**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/OR-UW-22010866094/2022 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein (M), ORF6 ...**

GenBank: OM646886.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1" \l "goto2192179967_0)

LOCUS OM646886 29504 bp RNA linear VRL 10-FEB-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/OR-UW-22010866094/2022 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 OM646886

VERSION OM646886.1

KEYWORDS .

SOURCE Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

ORGANISM [Severe acute respiratory syndrome coronavirus 2](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=2697049)

Viruses; Riboviria; Orthornavirae; Pisuviricota; Pisoniviricetes;

Nidovirales; Cornidovirineae; Coronaviridae; Orthocoronavirinae;

Betacoronavirus; Sarbecovirus.

REFERENCE 1 (bases 1 to 29504)

AUTHORS Roychoudhury,P., Xie,H., Shrestha,L., Bakhash,S.M., Lin,M.J.,

Baker,N.R., Ellis,S., Huang,M.-L., Jerome,K.R. and Greninger,A.

TITLE Direct Submission

JOURNAL Submitted (10-FEB-2022) Laboratory Medicine and Pathology,

University of Washington, 1100 Fairview Avenue North, E5-110,

Seattle, WA 98109, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: custom pipeline v. 2020-03

Sequencing Technology :: Illumina

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29504

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/OR-UW-22010866094/2022"

/host="Homo sapiens"

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

/country="USA"

/collection\_date="2022-01-08"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=65&to=21342) 65..21342

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?location=65:13255,13255:21342) join(65..13255,13255..21342)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UKT41534.1](https://www.ncbi.nlm.nih.gov/protein/2192179968)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDN

LIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKY

TMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGE

RVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYY

SLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

NCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVV

HNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKP

GNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLL

FVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALF

AYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGAT

VVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTT

CCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTA

NVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSD

DAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTM

LVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQE

YADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAV

GACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDV

TQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAG

DYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPL

NRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMP

LSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFA

IGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS

TLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLRAKHYVYIGDPAQLPAP

RTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKD

KSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASK

ILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLY

DKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLC

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/UKT41534.1?from=1&to=180) 65..604

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=181&to=818) 605..2518

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=819&to=2762) 2519..8350

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=2763&to=3262) 8351..9850

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=3263&to=3568) 9851..10768

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=3569&to=3855) 10769..11629

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=3856&to=3938) 11630..11878

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=3939&to=4136) 11879..12472

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=4137&to=4249) 12473..12811

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=4250&to=4388) 12812..13228

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=4389&to=5320) join(13229..13255,13255..16023)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=5321&to=5921) 16024..17826

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=5922&to=6448) 17827..19407

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=6449&to=6794) 19408..20445

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41534.1?from=6795&to=7092) 20446..21339

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=65&to=13270) 65..13270

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UKT41535.1](https://www.ncbi.nlm.nih.gov/protein/2192179969)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=1&to=180) 65..604

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=181&to=818) 605..2518

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=819&to=2762) 2519..8350

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=2763&to=3262) 8351..9850

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=3263&to=3568) 9851..10768

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=3569&to=3855) 10769..11629

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=3856&to=3938) 11630..11878

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=3939&to=4136) 11879..12472

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=4137&to=4249) 12473..12811

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=4250&to=4388) 12812..13228

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKT41535.1?from=4389&to=4401) 13229..13267

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=13263&to=13290) 13263..13290

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=13275&to=13329) 13275..13329

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=21350&to=25165) 21350..25165

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=21350&to=25165) 21350..25165

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UKT41536.1](https://www.ncbi.nlm.nih.gov/protein/2192179970)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLVREPEDLPQGF

SALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLK

YNENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLC

PFDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTN

VYADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYL

YRLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRV

VVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRD

IADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHA

DQLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRA

RSVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYI

CGDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGF

NFSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGL

TVLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVL

YENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAIS

SVLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSEC

VLGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFP

REGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSF

KEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKY

EQYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPV

LKGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=25174&to=26001) 25174..26001

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=25174&to=26001) 25174..26001

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UKT41537.1](https://www.ncbi.nlm.nih.gov/protein/2192179971)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26026&to=26253) 26026..26253

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26026&to=26253) 26026..26253

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UKT41538.1](https://www.ncbi.nlm.nih.gov/protein/2192179972)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26304&to=26972) 26304..26972

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26304&to=26972) 26304..26972

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UKT41539.1](https://www.ncbi.nlm.nih.gov/protein/2192179973)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26983&to=27168) 26983..27168

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=26983&to=27168) 26983..27168

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UKT41540.1](https://www.ncbi.nlm.nih.gov/protein/2192179974)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27175&to=27540) 27175..27540

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27175&to=27540) 27175..27540

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UKT41541.1](https://www.ncbi.nlm.nih.gov/protein/2192179975)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27537&to=27668) 27537..27668

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27537&to=27668) 27537..27668

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UKT41542.1](https://www.ncbi.nlm.nih.gov/protein/2192179976)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27675&to=28040) 27675..28040

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=27675&to=28040) 27675..28040

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UKT41543.1](https://www.ncbi.nlm.nih.gov/protein/2192179977)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=28055&to=29305) 28055..29305

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=28055&to=29305) 28055..29305

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UKT41544.1](https://www.ncbi.nlm.nih.gov/protein/2192179978)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=29330&to=29446) 29330..29446

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=29330&to=29446) 29330..29446

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UKT41545.1](https://www.ncbi.nlm.nih.gov/protein/2192179979)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=29381&to=29416) 29381..29416

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=29401&to=29429) 29401..29429

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM646886.1?from=29500&to=29504) 29500..>29504

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

ORIGIN

1 tcgtccgtgt tgcagccgat catcagcaca tctaggtttt gtccgggtgt gaccgaaagg

61 taagatggag agccttgtcc ctggtttcaa cgagaaaaca cacgtccaac tcagtttgcc

121 tgttttacag gttcgcgacg tgctcgtacg tggctttgga gactccgtgg aggaggtctt

181 atcagaggca cgtcaacatc ttaaagatgg cacttgtggc ttagtagaag ttgaaaaagg

241 cgttttgcct caacttgaac agccctatgt gttcatcaaa cgttcggatg ctcgaactgc

301 acctcatggt catgttatgg ttgagctggt agcagaactc gaaggcattc agtacggtcg

361 tagtggtgag acacttggtg tccttgtccc tcatgtgggc gaaataccag tggcttaccg

421 caaggttctt cttcgtaaga acggtaataa aggagctggt ggccatagtt acggcgccga

481 tctaaagtca tttgacttag gcgacgagct tggcactgat ccttatgaag attttcaaga

541 aaactggaac actaaacata gcagtggtgt tacccgtgaa ctcatgcgtg agcttaacgg

601 aggggcatac actcgctatg tcgataacaa cttctgtggc cctgatggct accctcttga

661 gtgcattaaa gaccttctag cacgtgctgg taaagcttca tgcactttgt ccgaacaact

721 ggactttatt gacactaaga ggggtgtata ctgctgccgt gaacatgagc atgaaattgc

781 ttggtacacg gaacgttctg aaaagagcta tgaattgcag acaccttttg aaattaaatt

841 ggcaaagaaa tttgacacct tcaatgggga atgtccaaat tttgtatttc ccttaaattc

901 cataatcaag actattcaac caagggttga aaagaaaaag cttgatggct ttatgggtag

961 aattcgatct gtctatccag ttgcgtcacc aaatgaatgc aaccaaatgt gcctttcaac

1021 tctcatgaag tgtgatcatt gtggtgaaac ttcatggcag acgggcgatt ttgttaaagc

1081 cacttgcgaa ttttgtggca ctgagaattt gactaaagaa ggtgccacta cttgtggtta

1141 cttaccccaa aatgctgttg ttaaaattta ttgtccagca tgtcacaatt cagaagtagg

1201 acctgagcat agtcttgccg aataccataa tgaatctggc ttgaaaacca ttcttcgtaa

1261 gggtggtcgc actattgcct ttggaggctg tgtgttctct tatgttggtt gccataacaa

1321 gtgtgcctat tgggttccac gtgctagcgc taacataggt tgtaaccata caggtgttgt

1381 tggagaaggt tccgaaggtc ttaatgacaa ccttcttgaa atactccaaa aagagaaagt

1441 caacatcaat attgttggtg actttaaact taatgaagag atcgccatta ttttggcatc

1501 tttttctgct tccacaagtg cttttgtgga aactgtgaaa ggtttggatt ataaagcatt

1561 caaacaaatt gttgaatcct gtggtaattt taaagttaca aaaggaaaag ctaaaaaagg

1621 tgcctggaat attggtgaac agaaatcaat actgagtcct ctttatgcat ttgcatcaga

1681 ggctgctcgt gttgtacgat caattttctc ccgcactctt gaaactgctc aaaattctgt

1741 gcgtgtttta cagaaggccg ctataacaat actagatgga atttcacagt attcactgag

1801 actcattgat gctatgatgt tcacatctga tttggctact aacaatctag ttgtaatggc

1861 ctacattaca ggtggtgttg ttcagttgac ttcgcagtgg ctaactaaca tctttggcac

1921 tgtttatgaa aaactcaaac ccgtccttga ttggcttgaa gagaagttta aggaaggtgt

1981 agagtttctt agagacggtt gggaaattgt taaatttatc tcaacctgtg cttgtgaaat

2041 tgtcggtgga caaattgtca cctgtgcaaa ggaaattaag gagagtgttc agacattctt

2101 taagcttgta aataaatttt tggctttgtg tgctgactct atcattattg gtggagctaa

2161 acttaaagcc ttgaatttag gtgaaacatt tgtcacgcac tcaaagggat tgtacagaaa

2221 gtgtgttaaa tccagagaag aaactggcct actcatgcct ctaaaagccc caaaagaaat

2281 tatcttctta gagggagaaa cacttcccac agaagtgtta acagaggaag ttgtcttgaa

2341 aactggtgat ttacaaccat tagaacaacc tactagtgaa gctgttgaag ctccattggt

2401 tggtacacca gtttgtatta acgggcttat gttgctcgaa atcaaagaca cagaaaagta

2461 ctgtgccctt gcacctaata tgatggtaac aaacaatacc ttcacactca aaggcggtgc

2521 accaacaaag gttacttttg gtgatgacac tgtgatagaa gtgcaaggtt acaagagtgt

2581 gaatatcact tttgaacttg atgaaaggat tgataaagta cttaatgaga ggtgctctgc

2641 ctatacagtt gaactcggta cagaagtaaa tgagttcgcc tgtgttgtgg cagatgctgt

2701 cataaaaact ttgcaaccag tatctgaatt acttacacca ctgggcattg atttagatga

2761 gtggagtatg gctacatact acttatttga tgagtctggt gagtttaaat tggcttcaca

2821 tatgtattgt tctttttacc ctccagatga ggatgaagaa gaaggtgatt gtgaagaaga

2881 agagtttgag ccatcaactc aatatgagta tggtactgaa gatgattacc aaggtaaacc

2941 tttggaattt ggtgccactt ctgctgctct tcaacctgaa gaagagcaag aagaagattg

3001 gttagatgat gatagtcaac aaactgttgg tcaacaagac ggcagtgagg acaatcagac

3061 aactactatt caaacaattg ttgaggttca acctcaatta gagatggaac ttacaccagt

3121 tgttcagact attgaagtga atagttttag tggttattta aaacttactg acaatgtata

3181 cattaaaaat gcagacattg tggaagaagc taaaaaggta aaaccaacag tggttgttaa

3241 tgcagccaat gtttacctta aacatggagg aggtgttgca ggagccttaa ataaggctac

3301 taacaatgcc atgcaagttg aatctgatga ttacatagct actaatggac cacttaaagt

3361 gggtggtagt tgtgttttaa gcggacacaa tcttgctaaa cactgtcttc atgttgtcgg

3421 cccaaatgtt aacaaaggtg aagacattca acttcttaag agtgcttatg aaaattttaa

3481 tcagcacgaa gttctacttg caccattatt atcagctggt atttttggtg ctgaccctat

3541 acattcttta agagtttgtg tagatactgt tcgcacaaat gtctacttag ctgtctttga

3601 taaaaatctc tatgacaaac ttgtttcaag ctttttggaa atgaagagtg aaaagcaagt

3661 tgaacaaaag atcgctgaga ttcctaaaga ggaagttaag ccatttataa ctgaaagtaa

3721 accttcagtt gaacagagaa aacaagatga taagaaaatc aaagcttgtg ttgaagaagt

3781 tacaacaact ctggaagaaa ctaagttcct cacagaaaac ttgttacttt atattgacat

3841 taatggcaat cttcatccag attctgccac tcttgttagt gacattgaca tcactttctt

3901 aaagaaagat gctccatata tagtgggtga tgttgttcaa gagggtgttt taactgctgt

3961 ggttatacct actaaaaagg ctggtggcac tactgaaatg ctagcgaaag ctttgagaaa

4021 agtgccaaca gacaattata taaccactta cccgggtcag ggtttaaatg gttacactgt

4081 agaggaggca aagacagtgc ttaaaaagtg taaaagtgcc ttttacattc taccatctat

4141 tatctctaat gagaagcaag aaattcttgg aactgtttct tggaatttgc gagaaatgct

4201 tgcacatgca gaagaaacac gcaaattaat gcctgtctgt gtggaaacta aagccatagt

4261 ttcaactata cagcgtaaat ataagggtat taaaatacaa gagggtgtgg ttgattatgg

4321 tgctagattt tacttttaca ccagtaaaac aactgtagcg tcacttatca acacacttaa

4381 cgatctaaat gaaactcttg ttacaatgcc acttggctat gtaacacatg gcttaaattt

4441 ggaagaagct gctcggtata tgagatctct caaagtgcca gctacagttt ctgtttcttc

4501 acctgatgct gttacagcgt ataatggtta tcttacttct tcttctaaaa cacctgaaga

4561 acattttatt gaaaccatct cacttgctgg ttcctataaa gattggtcct attctggaca

4621 atctacacaa ctaggtatag aatttcttaa gagaggtgat aaaagtgtat attacactag

4681 taatcctacc acattccacc tagatggtga agttatcacc tttgacaatc ttaagacact

4741 tctttctttg agagaagtga ggactattaa ggtgtttaca acagtagaca acattaacct

4801 ccacacgcaa gttgtggaca tgtcaatgac atatggacaa cagtttggtc caacttattt

4861 ggatggagct gatgttacta aaataaaacc tcataattca catgaaggta aaacatttta

4921 tgttttacct aatgatgaca ctctacgtgt tgaggctttt gagtactacc acacaactga

4981 tcctagtttt ctgggtaggt acatgtcagc attaaatcac actaaaaagt ggaaataccc

5041 acaagttaat ggtttaactt ctattaaatg ggcagataac aactgttatc ttgccactgc

5101 attgttaaca ctccaacaaa tagagttgaa gtttaatcca cctgctctac aagatgctta

5161 ttacagagca agggctggtg aagcggctaa cttttgtgca cttatcttag cctactgtaa

5221 taagacagta ggtgagttag gtgatgttag agaaacaatg agttacttgt ttcaacatgc

5281 caatttagat tcttgcaaaa gagtcttgaa cgttgtgtgt aaaacttgtg gacaacagca

5341 gacaaccctt aagggtgtag aagctgttat gtacatgggc acactttctt atgaacaatt

5401 taagaaaggt gttcagatac cttgtacgtg tggtaaacaa gctacaaaat atctagtaca

5461 acaggagtca ccttttgtta tgatgtcagc accacctgct cagtatgaac ttaagcatgg

5521 tacatttact tgtgctagtg agtacactgg taattaccag tgtggtcact ataaacatat

5581 aacttctaaa gaaactttgt attgcataga cggtgcttta cttacaaagt cctcagaata

5641 caaaggtcct attacggatg ttttctacaa agaaaacagt tacacaacaa ccataaaacc

5701 agttacttat aaattggatg gtgttgtttg tacagaaatt gaccctaagt tggacaatta

5761 ttataagaaa gacaattctt atttcacaga gcaaccaatt gatcttgtac caaaccaacc

5821 atatccaaac gcaagcttcg ataattttaa gtttgtatgt gataatatca aatttgctga

5881 tgatttaaac cagttaactg gttataagaa acctgcttca agagagctta aagttacatt

5941 tttccctgac ttaaatggtg atgtggtggc tattgattat aaacactaca caccctcttt

6001 taagaaagga gctaaattgt tacataaacc tattgtttgg catgttaaca atgcaactaa

6061 taaagccacg tataaaccaa atacctggtg tatacgttgt ctttggagca caaaaccagt

6121 tgaaacatca aattcgtttg atgtactgaa gtcagaggac gcgcagggaa tggataatct

6181 tgcctgcgaa gatctaaaac cagtctctga agaagtagtg gaaaatccta ccatacagaa

6241 agacgttctt gagtgtaatg tgaaaactac cgaagttgta ggagacatta tacttaaacc

6301 agcaaataat ataaaaatta cagaagaggt tggccacaca gatctaatgg ctgcttatgt

6361 agacaattct agtcttacta ttaagaaacc taatgaatta tctagagtat taggtttgaa

6421 aacccttgct actcatggtt tagctgctgt taatagtgtc ccttgggata ctatagctaa

6481 ttatgctaag ccttttctta acaaagttgt tagtacaact actaacatag ttacacggtg

6541 tttaaaccgt gtttgtacta attatatgcc ttatttcttt actttattgc tacaattgtg

6601 tacttttact agaagtacaa attctagaat taaagcatct atgccgacta ctatagcaaa

6661 gaatactgtt aagagtgtcg gtaaattttg tctagaggct tcatttaatt atttgaagtc

6721 acctaatttt tctaaactga taaatattat aatttggttt ttactattaa gtgtttgcct

6781 aggttcttta atctactcaa ccgctgcttt aggtgtttta atgtctaatt taggcatgcc

6841 ttcttactgt actggttaca gagaaggcta tttgaactct actaatgtca ctattgcaac

6901 ctactgtact ggttctatac cttgtagtgt ttgtcttagt ggtttagatt ctttagacac

6961 ctatccttct ttagaaacta tacaaattac catttcatct tttaaatggg atttaactgc

7021 ttttggctta gttgcagagt ggtttttggc atatattctt ttcactaggt ttttctatgt

7081 acttggattg gctgcaatca tgcaattgtt tttcagctat tttgcagtac attttattag

7141 taattcttgg cttatgtggt taataattaa tcttgtacaa atggccccga tttcagctat

7201 ggttagaatg tacatcttct ttgcatcatt ttattatgta tggaaaagtt atgtgcatgt

7261 tgtagacggt tgtaattcat caacttgtat gatgtgttac aaacgtaata gagcaacaag

7321 agtcgaatgt acaactattg ttaatggtgt tagaaggtcc ttttatgtct atgctaatgg

7381 aggtaaaggc ttttgcaaac tacacaattg gaattgtgtt aattgtgata cattctgtgc

7441 tggtagtaca tttattagtg atgaagttgc gagagacttg tcactacagt ttaaaagacc

7501 aataaatcct actgaccagt cttcttacat cgttgatagt gttacagtga agaatggttc

7561 catccatctt tactttgata aagctggtca aaagacttat gaaagacatt ctctctctca

7621 ttttgttaac ttagacaacc tgagagctaa taacactaaa ggttcattgc ctattaatgt

7681 tatagttttt gatggtaaat caaaatgtga agaatcatct gcaaaatcag cgtctgttta

7741 ctacagtcag cttatgtgtc aacctatact gttactagat caggcattag tgtctgatgt

7801 tggtgatagt gcggaagttg cagttaaaat gtttgatgct tacgttaata cgttttcatc

7861 aacttttaac gtaccaatgg aaaaactcaa aacactagtt gcaactgcag aagctgaact

7921 tgcaaagaat gtgtccttag acaatgtctt atctactttt atttcagcag ctcggcaagg

7981 gtttgttgat tcagatgtag aaactaaaga tgttgttgaa tgtcttaaat tgtcacatca

8041 atctgacata gaagttactg gcgatagttg taataactat atgctcacct ataacaaagt

8101 tgaaaacatg acaccccgtg accttggtgc ttgtattgac tgtagtgcgc gtcatattaa

8161 tgcgcaggta gcaaaaagtc acaacattac tttgatatgg aacgttaaag atttcatgtc

8221 attgtctgaa caactacgaa aacaaatacg tagtgctgct aaaaagaata acttaccttt

8281 taagttgaca tgtgcaacta ctagacaagt tgttaatgtt gtaacaacaa agatagcact

8341 taagggtggt aaaattgtta ataattggtt gaagcagtta attaaagtta cacttgtgtt

8401 cctttttgtt gctgctattt tctatttaat aacacctgtt catgtcatgt ctaaacatac

8461 tgacttttca agtgaaatca taggatacaa ggctattgat ggtggtgtca ctcgtgacat

8521 agcatctaca gatacttgtt ttgctaacaa acatgctgat tttgacacat ggtttagcca

8581 gcgtggtggt agttatacta atgacaaagc ttgcccattg attgctgcag tcataacaag

8641 agaagtgggt tttgtcgtgc ctggtttgcc tggcacgata ttacgcacaa ctaatggtga

8701 ctttttgcat ttcttaccta gagtttttag tgcagttggt aacatctgtt acacaccatc

8761 aaaacttata gagtacactg actttgcaac atcagcttgt gttttggctg ctgaatgtac

8821 aatttttaaa gatgcttctg gtaagccagt accatattgt tatgatacca atgtactaga

8881 aggttctgtt gcttatgaaa gtttacgccc tgacacacgt tatgtgctca tggatggctc

8941 tattattcaa tttcctaaca cctaccttga aggttctgtt agagtggtaa caacttttga

9001 ttctgagtac tgtaggcacg gcacttgtga aagatcagaa gctggtgttt gtgtatctac

9061 tagtggtaga tgggtactta acaatgatta ttacagatct ttaccaggag ttttctgtgg

9121 tgtagatgct gtaaatttac ttactaatat gtttacacca ctaattcaac ctattggtgc

9181 tttggacata tcagcatcta tagtagctgg tggtattgta gctatcgtag taacatgcct

9241 tgcctactat tttatgaggt ttagaagagc ttttggtgaa tacagtcatg tagttgcctt

9301 taatacttta ctattcctta tgtcattcac tgtactctgt ttaacaccag tttactcatt

9361 cttacctggt gtttattctg ttatttactt gtacttgaca ttttatctta ctaatgatgt

9421 ttctttttta gcacatattc agtggatggt tatgttcaca cctttagtac ctttctggat

9481 aacaattgct tatatcattt gtatttccac aaagcatttc tattggttct ttagtaatta

9541 cctaaagaga cgtgtagtct ttaatggtgt ttcctttagt acttttgaag aagctgcgct

9601 gtgcaccttt ttgttaaata aagaaatgta tctaaagttg cgtagtgatg tgctattacc

9661 tcttacgcaa tataatagat acttagctct ttataataag tacaagtatt ttagtggagc

9721 aatggataca actagctaca gagaagctgc ttgttgtcat ctcgcaaagg ctctcaatga

9781 cttcagtaac tcaggttctg atgttcttta ccaaccacca caaatctcta tcacctcagc

9841 tgttttgcag agtggtttta gaaaaatggc attcccatct ggtaaagttg agggttgtat

9901 ggtacaagta acttgtggta caactacact taacggtctt tggcttgatg acgtagttta

9961 ctgtccaaga catgtgatct gcacctctga agacatgctt aaccctaatt atgaagattt

10021 actcattcgt aagtctaatc ataatttctt ggtacaggct ggtaatgttc aactcagggt

10081 tattggacat tctatgcaaa attgtgtact taagcttaag gttgatacag ccaatcctaa

10141 gacacctaag tataagtttg ttcgcattca accaggacag actttttcag tgttagcttg

10201 ttacaatggt tcaccatctg gtgtttacca atgtgctatg aggcacaatt tcactattaa

10261 gggttcattc cttaatggtt catgtggtag tgttggtttt aacatagatt atgactgtgt

10321 ctctttttgt tacatgcacc atatggaatt accaactgga gttcatgctg gcacagactt

10381 agaaggtaac ttttatggac cttttgttga caggcaaaca gcacaagcag ctggtacgga

10441 cacaactatt acagttaatg ttttagcttg gttgtacgct gctgttataa atggagacag

10501 gtggtttctc aatcgattta ccacaactct taatgacttt aaccttgtgg ctatgaagta

10561 caattatgaa cctctaacac aagaccatgt tgacatacta ggacctcttt ctgctcaaac

10621 tggaattgcc gttttagata tgtgtgcttc attaaaagaa ttactgcaaa atggtatgaa

10681 tggacgtacc atattgggta gtgctttatt agaagatgaa tttacacctt tcgatgttgt

10741 tagacaatgc tcaggtgtta ctttccaaag tgcagtgaaa agaacaatca agggtacaca

10801 ccactggttg ttactcacaa ttttgacttc acttttagtt ttagtccaga gtactcaatg

10861 gtctttgttc ttttttttgt atgaaaatgc ctttttacct tttgctatgg gtattattgc

10921 tatgtctgct tttgcaatga tgtttgtcaa acataagcat gcatttctct gtttgttttt

10981 gttaccttct cttgccactg tagcttattt taatatggtc tatatgcctg ctagttgggt

11041 gatgcgtatt atgacatggt tggatatggt tgatactagt tttaagctaa aagactgtgt

11101 tatgtatgca tcagctgtag tgttactaat ccttatgaca gcaagaactg tgtatgatga

11161 tggtgctagg agagtgtgga cacttatgaa tgtcttgaca ctcgtttata aagtttatta

11221 tggtaatgct ttagatcaag ccatttccat gtgggctctt ataatctctg ttacttctaa

11281 ctactcaggt gtagttacaa ctgtcatgtt tttggccaga ggtgttgttt ttatgtgtgt

11341 tgagtattgc cctattttct tcataactgg taatacactt cagtgtataa tgctagttta

11401 ttgtttctta ggctattttt gtacttgtta ctttggcctc ttttgtttac tcaaccgcta

11461 ctttagactg actcttggtg tttatgatta cttagtttct acacaggagt ttagatatat

11521 gaattcacag ggactactcc cacccaagaa tagcatagat gccttcaaac tcaacattaa

11581 attgttgggt gttggtggca aaccttgtat caaagtagcc actgtacagt ctaaaatgtc

11641 agatgtaaag tgcacatcag tagtcttact ctcagttttg caacaactca gagtagaatc

11701 atcatctaaa ttgtgggctc aatgtgtcca gttacacaat gacattctct tagctaaaga

11761 tactactgaa gcctttgaaa aaatggtttc actactttct gttttgcttt ccatgcaggg

11821 tgctgtagac ataaacaagc tttgtgaaga aatgctggac aacagggcaa ccttacaagc

11881 tatagcctca gagtttagtt cccttccatc atatgcagct tttgccactg ctcaagaagc

11941 ttatgagcag gctgttgcta atggtgattc tgaagttgtt cttaaaaagt tgaagaagtc

12001 tttgaatgtg gctaaatctg aatttgaccg tgatgcagcc atgcaacgta agttggaaaa

12061 gatggctgat caagctatga cccaaatgta taaacaggct agatctgagg acaagagggc

12121 aaaagttact agtgctatgc agacaatgct tttcactatg cttagaaagt tggataatga

12181 tgcactcaac aacattatca acaatgcaag agatggttgt gttcccttga acataatacc

12241 tcttacaaca gcagccaaac taatggttgt cataccagac tataacacat ataaaaatac

12301 gtgtgatggt acaacattta cttatgcatc agcattgtgg gaaatccaac aggttgtaga

12361 tgcagatagt aaaattgttc aacttagtga aattagtatg gacaattcac ctaatttagc

12421 atggcctctt attgtaacag ctttaagggc caattctgct gtcaaattac agaataatga

12481 gcttagtcct gttgcactac gacagatgtc ttgtgctgcc ggtactacac aaactgcttg

12541 cactgatgac aatgcgttag cttactacaa cacaacaaag ggaggtaggt ttgtacttgc

12601 actgttatcc gatttacagg atttgaaatg ggctagattc cctaagagtg atggaactgg

12661 tactatctat acagaactgg aaccaccttg taggtttgtt acagacacac ctaaaggtcc

12721 taaagtgaag tatttatact ttattaaagg attaaacaac ctaaatagag gtatggtact

12781 tggtagttta gctgccacag tacgtctaca agctggtaat gcaacagaag tgcctgccaa

12841 ttcaactgta ttatctttct gtgcttttgc tgtagatgct gctaaagctt acaaagatta

12901 tctagctagt gggggacaac caatcactaa ttgtgttaag atgttgtgta cacacactgg

12961 tactggtcag gcaataacag tcacaccgga agccaatatg gatcaagaat cctttggtgg

13021 tgcatcgtgt tgtctgtact gccgttgcca catagatcat ccaaatccta aaggattttg

13081 tgacttaaaa ggtaagtatg tacaaatacc tacaacttgt gctaatgacc ctgtgggttt

13141 tacacttaaa aacacagtct gtaccgtctg cggtatgtgg aaaggttatg gctgtagttg

13201 tgatcaactc cgcgaaccca tgcttcagtc agctgatgca caatcgtttt taaacgggtt

13261 tgcggtgtaa gtgcagcccg tcttacaccg tgcggcacag gcactagtac tgatgtcgta

13321 tacagggctt ttgacatcta caatgataaa gtagctggtt ttgctaaatt cctaaaaact

13381 aattgttgtc gcttccaaga aaaggacgaa gatgacaatt taattgattc ttactttgta

13441 gttaagagac acactttctc taactaccaa catgaagaaa caatttataa tttacttaag

13501 gattgtccag ctgttgctaa acatgacttc tttaagttta gaatagacgg tgacatggta

13561 ccacatatat cacgtcaacg tcttactaaa tacacaatgg cagacctcgt ctatgcttta

13621 aggcattttg atgaaggtaa ttgtgacaca ttaaaagaaa tacttgtcac atacaattgt

13681 tgtgatgatg attatttcaa taaaaaggac tggtatgatt ttgtagaaaa cccagatata

13741 ttacgcgtat acgccaactt aggtgaacgt gtacgccaag ctttgttaaa aacagtacaa

13801 ttctgtgatg ccatgcgaaa tgctggtatt gttggtgtac tgacattaga taatcaagat

13861 ctcaatggta actggtatga tttcggtgat ttcatacaaa ccacgccagg tagtggagtt

13921 cctgttgtag attcttatta ttcattgtta atgcctatat taaccttgac cagggcttta

13981 actgcagagt cacatgttga cactgactta acaaagcctt acattaagtg ggatttgtta

14041 aaatatgact tcacggaaga gaggttaaaa ctctttgacc gttattttaa atattgggat

14101 cagacatacc acccaaattg tgttaactgt ttggatgaca gatgcattct gcattgtgca

14161 aactttaatg ttttattctc tacagtgttc ccacttacaa gttttggacc actagtgaga

14221 aaaatatttg ttgatggtgt tccatttgta gtttcaactg gataccactt cagagagcta

14281 ggtgttgtac ataatcagga tgtaaactta catagctcta gacttagttt taaggaatta

14341 cttgtgtatg ctgctgaccc tgctatgcac gctgcttctg gtaatctatt actagataaa

14401 cgcactacgt gcttttcagt agctgcactt actaacaatg ttgcttttca aactgtcaaa

14461 cccggtaatt ttaacaaaga cttctatgac tttgctgtgt ctaagggttt ctttaaggaa

14521 ggaagttctg ttgaattaaa acacttcttc tttgctcagg atggtaatgc tgctatcagc

14581 gattatgact actatcgtta taatctacca acaatgtgtg atatcagaca actactattt

14641 gtagttgaag ttgttgataa gtactttgat tgttacgatg gtggctgtat taatgctaac

14701 caagtcatcg tcaacaacct agacaaatca gctggttttc catttaataa atggggtaag

14761 gctagacttt attatgattc aatgagttat gaggatcaag atgcactttt cgcatataca

14821 aaacgtaatg tcatccctac tataactcaa atgaatctta agtatgccat tagtgcaaag

14881 aatagagctc gcaccgtagc tggtgtctct atctgtagta ctatgaccaa tagacagttt

14941 catcaaaaat tattgaaatc aatagccgcc actagaggag ctactgtagt aattggaaca

15001 agcaaattct atggtggttg gcacaatatg ttaaaaactg tttatagtga tgtagaaaac

15061 cctcacctta tgggttggga ttatcctaaa tgtgatagag ccatgcctaa catgcttaga

15121 attatggcct cacttgttct tgctcgcaaa catacaacgt gttgtagctt gtcacaccgt

15181 ttctatagat tagctaatga gtgtgctcaa gtattgagtg aaatggtcat gtgtggcggt

15241 tcactatatg ttaaaccagg tggaacctca tcaggagatg ccacaactgc ttatgctaat

15301 agtgttttta acatttgtca agctgtcacg gccaatgtta atgcactttt atctactgat

15361 ggtaacaaaa ttgccgataa gtatgtccgc aatttacaac acagacttta tgagtgtctc

15421 tatagaaata gagatgttga cacagacttt gtgaatgagt tttacgcata tttgcgtaaa

15481 catttctcaa tgatgatact ctctgacgat gctgttgtgt gtttcaatag cacttatgca

15541 tctcaaggtc tagtggctag cataaagaac tttaagtcag ttctttatta tcaaaacaat

15601 gtttttatgt ctgaagcaaa atgttggact gagactgacc ttactaaagg acctcatgaa

15661 ttttgctctc aacatacaat gctagttaaa cagggtgatg attatgtgta ccttccttac

15721 ccagatccat caagaatcct aggggccggc tgttttgtag atgatatcgt aaaaacagat

15781 ggtacactta tgattgaacg gttcgtgtct ttagctatag atgcttaccc acttactaaa

15841 catcctaatc aggagtatgc tgatgtcttt catttgtact tacaatacat aagaaagcta

15901 catgatgagt taacaggaca catgttagac atgtattctg ttatgcttac taatgataac

15961 acttcaaggt attgggaacc tgagttttat gaggctatgt acacaccgca tacagtctta

16021 caggctgttg gggcttgtgt tctttgcaat tcacagactt cattaagatg tggtgcttgc

16081 atacgtagac cattcttatg ttgtaaatgc tgttacgacc atgtcatatc aacatcacat

16141 aaattagtct tgtctgttaa tccgtatgtt tgcaatgctc caggttgtga tgtcacagat

16201 gtgactcaac tttacttagg aggtatgagc tattattgta aatcacataa accacccatt

16261 agttttccat tgtgtgctaa tggacaagtt tttggtttat ataaaaatac atgtgttggt

16321 agcgataatg ttactgactt taatgcaatt gcaacatgtg actggacaaa tgctggtgat

16381 tacattttag ctaacacctg tactgaaaga ctcaagcttt ttgcagcaga aacgctcaaa

16441 gctactgagg agacatttaa actgtcttat ggtattgcta ctgtacgtga agtgctgtct

16501 gacagagaat tacatctttc atgggaagtt ggtaaaccta gaccaccact taaccgaaat

16561 tatgtcttta ctggttatcg tgtaactaaa aacagtaaag tacaaatagg agagtacacc

16621 tttgaaaaag gtgactatgg tgatgctgtt gtttaccgag gtacaacaac ttacaaatta

16681 aatgttggtg attattttgt gctgacatca catacagtaa tgccattaag tgcacctaca

16741 ctagtgccac aagagcacta tgttagaatt actggcttat acccaacact caatatctca

16801 gatgagtttt ctagcaatgt tgcaaattat caaaaggttg gtatgcaaaa gtattctaca

16861 ctccagggac cacctggtac tggtaagagt cattttgcta ttggcctagc tctctactac

16921 ccttctgctc gcatagtgta tacagcttgc tctcatgccg ctgttgatgc actatgtgag

16981 aaggcattaa aatatttgcc tatagataaa tgtagtagaa ttatacctgc acgtgctcgt

17041 gtagagtgtt ttgataaatt caaagtgaat tcaacattag aacagtatgt cttttgtact

17101 gtaaatgcat tgcctgagac gacagcagat atagttgtct ttgatgaaat ttcaatggcc

17161 acaaattatg atttgagtgt tgtcaatgcc agattacgtg ctaagcacta tgtgtacatt

17221 ggcgaccctg ctcaattacc tgcaccacgc acattgctaa ctaagggcac actagaacca

17281 gaatatttca attcagtgtg tagacttatg aaaactatag gtccagacat gttcctcgga

17341 acttgtcggc gttgtcctgc tgaaattgtt gacactgtga gtgctttggt ttatgataat

17401 aagcttaaag cacataaaga caaatcagct caatgcttta aaatgtttta taagggtgtt

17461 atcacgcatg atgtttcatc tgcaattaac aggccacaaa taggcgtggt aagagaattc

17521 cttacacgta accctgcttg gagaaaagct gtctttattt caccttataa ttcacagaat

17581 gctgtagcct caaagatttt gggactacca actcaaactg ttgattcatc acagggctca

17641 gaatatgact atgtcatatt cactcaaacc actgaaacag ctcactcttg taatgtaaac

17701 agatttaatg ttgctattac cagagcaaaa gtaggcatac tttgcataat gtctgataga

17761 gacctttatg acaagttgca atttacaagt cttgaaattc cacgtaggaa tgtggcaact

17821 ttacaagctg aaaatgtaac aggactcttt aaagattgta gtaaggtaat cactgggtta

17881 catcctacac aggcacctac acacctcagt gttgacacta aattcaaaac tgaaggttta

17941 tgtgttgacg tacctggcat acctaaggac atgacctata gaagactcat ctctatgatg

18001 ggttttaaaa tgaattatca agttaatggt taccctaaca tgtttatcac ccgcgaagaa

18061 gctataagac atgtacgtgc atggattggc ttcgatgtcg aggggtgtca tgctactaga

18121 gaagctgttg gtaccaattt acctttacag ctaggttttt ctacaggtgt taacctagtt

18181 gctgtaccta caggttatgt tgatacacct aataatacag atttttccag agttagtgct

18241 aaaccaccgc ctggagatca atttaaacac ctcataccac ttatgtacaa aggacttcct

18301 tggaatgtag tgcgtataaa gattgtacaa atgttaagtg acacacttaa aaatctctct

18361 gacagagtcg tatttgtctt atgggcacat ggctttgagt tgacatctat gaagtatttt

18421 gtgaaaatag gacctgagcg cacctgttgt ctatgtgata gacgtgccac atgcttttcc

18481 actgcttcag acacttatgc ctgttggcat cattctattg gatttgatta cgtctataat

18541 ccgtttatga ttgatgttca acaatggggt tttacaggta acctacaaag caaccatgat

18601 ctgtattgtc aagtccatgg taatgcacat gtagctagtt gtgatgcaat catgactagg

18661 tgtctagctg tccacgagtg ctttgttaag cgtgttgact ggactattga atatcctata

18721 attggtgatg aactgaagat taatgcggct tgtagaaagg ttcaacacat ggttgttaaa

18781 gctgcattat tagcagacaa attcccagtt cttcacgaca ttggtaaccc taaagctatt

18841 aagtgtgtac ctcaagctga tgtagaatgg aagttctatg atgcacagcc ttgtagtgac

18901 aaagcttata aaatagaaga attattctat tcttatgcca cacattctga caaattcaca

18961 gatggtgtat gcctattttg gaattgcaat gtcgatagat atcctgctaa ttccattgtt

19021 tgtagatttg acactagagt gctatctaac cttaacttgc ctggttgtga tggtggcagt

19081 ttgtatgtaa ataaacatgc attccacaca ccagcttttg ataaaagtgc ttttgttaat

19141 ttaaaacaat taccattttt ctattactct gacagtccat gtgagtctca tggaaaacaa

19201 gtagtgtcag atatagatta tgtaccacta aagtctgcta cgtgtataac acgttgcaat

19261 ttaggtggtg ctgtctgtag acatcatgct aatgagtaca gattgtatct cgatgcttat

19321 aacatgatga tctcagctgg ctttagcttg tgggtttaca aacaatttga tacttataac

19381 ctctggaaca cttttacaag acttcagagt ttagaaaatg tggcttttaa tgttgtaaat

19441 aagggacact ttgatggaca acagggtgaa gtaccagttt ctatcattaa taacactgtt

19501 tacacaaaag ttgatggtgt tgatgtagaa ttgtttgaaa ataaaacaac attacctgtt

19561 aatgtagcat ttgagctttg ggctaagcgc aacattaaac cagtaccaga ggtgaaaata

19621 ctcaataatt tgggtgtgga cattgctgct aatactgtga tctgggacta caaaagagat

19681 gctccagcac atatatctac tattggtgtt tgttctatga ctgacatagc caagaaacca

19741 actgaaacga tttgtgcacc actcactgtc ttttttgatg gtagagttga tggtcaagta

19801 gacttattta gaaatgcccg taatggtgtt cttattacag aaggtagtgt taaaggttta

19861 caaccatctg taggtcccaa acaagctagt cttaatggag tcacattaat tggagaagcc

19921 gtaaaaacac agttcaatta ttataagaaa gttgatggtg ttgtccaaca attacctgaa

19981 acttacttta ctcagagtag aaatttacaa gaatttaaac ccaggagtca aatggaaatt

20041 gatttcttag aattagctat ggatgaattc attgaacggt ataaattaga aggctatgcc

20101 ttcgaacata tcgtttatgg agattttagt catagtcagt taggtggttt acatctactg

20161 attggactag ctaaacgttt taaggaatca ccttttgaat tagaagattt tattcctatg

20221 gacagtacag ttaaaaacta tttcataaca gatgcgcaaa caggttcatc taagtgtgtg

20281 tgttctgtta ttgatttatt acttgatgat tttgttgaaa taataaaatc ccaagattta

20341 tctgtagttt ctaaggttgt caaagtgact attgactata cagaaatttc atttatgctt

20401 tggtgtaaag atggccatgt agaaacattt tacccaaaat tacaatctag tcaagcgtgg

20461 caaccgggtg ttgctatgcc taatctttac aaaatgcaaa gaatgctatt agaaaagtgt

20521 gaccttcaaa attatggtga tagtgcaaca ttacctaaag gcataatgat gaatgtcgca

20581 aaatatactc aactgtgtca atatttaaac acattaacat tagctgtacc ctataatatg

20641 agagttatac attttggtgc tggttctgat aaaggagttg caccaggtac agctgtttta

20701 agacagtggt tgcctacggg tacgctgctt gtcgattcag atcttaatga ctttgtctct

20761 gatgcagatt caactttgat tggtgattgt gcaactgtac atacagctaa taaatgggat

20821 ctcattatta gtgatatgta cgaccctaag actaaaaatg ttacaaaaga aaatgactct

20881 aaagagggtt ttttcactta catttgtggg tttatacaac aaaagctagc tcttggaggt

20941 tccgtggcta taaagataac agaacattct tggaatgctg atctttataa gctcatggga

21001 cacttcgcat ggtggacagc ctttgttact aatgtgaatg cgtcatcatc tgaagcattt

21061 ttaattggat gtaattatct tggcaaacca cgcgaacaaa tagatggtta tgtcatgcat

21121 gcaaattaca tattttggag gaatacaaat ccaattcagt tgtcttccta ttctttattt

21181 gacatgagta aatttcccct taaattaagg ggtactgctg ttatgtcttt aaaagaaggt

21241 caaatcaatg atatgatttt atctcttctt agtaaaggta gacttataat tagagaaaac

21301 aacagagttg ttatttctag tgatgttctt gttaacaact aaacgaacaa tgtttgtttt

21361 tcttgtttta ttgccactag tctctagtca gtgtgttaat cttacaacca gaactcaatt

21421 accccctgca tacactaatt ctttcacacg tggtgtttat taccctgaca aagttttcag

21481 atcctcagtt ttacattcaa ctcaggactt gttcttacct ttcttttcca atgttacttg

21541 gttccatgtt atctctggga ccaatggtac taagaggttt gataaccctg tcctaccatt

21601 taatgatggt gtttattttg cttccattga gaagtctaac ataataagag gctggatttt

21661 tggtactact ttagattcga agacccagtc cctacttatt gttaataacg ctactaatgt

21721 tgttattaaa gtctgtgaat ttcaattttg taatgatcca tttttggacc acaaaaacaa

21781 caaaagttgg atggaaagtg agttcagagt ttattctagt gcgaataatt gcacttttga

21841 atatgtctct cagccttttc ttatggacct tgaaggaaaa cagggtaatt tcaaaaatct

21901 tagggaattt gtgtttaaga atattgatgg ttattttaaa atatattcta agcacacgcc

21961 tattaattta gtgcgtgagc cagaagatct ccctcagggt ttttcggctt tagaaccatt

22021 ggtagatttg ccaataggta ttaacatcac taggtttcaa actttacttg ctttacatag

22081 aagttatttg actcctggtg attcttcttc aggttggaca gctggtgctg cagcttatta

22141 tgtgggttat cttcaaccta ggacttttct attaaaatat aatgaaaatg gaaccattac

22201 agatgctgta gactgtgcac ttgaccctct ctcagaaaca aagtgtacgt tgaaatcctt

22261 cactgtagaa aaaggaatct atcaaacttc taactttaga gtccaaccaa cagaatctat

22321 tgttagattt cctaatatta caaacttgtg cccttttgat gaagttttta acgccaccag

22381 atttgcatct gtttatgctt ggaacaggaa gagaatcagc aactgtgttg ctgattattc

22441 tgtcctatat aatctcgcac catttttcac ttttaagtgt tatggagtgt ctcctactaa

22501 attaaatgat ctctgcttta ctaatgtcta tgcagattca tttgtaatta gaggtgatga

22561 agtcagacaa atcgctccag ggcaaactgg aaatattgct gattataatt ataaattacc

22621 agatgatttt acaggctgcg ttatagcttg gaattctaac aagcttgatt ctaaggttag

22681 tggtaattat aattacctgt atagattgtt taggaagtct aatctcaaac cttttgagag

22741 agatatttca actgaaatct atcaggccgg taacaaacct tgtaatggtg ttgcaggttt

22801 taattgttac tttcctttac gatcatatag tttccgaccc acttatggtg ttggtcacca

22861 accatacaga gtagtagtac tttcttttga acttctacat gcaccagcaa ctgtttgtgg

22921 acctaaaaag tctactaatt tggttaaaaa caaatgtgtc aatttcaact tcaatggttt

22981 aaaaggcaca ggtgttctta ctgagtctaa caaaaagttt ctgcctttcc aacaatttgg

23041 cagagacatt gctgacacta ctgatgctgt ccgtgatcca cagacacttg agattcttga

23101 cattacacca tgttcttttg gtggtgtcag tgttataaca ccaggaacaa atacttctaa

23161 ccaggttgct gttctttatc agggtgttaa ctgcacagaa gtccctgttg ctattcatgc

23221 agatcaactt actcctactt ggcgtgttta ttctacaggt tctaatgttt ttcaaacacg

23281 tgcaggctgt ttaatagggg ctgaatatgt caacaactca tatgagtgtg acatacccat

23341 tggtgcaggt atatgcgcta gttatcagac tcagactaag tctcatcggc gggcacgtag

23401 tgtagctagt caatccatca ttgcctacac tatgtcactt ggtgcagaaa attcagttgc

23461 ttactctaat aactctattg ccatacccac aaattttact attagtgtta ccacagaaat

23521 tctaccagtg tctatgacca agacatcagt agattgtaca atgtacattt gtggtgattc

23581 aactgaatgc agcaatcttt tgttgcaata tggcagtttt tgtacacaat taaaacgtgc

23641 tttaactgga atagctgttg aacaagacaa aaacacccaa gaagtttttg cacaagtcaa

23701 acaaatttac aaaacaccac caattaaata ttttggtggt tttaattttt cacaaatatt

23761 accagatcca tcaaaaccaa gcaagaggtc atttattgaa gatctacttt tcaacaaagt

23821 gacacttgca gatgctggct tcatcaaaca atatggtgat tgccttggtg atattgctgc

23881 tagagacctc atttgtgcac aaaagtttaa aggccttact gttttgccac ctttgctcac

23941 agatgaaatg attgctcaat acacttctgc actgttagcg ggtacaatca cttctggttg

24001 gacctttggt gcaggtgctg cattacaaat accatttgct atgcaaatgg cttataggtt

24061 taatggtatt ggagttacac agaatgttct ctatgagaac caaaaattga ttgccaacca

24121 atttaatagt gctattggca aaattcaaga ctcactttct tccacagcaa gtgcacttgg

24181 aaaacttcaa gatgtggtca accataatgc acaagcttta aacacgcttg ttaaacaact

24241 tagctccaaa tttggtgcaa tttcaagtgt tttaaatgat atcttttcac gtcttgacaa

24301 agttgaggct gaagtgcaaa ttgataggtt gatcacaggc agacttcaaa gtttgcagac

24361 atatgtgact caacaattaa ttagagctgc agaaatcaga gcttctgcta atcttgctgc

24421 tactaaaatg tcagagtgtg tacttggaca atcaaaaaga gttgattttt gtggaaaggg

24481 ctatcatctt atgtccttcc ctcagtcagc acctcatggt gtagtcttct tgcatgtgac

24541 ttatgtccct gcacaagaaa agaacttcac aactgctcct gccatttgtc atgatggaaa

24601 agcacacttt cctcgtgaag gtgtctttgt ttcaaatggc acacactggt ttgtaacaca

24661 aaggaatttt tatgaaccac aaatcattac tacagacaac acatttgtgt ctggtaactg

24721 tgatgttgta ataggaattg tcaacaacac agtttatgat cctttgcaac ctgaattaga

24781 ttcattcaag gaggagttag ataaatattt taagaatcat acatcaccag atgttgattt

24841 aggtgacatc tctggcatta atgcttcagt tgtaaacatt caaaaagaaa ttgaccgcct

24901 caatgaggtt gccaagaatt taaatgaatc tctcatcgat ctccaagaac ttggaaagta

24961 tgagcagtat ataaaatggc catggtacat ttggctaggt tttatagctg gcttgattgc

25021 catagtaatg gtgacaatta tgctttgctg tatgaccagt tgctgtagtt gtctcaaggg

25081 ctgttgttct tgtggatcct gctgcaaatt tgatgaagac gactctgagc cagtgctcaa

25141 aggagtcaaa ttacattaca cataaacgaa cttatggatt tgtttatgag aatcttcaca

25201 attggaactg taactttgaa gcaaggtgaa atcaaggatg ctactccttc agattttgtt

25261 cgcgctactg caacgatacc gatacaagcc tcactccctt tcggatggct tattgttggc

25321 gttgcacttc ttgctgtttt tcagagcgct tccaaaatca taactctcaa aaagagatgg

25381 caactagcac tctccaaggg tgttcacttt gtttgcaact tgctgttgtt gtttgtaaca

25441 gtttactcac accttttgct cgttgctgct ggccttgaag ccccttttct ctatctttat

25501 gctttagtct acttcttgca gagtataaac tttgtaagaa taataatgag gctttggctt

25561 tgctggaaat gccgttccaa aaacccatta ctttatgatg ccaactattt tctttgctgg

25621 catactaatt gttacgacta ttgtatacct tacaatagtg taacttcttc aattgtcatt

25681 acttcaggtg atggcacaac aagtcctatt tctgaacatg actaccagat tggtggttat

25741 actgaaaaat gggaatctgg agtaaaagac tgtgttgtat tacacagtta cttcacttca

25801 gactattacc agctgtactc aactcaattg agtacagaca ctggtgttga acatgttacc

25861 ttcttcatct acaataaaat tgttgatgag cctgaagaac atgtccaaat tcacacaatc

25921 gacggttcat ccggagttgt taatccagta atggaaccaa tttatgatga accgacgacg

25981 actactagcg tgcctttgta agcacaagct gatgagtacg aacttatgta ctcattcgtt

26041 tcggaagaga taggtacgtt aatagttaat agcgtacttc tttttcttgc tttcgtggta

26101 ttcttgctag ttacactagc catccttact gcgcttcgat tgtgtgcgta ctgctgcaat

26161 attgttaacg tgagtcttgt aaaaccttct ttttacgttt actctcgtgt taaaaatctg

26221 aattcttcta gagttcctga tcttctggtc taaacgaact aaatattata ttagtttttc

26281 tgtttggaac tttaatttta gccatggcag gttccaacgg tactattacc gttgaagagc

26341 ttaaaaagct ccttgaagaa tggaacctag taataggttt cctattcctt acatggattt

26401 gtcttctaca atttgcctat gccaacagga ataggttttt gtatataatt aagttaattt

26461 tcctctggct gttatggcca gtaactttaa cttgttttgt gcttgctgct gtttacagaa

26521 taaattggat caccggtgga attgctatcg caatggcttg tcttgtaggc ttgatgtggc

26581 tcagctactt cattgcttct ttcagactgt ttgcgcgtac gcgttccatg tggtcattca

26641 atccagaaac taacattctt ctcaacgtgc cactccatgg cactattctg accagaccgc

26701 ttctagaaag tgaactcgta atcggagctg tgatccttcg tggacatctt cgtattgctg

26761 gacaccatct aggacgctgt gacatcaagg acctgcctaa agaaatcact gttgctacat

26821 cacgaacgct ttcttattac aaattgggag cttcgcagcg tgtagcaggt gactcaggtt

26881 ttgctgcata cagtcgctac aggattggca actataaatt aaacacagac cattccagta

26941 gcagtgacaa tattgctttg cttgtacagt aagtgacaac agatgtttca tctcgttgac

27001 tttcaggtta ctatagcaga gatattacta attattatgc ggacttttaa agtttccatt

27061 tggaatcttg attacatcat aaacctcata attaaaaatt tatctaagtc actaactgag

27121 aataaatatt ctcaattaga tgaagagcaa ccaatggaga ttgattaaac gaacatgaaa

27181 attattcttt tcttggcact gataacactc gctacttgtg agctttatca ctaccaagag

27241 tgtgttagag gtacaacagt acttttaaaa gaaccttgct cttctggaac atacgagggc

27301 aattcaccat ttcatcctct agctgataac aaatttgcac tgacttgctt tagcactcaa

27361 tttgcttttg cttgtcctga cggcgtaaaa cacgtctatc agttacgtgc cagatcagtt

27421 tcacctaaac tgttcatcag acaagaggaa gttcaagaac tttactctcc aatttttctt

27481 attgttgcgg caatagtgtt tataacactt tgcttcacac tcaaaagaaa gacagaatga

27541 ttgaactttc attaattgac ttctatttgt gctttttagc ctttctgtta ttccttgttt

27601 taattatgct tattatcttt tggttctcac ttgaactgca agatcataat gaaacttgtc

27661 acgcctaaac gaacatgaaa tttcttgttt tcttaggaat catcacaact gtagctgcat

27721 ttcaccaaga atgtagttta cagtcatgta ctcaacatca accatatgta gttgatgacc

27781 cgtgtcctat tcacttctat tctaaatggt atattagagt aggagctaga aaatcagcac

27841 ctttaattga attgtgcgtg gatgaggctg gttctaaatc acccattcag tacatcgata

27901 tcggtaatta tacagtttcc tgtttacctt ttacaattaa ttgccaggaa cctaaattgg

27961 gtagtcttgt agtgcgttgt tcgttctatg aagacttttt agagtatcat gacgttcgtg

28021 ttgttttaga tttcatctaa acgaacaaac ttaaatgtct gataatggac cccaaaatca

28081 gcgaaatgca ctccgcatta cgtttggtgg accctcagat tcaactggca gtaaccagaa

28141 tggtggggcg cgatcaaaac aacgtcggcc ccaaggttta cccaataata ctgcgtcttg

28201 gttcaccgct ctcactcaac atggcaagga agaccttaaa ttccctcgag gacaaggcgt

28261 tccaattaac accaatagca gtccagatga ccaaattggc tactaccgaa gagctaccag

28321 acgaattcgt ggtggtgacg gtaaaatgaa agatctcagt ccaagatggt atttctacta

28381 cctaggaact gggccagaag ctggacttcc ctatggtgct aacaaagacg gcatcatatg

28441 ggttgcaact gagggagcct tgaatacacc aaaagatcac attggcaccc gcaatcctgc

28501 taacaatgct gcaatcgtgc tacaacttcc tcaaggaaca acattgccaa aaggcttcta

28561 cgcagaaggg agcagaggcg gcagtcaagc ctcttctcgt tcctcatcac gtagtcgcaa

28621 cagttcaaga aattcaactc caggcagcag taaacgaact tctcctgcta gaatggctgg

28681 caatggcggt gatgctgctc ttgctttgct gctgcttgac agattgaacc agcttgagag

28741 caaaatgtct ggtaaaggcc aacaacaaca aggccaaact gtcactaaga aatctgctgc

28801 tgaggcttct aagaagcctc ggcaaaaacg tactgccact aaagcataca atgtaacaca

28861 agctttcggc agacgtggtc cagaacaaac ccaaggaaat tttggggacc aggaactaat

28921 cagacaagga actgattaca aacattggcc gcaaattgca caatttgccc ccagcgcttc

28981 agcgttcttc ggaatgtcgc gcattggcat ggaagtcaca ccttcgggaa cgtggttgac

29041 ctacacaggt gccatcaaat tggatgacaa agatccaaat ttcaaagatc aagtcatttt

29101 gctgaataag catattgacg catacaaaac attcccacca acagagccta aaaaggacaa

29161 aaagaagaag gctgatgaaa ctcaagcctt accgcagaga cagaagaaac agcaaactgt

29221 gactcttctt cctgctgcag atttggatga tttctccaaa caattgcaac aatccatgag

29281 cagtgctgac tcaactcagg cctaaactca tgcagaccac acaaggcaga tgggctatat

29341 aaacgttttc gcttttccgt ttacgatata tagtctactc ttgtgcagaa tgaattctcg

29401 taactacata gcacaagtag atgtagttaa ctttaatctc acatagcaat ctttaatcag

29461 tgtgtaacat tagggaggac ttgaaagagc caccacattt tcac

//