttca

17221 atggccacaa attatgattt gagtgttgtc aatgccagat tacgtgctaa gcactatgtg

17281 tacattggcg accctgctca attacctgca ccacgcacat tgctaactaa gggcacacta

17341 gaaccagaat atttcaattc agtgtgtaga cttatgaaaa ctataggtcc agacatgttc

17401 ctcggaactt gtcggcgttg tcctgctgaa attgttgaca ctgtgagtgc tttggtttat

17461 gataataagc ttaaagcaca taaagacaaa tcagctcaat gctttaaaat gttttataag

17521 ggtgttatca cgcatgatgt ttcatctgca attaacaggc cacaaatagg cgtggtaaga

17581 gaattcctta cacgtaaccc tgcttggaga aaagctgtct ttatttcacc ttataattca

17641 cagaatgctg tagcctcaaa gattttggga ctaccaactc aaactgttga ttcatcacag

17701 ggctcagaat atgactatgt catattcact caaaccactg aaacagctca ctcttgtaat

17761 gtaaacagat ttaatgttgc tattaccaga gcaaaagtag gcatactttg cataatgtct

17821 gatagagacc tttatgacaa gttgcaattt acaagtcttg aaattccacg taggaatgtg

17881 gcaactttac aagctgaaaa tgtaacagga ctctttaaag attgtagtaa ggtaatcact

17941 gggttacatc ctacacaggc acctacacac ctcagtgttg acactaaatt caaaactgaa

18001 ggtttatgtg ttgacgtacc tggcatacct aaggacatga cctatagaag actcatctct

18061 atgatgggtt ttaaaatgaa ttatcaagtt aatggttacc ctaacatgtt tatcacccgc

18121 gaagaagcta taagacatgt acgtgcatgg attggcttcg atgtcgaggg gtgtcatgct

18181 actagagaag ctgttggtac caatttacct ttacagctag gtttttctac aggtgttaac

18241 ctagttgctg tacctacagg ttatgttgat acacctaata atacagattt ttccagagtt

18301 agtgctaaac caccgcctgg agatcaattt aaacacctca taccacttat gtacaaagga

18361 cttccttgga atgtagtgcg tataaagatt gtacaaatgt taagtgacac acttaaaaat

18421 ctctctgaca gagtcgtatt tgtcttatgg gcacatggct ttgagttgac atctatgaag

18481 tattttgtga aaataggacc tgagcgcacc tgttgtctat gtgatagacg tgccacatgc

18541 ttttccactg cttcagacac ttatgcctgt tggcatcatt ctattggatt tgattacgtc

18601 tataatccgt ttatgattga tgttcaacaa tggggtttta caggtaacct acaaagcaac

18661 catgatctgt attgtcaagt ccatggtaat gcacatgtag ctagttgtga tgcaatcatg

18721 actaggtgtc tagctgtcca cgagtgcttt gttaagcgtg ttgactggac tattgaatat

18781 cctataattg gtgatgaact gaagattaat gcggcttgta gaaaggttca acacatggtt

18841 gttaaagctg cattattagc agacaaattc ccagttcttc acgacattgg taaccctaaa

18901 gctattaagt gtgtacctca agctgatgta gaatggaagt tctatgatgc acagccttgt

18961 agtgacaaag cttataaaat agaagaatta ttctattctt atgccacaca ttctgacaaa

19021 ttcacagatg gtgtatgcct attttggaat tgcaatgtcg atagatatcc tgctaattcc

19081 attgtttgta gatttgacac tagagtgcta tctaacctta acttgcctgg ttgtgatggt

19141 ggcagtttgt atgtaaataa acatgcattc cacacaccag cttttgataa aagtgctttt

19201 gttaatttaa aacaattacc atttttctat tactctgaca gtccatgtga gtctcatgga

19261 aaacaagtag tgtcagatat agattatgta ccactaaagt ctgctacgtg tataacacgt

19321 tgcaatttag gtggtgctgt ctgtagacat catgctaatg agtacagatt gtatctcgat

19381 gcttataaca tgatgatctc agctggcttt agcttgtggg tttacaaaca atttgatact

19441 tataacctct ggaacacttt tacaagactt cagagtttag aaaatgtggc ttttaatgtt

19501 gtaaataagg gacactttga tggacaacag ggtgaagtac cagtttctat cattaataac

19561 actgtttaca caaaagttga tggtgttgat gtagaattgt ttgaaaataa aacaacatta

19621 cctgttaatg tagcatttga gctttgggct aagcgcaaca ttaaaccagt accagaggtg

19681 aaaatactca ataatttggg tgtggacatt gctgctaata ctgtgatctg ggactacaaa

19741 agagatgctc cagcacatat atctactatt ggtgtttgtt ctatgactga catagccaag

19801 aaaccaactg aaacgatttg tgcaccactc actgtctttt ttgatggtag agttgatggt

19861 caagtagact tatttagaaa tgcccgtaat ggtgttctta ttacagaagg tagtgttaaa

19921 ggtttacaac catctgtagg tcccaaacaa gctagtctta atggagtcac attaattgga

19981 gaagccgtaa aaacacagtt caattattat aagaaagttg atggtgttgt ccaacaatta

20041 cctgaaactt actttactca gagtagaaat ttacaagaat ttaaacccag gagtcaaatg

20101 gaaattgatt tcttagaatt agctatggat gaattcattg aacggtataa attagaaggc

20161 tatgccttcg aacatatcgt ttatggagat tttagtcata gtcagttagg tggtttacat

20221 ctactgattg gactagctaa acgttttaag gaatcacctt ttgaattaga agattttatt

20281 cctatggaca gtacagttaa aaactatttc ataacagatg cgcaaacagg ttcatctaag

20341 tgtgtgtgtt ctgttattga tttattactt gatgattttg ttgaaataat aaaatcccaa

20401 gatttatctg tagtttctaa ggttgtcaaa gtgactattg actatacaga aatttcattt

20461 atgctttggt gtaaagatgg ccatgtagaa acattttacc caaaattaca atctagtcaa

20521 gcgtggcaac cgggtgttgc tatgcctaat ctttacaaaa tgcaaagaat gctattagaa

20581 aagtgtgacc ttcaaaatta tggtgatagt gcaacattac ctaaaggcat aatgatgaat

20641 gtcgcaaaat atactcaact gtgtcaatat ttaaacacat taacattagc tgtaccctat

20701 aatatgagag ttatacattt tggtgctggt tctgataaag gagttgcacc aggtacagct

20761 gttttaagac agtggttgcc tacgggtacg ctgcttgtcg attcagatct taatgacttt

20821 gtctctgatg cagattcaac tttgattggt gattgtgcaa ctgtacatac agctaataaa

20881 tgggatctca ttattagtga tatgtacgac cctaagacta aaaatgttac aaaagaaaat

20941 gactctaaag agggtttttt cacttacatt tgtgggttta tacaacaaaa gctagctctt

21001 ggaggttccg tggctataaa gataacagaa cattcttgga atgctgatct ttataagctc

21061 atgggacact tcgcatggtg gacagccttt gttactaatg tgaatgcgtc atcatctgaa

21121 gcatttttaa ttggatgtaa ttatcttggc aaaccacgcg aacaaataga tggttatgtc

21181 atgcatgcaa attacatatt ttggaggaat acaaatccaa ttcagttgtc ttcctattct

21241 ttatttgaca tgagtaaatt tccccttaaa ttaaggggta ctgctgttat gtctttaaaa

21301 gaaggtcaaa tcaatgatat gattttatct cttcttagta aaggtagact tataattaga

21361 gaaaacaaca gagttgttat ttctagtgat gttcttgtta acaactaaac gaacaatgtt

21421 tgtttttctt gttttattgc cactagtctc tagtcagtgt gttaatctta taaccagaac

21481 tcaatcatac actaattctt tcacacgtgg tgtttattac cctgacaaag ttttcagatc

21541 ctcagtttta cattcaactc aggacttgtt cttacctttc ttttccaatg ttacttggtt

21601 ccatgctata catgtctctg ggaccaatgg tactaagagg tttgataacc ctgtcctacc

21661 atttaatgat ggtgtttatt ttgcttccac tgagaagtct aacataataa gaggctggat

21721 ttttggtact actttagatt cgaagaccca gtccctactt attgttaata acgctactaa

21781 tgttgttatt aaagtctgtg aatttcaatt ttgtaatgat ccatttttgg accacaaaaa

21841 caacaaaagt tggatggaaa gtgagttcag agtttattct agtgcgaata attgcacttt

21901 tgaatatgtc tctcagcctt ttcttatgga ccttgaagga aaacagggta atttcaaaaa

21961 tcttagggaa tttgtgttta agaatattga tggttatttt aaaatatatt ctaagcacac

22021 gcctattata gtgcgtgagc cagaagatct ccctcagggt ttttcggctt tagaaccatt

22081 ggtagatttg ccaataggta ttaacatcac taggtttcaa actttacttg ctttacatag

22141 aagttatttg actcctggtg attcttcttc aggttggaca gctggtgctg cagcttatta

22201 tgtgggttat cttcaaccta ggacttttct attaaaatat aatgaaaatg gaaccattac

22261 agatgctgta gactgtgcac ttgaccctct ctcagaaaca aagtgtacgt tgaaatcctt

22321 cactgtagaa aaaggaatct atcaaacttc taactttaga gtccaaccaa cagaatctat

22381 tgttagattt cctaatatta caaacttgtg cccttttgat gaagttttta acgccaccag

22441 atttgcatct gtttatgctt ggaacaggaa gagaatcagc aactgtgttg ctgattattc

22501 tgtcctatat aatttcgcac catttttcgc ttttaagtgt tatggagtgt ctcctactaa

22561 attaaatgat ctctgcttta ctaatgtcta tgcagattca tttgtaatta gaggtaatga

22621 agtcagccaa atcgctccag ggcaaactgg aaatattgct gattataatt ataaattacc

22681 agatgatttt acaggctgcg ttatagcttg gaattctaac aagcttgatt ctaaggttgg

22741 tggtaattat aattacctgt atagattgtt taggaagtct aatctcaaac cttttgagag

22801 agatatttca actgaaatct atcaggccgg taacaaacct tgtaatggtg ttgcaggttt

22861 taattgttac tttcctttac gatcatatgg tttccgaccc acttatggtg ttggtcacca

22921 accatacaga gtagtagtac tttcttttga acttctacat gcaccagcaa ctgtttgtgg

22981 acctaaaaag tctactaatt tggttaaaaa caaatgtgtc aatttcaact tcaatggttt

23041 aaaaggcaca ggtgttctta ctgagtctaa caaaaagttt ctgcctttcc aacaatttgg

23101 cagagacatt gctgacacta ctgatgctgt ccgtgatcca cagacacttg agattcttga

23161 cattacacca tgttcttttg gtggtgtcag tgttataaca ccaggaacaa atacttctaa

23221 ccaggttgct gttctttatc agggtgttaa ctgcacagaa gtccctgttg ctattcatgc

23281 agatcaactt actcctactt ggcgtgttta ttctacaggt tctaatgttt ttcaaacacg

23341 tgcaggctgt ttaatagggg ctgaatatgt caacaactca tatgagtgtg acatacccat

23401 tggtgcaggt atatgcgcta gttatcagac tcagactaag tctcatcggc gggcacgtag

23461 tgtagctagt caatccatca ttgcctacac tatgtcactt ggtgcagaaa attcagttgc

23521 ttactctaat aactctattg ccatacccac aaattttact attagtgtta ccacagaaat

23581 tctaccagtg tctatgacca agacatcagt agattgtaca atgtacattt gtggtgattc

23641 aactgaatgc agcaatcttt tgttgcaata tggcagtttt tgtacacaat taaaacgtgc

23701 tttaactgga atagctgttg aacaagacaa aaacacccaa gaagtttttg cacaagtcaa

23761 acaaatttac aaaacaccac caattaaata ttttggtggt tttaattttt cacaaatatt

23821 accagatcca tcaaaaccaa gcaagaggtc atttattgaa gatctacttt tcaacaaagt

23881 gacacttgca gatgctggct tcatcaaaca atatggtgat tgccttggtg atattgctgc

23941 tagagacctc atttgtgcac aaaagtttaa cggccttact gttttgccac ctttgctcac

24001 agatgaaatg attgctcaat acacttctgc actgttagcg ggtacaatca cttctggttg

24061 gacctttggt gcaggtgctg cattacaaat accatttgct atgcaaatgg cttataggtt

24121 taatggtatt ggagttacac agaatgttct ctatgagaac caaaaattga ttgccaacca

24181 atttaatagt gctattggca aaattcaaga ctcactttct tccacagcaa gtgcacttgg

24241 aaaacttcaa gatgtggtca accataatgc acaagcttta aacacgcttg ttaaacaact

24301 tagctccaaa tttggtgcaa tttcaagtgt tttaaatgat atcttttcac gtcttgacaa

24361 agttgaggct gaagtgcaaa ttgataggtt gatcacaggc agacttcaaa gtttgcagac

24421 atatgtgact caacaattaa ttagagctgc agaaatcaga gcttctgcta atcttgctgc

24481 tactaaaatg tcagagtgtg tacttggaca atcaaaaaga gttgattttt gtggaaaggg

24541 ctatcatctt atgtccttcc ctcagtcagc acctcatggt gtagtcttct tgcatgtgac

24601 ttatgtccct gcacaagaaa agaacttcac aactgctcct gccatttgtc atgatggaaa

24661 agcacacttt cctcgtgaag gtgtctttgt ttcaaatggc acacactggt ttgtaacaca

24721 aaggaatttt tatgaaccac aaatcattac tacagacaac acatttgtgt ctggtaactg

24781 tgatgttgta ataggaattg tcaacaacac agtttatgat cctttgcaac ctgaattaga

24841 ttcattcaag gaggagttag ataaatattt taagaatcat acatcaccag atgttgattt

24901 aggtgacatc tctggcatta atgcttcagt tgtaaacatt caaaaagaaa ttgaccgcct

24961 caatgaggtt gccaagaatt taaatgaatc tctcatcgat ctccaagaac ttggaaagta

25021 tgagcagtat ataaaatggc catggtacat ttggctaggt tttatagctg gcttgattgc

25081 catagtaatg gtgacaatta tgctttgctg tatgaccagt tgctgtagtt gtctcaaggg

25141 ctgttgttct tgtggatcct gctgcaaatt tgatgaagac gactctgagc cagtgctcaa

25201 aggagtcaaa ttacattaca cataaacgaa cttatggatt tgtttatgag aatcttcaca

25261 attggaactg taactttgaa gcaaggtgaa atcaaggatg ctactccttc agattttgtt

25321 cgcgctactg caacgatacc gatacaagcc tcactccctt tcggatggct tattgttggc

25381 gttgcacttc ttgctgtttt tcagagcgct tccaaaatca taactctcaa aaagagatgg

25441 caactagcac tctccaaggg tgttcacttt gtttgcaact tgctgttgtt gtttgtaaca

25501 gtttactcac accttttgct cgttgctgct ggccttgaag ccccttttct ctatctttat

25561 gctttagtct acttcttgca gagtataaac tttgtaagaa taataatgag gctttggctt

25621 tgctggaaat gccgttccaa aaacccatta ctttatgatg ccaactattt tctttgctgg

25681 catactaatt gttacgacta ttgtatacct tacaatagtg taacttcttc aattgtcatt

25741 acttcaggtg atggcacaac aagtcctatt tctgaacatg actaccagat tggtggttat

25801 actgaaaaat gggaatctgg agtaaaagac tgtgttgtat tacacagtta cttcacttca

25861 gactattacc agctgtactc aactcaattg agtacagaca ttggtgttga acatgttacc

25921 ttcttcatct acaataaaat tgttgatgag cctgaagaac atgtccaaat tcacacaatc

25981 gacggttcat ctggagttgt taatccagta atggaaccaa tttatgatga accgacgacg

26041 actactagcg tgcctttgta agcacaagct gatgagtacg aacttatgta ctcattcgtt

26101 tcggaagaga taggtacgtt aatagttaat agcgtacttc tttttcttgc tttcgtggta

26161 ttcttgctag ttacactagc catccttact gcgcttcgat tgtgtgcgta ctgctgcaat

26221 attgttaacg tgagtcttgt aaaaccttct ttttacgttt actctcgtgt taaaaatctg

26281 aattcttcta gagttcctga tcttctggtc taaacgaact aaatattata ttagtttttc

26341 tgtttggaac tttaatttta gccatggcag attccaacgg tactattacc gttgaagagc

26401 ttaaaaagct ccttgaagaa tggaacctag taataggttt cctattcctt acatggattt

26461 gtcttctaca atttgcctat gccaacagga ataggttttt gtatataatt aagttaattt

26521 tcctctggct gttatggcca gtaactttaa cttgttttgt gcttgctgct gtttacagaa

26581 taaattggat caccggtgga attgctatcg caatggcttg tcttgtaggc ttgatgtggc

26641 tcagctactt cattgcttct ttcagactgt ttgcgcgtac gcgttccatg tggtcattta

26701 atccagaaac taacattctt ctcaacgtgc cactccatgg cactattctg accagaccgc

26761 ttctagaaag tgaactcgta atcggagctg tgatccttcg tggacatctt cgtattgctg

26821 gacaccatct aggacgctgt gacatcaagg acctgcctaa agaaatcact gttgctacat

26881 cacgaacgct ttcttattac aaattgggag cttcgcagcg tgtagcaggt gactcaggtt

26941 ttgctgcata cagtcgctac aggattggca actataaatt aaacacagac cattccagta

27001 gcagtgacaa tattgctttg cttgtacagt aagtgacaac agatgtttca tctcgttgac

27061 tttcaggtta ctatagcaga gatattacta attattatgc ggacttttaa agtttccatt

27121 tggaatcttg attacatcat aaacctcata attaaaaatt tatctaagtc actaactgag

27181 aataaatatt ctcaattaga tgaagagcaa ccaatggaga ttgattaaac gaacatgaaa

27241 attattcttt tcttggcact gataacactc gctacttgtg agctttatca ctaccaagag

27301 tgtgttagag gtacaacagt acttttaaaa gaaccttgct cttctggaac atacgagggc

27361 aattcaccat ttcatcctct agctgataac aaatttgcac tgacttgctt tagcactcaa

27421 tttgcttttg cttgtcctga cggcgtaaaa cacgtctatc agttacgtgc cagatcagtt

27481 tcacctaaac tgttcatcag acaagaggaa gttcaagaac tttactctcc aatttttctt

27541 attgttgcgg caatagtgtt tataacactt tgcttcacac tcaaaagaaa gacagaatga

27601 ttgaactttc attaattgac ttctatttgt gctttttagc ctttctgtta ttccttgttt

27661 taattatgct tattatcttt tggttctcac ttgaactgca agatcataat gaaacttgtc

27721 acgcctaaac gaacatgaaa tttcttgttt tcttaggaat catcacaact gtagctgcat

27781 ttcaccaaga atgtagttta cagtcatgta ctcaacatca accatatgta gttgatgacc

27841 cgtgtcctat tcacttctat tctaaatggt atattagagt aggagctaga aaatcagcac

27901 ctttaattga attgtgcgtg gatgaggctg gttctaaatc acccattcag tacatcgata

27961 tcggtaatta tacagtttcc tgtttacctt ttacaattaa ttgccaggaa cctaaattgg

28021 gtagtcttgt agtgcgttgt tcgttctatg aagacttttt agagtatcat gacgttcgtg

28081 ttgttttaga tttcatctaa acgaacaaac ttaaatgtct gataatggac cccaaaatca

28141 gcgaaatgca ctccgcatta cgtttggtgg accctcagat tcaactggca gtaaccagaa

28201 tggtggggcg cgatcaaaac aacgtcggcc ccaaggttta cccaataata ctgcgtcttg

28261 gttcaccgct ctcactcaac atggcaagga agaccttaaa ttccctcgag gacaaggcgt

28321 tccaattaac accaatagca gtccagatga ccaaattggc tactaccgaa gagctaccag

28381 acgaattnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

28441 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnntcatatg

28501 ggttgcaact gagggagcct tgaatacacc aaaagatcac attggcaccc gcaatcctgc

28561 taacaatgct gcaatcgtgc tacaacttcc tcaaggaaca acattgccaa aaggcttcta

28621 cgcagaaggg agcagaggcg gcagtcaagc ctcttctcgt tcctcatcac gtagtcgcaa

28681 cagttcaaga aattcaactc caggcagcag taaacgaact tctcctgcta gaatggctgg

28741 caatggcggt gatgctgctc ttgctttgct gctgcttgac agattgaacc agcttgagag

28801 caaaatgtct ggtaaaggcc aacaacaaca aggccaaact gtcactaaga aatctgctgc

28861 tgaggcttct aagaagcctc ggcaaaaacg tactgccact aaagcataca atgtaacaca

28921 agctttcggc agacgtggtc cagaacaaac ccaaggaaat tttggggacc aggaactaat

28981 cagacaagga actgattaca aacattggcc gcaaattgca caatttgccc ccagcgcttc

29041 agcgttcttc ggaatgtcgc gcattggcat ggaagtcaca ccttcgggaa cgtggttgac

29101 ctacacaggt gccatcaaat tggatgacaa agatccaaat ttcaaagatc aagtcatttt

29161 gctgaataag catattgacg catacaaaac attcccacca acagagccta aaaaggacaa

29221 aaagaagaag gctgatgaaa ctcaagcctt accgcagaga cagaagaaac agcaaactgt

29281 gactcttctt cctgctgcag atttggatga tttctccaaa caattgcaac aatccatgag

29341 cagtgctgac tcaactcagg cctaaactca tgcagaccac acaaggcaga tgggctatat

29401 aaacgttttc gcttttccgt ttacgatata tagtctactc ttgtgcagaa tgaattctcg

29461 taactacata gcacaagtag atgtagttaa ctttaatctc acatagcaat ctttaatcag

29521 tgtgtaacat tagggaggac ttgaaagagc caccacattt tcacctacag tgaacaatgc

29581 tagggagagc tg

//