Human respiratory syncytial virus B strain HRSV/B/Texas.USA/121301314/2014, complete genome

GenBank: OK649755.1

FASTA Graphics

Go to:

```
LOCUS       OK649755              15251 bp    cRNA    linear   VRL 07-NOV-2021
DEFINITION  Human respiratory syncytial virus B strain
            HRSV/B/Texas.USA/121301314/2014, complete genome.
ACCESSION   OK649755
VERSION     OK649755.1
DBLINK      BioProject: PRJNA322324
KEYWORDS    .
SOURCE      Human respiratory syncytial virus B
  ORGANISM  Human respiratory syncytial virus B
            Viruses; Riboviria; Orthornavirae; Negarnaviricota;
            Haploviricotina; Monjiviricetes; Mononegavirales; Pneumoviridae;
            Orthopneumovirus.
REFERENCE   1  (bases 1 to 15251)
  AUTHORS   Wang,L., Ng,T.F.F., Castro,C.J., Marine,R.L., Magana,L.C.,
            Esona,M., Peret,T.C.T. and Thornburg,N.J.
  TITLE     Next-Generation Sequencing of Human Respiratory Syncytial Virus
            Subgroups A and B Genomes
  JOURNAL   J Virol Methods (2021) In press
   PUBMED   34673119
  REMARK    Publication Status: Available-Online prior to print
REFERENCE   2  (bases 1 to 15251)
  AUTHORS   Wang,L., Ng,T.F.F., Castro,C.J., Marine,R.L., Magana,L.C.,
            Esona,M., Peret,T.C.T. and Thornburg,N.J.
  TITLE     Direct Submission
  JOURNAL   Submitted (22-OCT-2021) Respiratory Viruses Branch, Division of
            Viral Diseases, Centers for Disease Control and Prevention, 1600
            Clifton Rd. NE, Atlanta, GA 30329, USA
COMMENT     ##Assembly-Data-START##
            Assembly Method      :: SPAdes v. 3.9; Geneious v. R11
            Sequencing Technology :: Illumina
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
     source          1..15251
                     /organism="Human respiratory syncytial virus B"
                     /mol_type="viral cRNA"
                     /strain="HRSV/B/Texas.USA/121301314/2014"
                     /host="Homo sapiens"
                     /db_xref="taxon:208895"
                     /country="USA"
```

/collection_date="2014"
/note="subtype: B"
CDS 91..510
/note="NS1"
/codon_start=1
/product="nonstructural protein 1"
/protein_id="UDY80215.1"
/translation="MGCNSLSMIKVRLQNLFDNDEVALLKITCYTDKLILLTNALAKA
TIHTIKLNGIVFIHVITSSEVCPDNNIVVKSNFTTMPILQNGGYIWELIELTHCSQLN
GLIDDNCEIKFSKRLSDSVMTDYMNQISDLLGLDLHS"
CDS 618..992
/note="NS2"
/codon_start=1
/product="nonstructural protein 2"
/protein_id="UDY80216.1"
/translation="MSTTNDNTTMQRLMITDMRPLSMDSIITSLTKEIITHKFIYLIN
NECIVRKLDERQATFTFLVNYEMKLLHKVGSTKYKKYTEYNTKYGTFPMPIFINHGGF
LECIGIKPTKHTPIIYKYDLNP"
CDS 1131..2306
/note="N"
/codon_start=1
/product="nucleoprotein"
/protein_id="UDY80217.1"
/translation="MALSKVKLNDTLNKDQLLSSSKYTIQRSTGDNIDTPNYDVQKHL
NKLCGMLLITEDANHKFTGLIGMLYAMSRLGREDTIKILKDAGYHVKANGVDITTYRQ
DINGKEMKFEVLTLSSLTSEIQVNIEIESRKSYKKMLKEMGEVAPEYRHDSPDCGMII
LCIAALVITKLAAGDRSGLTAVIRRANNVLKNEIKRYKGLIPKDIANSFYEVFEKHPH
LIDVFVHFGIAQSSTRGGSRVEGIFAGLFMNAYGSGQVMLRWGVLAKSVKNIMLGHAS
VQAEMEQVVEVYEYAQKLGGEAGFYHILNNPKASLLSLTQFPNFSSVVLGNAAGLGIM
GEYRGTPRNQDLYDAAKAYAEQLKENGVINYSVLDLTTEELEAIKHQLNPKEDDVEL"
CDS 2339..3064
/note="P"
/codon_start=1
/product="phosphoprotein"
/protein_id="UDY80218.1"
/translation="MEKFAPEFHGEDANNKATKFLESIKGKFASSKDPKKKDSIISVN
SIDIEVTKESPITSGTNIINPTSEADSTLETKANYPRKPLVSFKEDLTPSDNPFSKLY
KETIETFDNNEEESSYSYEEINDQTNDNITARLDRIDEKLSEILGMLHTLVVASAGPT
SARDGIRDAMVGLREEMIEKIRAEALMTNDRLEAMARLRNEESEKMTKDTSDEVSLNP
TSKKLSDLLEDNDSDNDLSLDDF"
CDS 3255..4025
/note="M"
/codon_start=1
/product="matrix protein"

/protein_id="UDY80219.1"
/translation="METYVNKLHEGSTYTAAVQYNVLEKDDDPASLTIWVPMFQSSVP
ADLLIKELASINILVKQISTPKGPSLRVTINSRSAVLAQMPSNFTISANVSLDERSKL
AYDVTTPCEIKACSLTCLKVKSMLTTVKDLTMKTFNPTHEIIALCEFENIMTSKRVII
PTYLRSISVKNKDLNSLENIATTEFKNAITNAKIIPYAGLVLVITVTDNKGAFKYIKP
QSQFIVDLGAYLEKESIYYVTTNWKHTATRFSIKPLED"
CDS 4294..4491
/note="SH"
/codon_start=1
/product="small hydrophobic protein"
/protein_id="UDY80220.1"
/translation="MGNTSITIEFTSKFWPYFTLIHMILTLISLLIIITIMIAILNKL
SEHKTFCNETLEQGQMYQINT"
CDS 4681..5634
/note="G"
/codon_start=1
/product="attachment glycoprotein"
/protein_id="UDY80221.1"
/translation="MSKNKNQRTARTLEKTWDTLNHLIVISSCLYKLNLKSIAQIALS
VLAMIISTSLIIAAIIFIISANHKVTLTTVTVQTIKNHTEKNITTYLTQVSPERVSPS
NQPTTTPPIHTNSATISPNTKSETHHTTAQTKGRTSTPTQNNKPNTKPRPKNPPKKDD
YHFEVFNFVPCSICGNNQLCKSICKTIPSNKPKKKPTTKPTNKPPTKTTNKRDPKTLA
KTPKKETTINPTKKPTPKTTERDTSTPQSTVLDTTTSKHTERDTSTSQSIALDTTTSK
HTIQQQSLYSTTPENTPNSTQTPTASEPSTSNSTQKLQSYA"
CDS 5711..7435
/note="F"
/codon_start=1
/product="fusion protein"
/protein_id="UDY80222.1"
/translation="MELLIHRSSAIFLTFAINALYLTSSQNITEEFYQSTCSAVSRGY
LSALRTGWYTSVITIELSNIKETKCNGTDTKVKLIKQELDKYKNAVTELQLLMQNTPA
ANNRARREAPQYMNYTINTTKNLNVSISKKRKRRFLGFLLGVGSAIASGIAVSKVLHL
EGEVNKIKNALLSTNKAVVSLSNGVSVLTSKVLDLKNYINNQLLPIVNQQSCRISNIE
TVIEFQQKNSRLLEITREFSVNAGVTTPLSTYMLTNSELLSLINDMPITNDQKKLMSS
NVQIVRQQSYSIMSIIKEEVLAYVVQLPIYGVIDTPCWKLHTSPLCTTNIKEGSNICL
TRTDRGWYCDNAGSVSFFPQADTCKVQSNRVFCDTMNSLTLPSEVSLCNTDIFNSKYD
CKIMTSKTDISSSVITSLGAIVSCYGKTKCTASNKNRGIIKTFSNGCDYVSNKGVDTV
SVGNTLYYVNKLEGKNLYVKGEPIINYYDPLVFPSDEFDASISQVNEKINQSLAFIRR
SDELLHNVNTGKSTTNIMITAIIIVIIVVLLSLIAIGLLLYCKAKNTPVTLSKDQLSG
INNIAFSK"
CDS 7662..8249
/note="M2-1"
/codon_start=1
/product="matrix protein 2-1"

/protein_id="UDY80223.1"
/translation="MSRRNPCKFEIRGHCLNGRRCHYSHNYFEWPPHALLVRQNFMLN
KILKSMDKSIDTLSEISGAAELDRTEEYALGIVGVLESYIGSINNITKQSACVAMSKL
LIEINSDDIKKLRDNEEPNSPKIRVYNTVISYIESNRKNSKQTIHLLKRLPADVLKKT
IKNTLDIHKSITISNPKESTVSDQNDQTKNNDITG"
CDS 8215..8487
/note="M2-2"
/codon_start=1
/product="matrix protein 2-2"
/protein_id="UDY80224.1"
/translation="MTKPKIMILPDKYPCSISSILISSENMIATFNHKDILQFNHNHL
DNHQCLLNHIFDEIHWTPKNLLDATQQFLQHLNIPEDIYTVYILVS"
CDS 8553..15053
/note="L"
/codon_start=1
/product="RNA-directed RNA polymerase"
/protein_id="UDY80225.1"
/translation="MDPIINGSSANVYLTDSYLKGVISFSECNALGSYLFNGPYLKND
YTNLISRQSPLLEHMNLKKLTITQSLISRYHKGELKLEEPTYFQSLLMTYKSMSSSEQ
IATTNLLKKIIRRAIEISDVKVYAILNKLGLKEKDRVKPNNNSGDENSVLTTIIKDDI
LSAVENNQSYTNSDKNYSVNQNINIKTTLLKKLMCSMQHPPSWLIHWFNLYTKLNNIL
TQYRSNEVKSHGFILIDNQTLSGFQFILNQYGCIVYHKGLKKITTTTYNQFLTWKDIS
LSRLNVCLITWISNCLNTLNKSLGLRCGFNNVVLSQLFLYGDCILKLFHNEGFYIIKE
VEGFIMSLILNITEEDQFRKRFYNSMLNNITDAAIKAQKDLLSRVCHTLLDKTVSDNI
INGKWIILLSKFLKLIKLAGDNNLNNLSELYFLFRIFGHPMVDERQAMDAVRINCNET
KFYLLSSLSTLRGAFIYRIIKGFVNTYNRWPTLRNAIVLPLRWLNYYKLNTYPSLLEI
TENDLIILSGLRFYREFHLPKKVDLEMIINDKAISPPKDLIWTSFPRNYMPSHIQNYI
EHEKLKFSESDRSRRVLEYYLRDNKFNECDLYNCVVNQSYLNNSNHVVSLTGKERELS
VGRMFAMQPGMFRQIQILAEKMIAENILQFFPESLTRYGDLELQKILELKAGISNKSN
RYNDNYNNYISKCSIITDLSKFNQAFRYETSCICSDVLDELHGVQSLFSWLHLTIPLV
TIICTYRHAPPFIKDHVVNLNEVDEQSGLYRYHMGGIEGWCQKLWTIEAISLLDLISL
KGKFSITALINGDNQSIDISKPVRLIEGQTHAQADYLLALNSLKLLYKEYAGIGHKLK
GTETYISRDMQFMSKTIQHNGVYYPASIKKVLRVGPWINTILDDFKVSLESIGSLTQE
LEYRGESLLCSLIFRNIWLYNQIALQLRNHALCNNKLYLDILKVLKHLKTFFNLDSID
TALSLYMNLPMLLGGGDPNLLYRSFYRRTPDFLTEAIVHSVFVLSYYTGHDLQDKLQD
LPDDRLNKFLTCVITFDKNPNAEFVTLMRDPQALGSERQAKITSEINRLAVTEVLSIA
PNKIFSKSAQHYTTTEIDLNDIMQNIEPTYPHGLRVVYESLPFYKAEKIVNLISGTKS
ITNILEKTSAIDTTDINRATDMMRKNITLLIRILPLDCNKDKRELLSLENLSITELSK
YVRERSWSLSNIVGVTSPSIMFTMDIKYTTSTIASGIIIEKYNVNGLTRGERGPTKPW
VGSSTQEKKTMPVYNRQVLTKKQRDQIDLLAKLDWVYASIDNKDEFMEELSTGTLGLS
YEKAKKLFPQYLSVNYLHRLTVSSRPCEFPASIPAYRTTNYHFDTSPINHVLTEKYGD
EDIDIVFQNCISFGLSLMSVVEQFTNICPNRIILIPKLNEIHLMKPPIFTGDVDIIKL
KQVIQKQHMFLPDKISLTQYVELFLSNKALKSGSHINSNLILVHKMSDYFHNAYILST
NLAGHWILIIQLMKDSKGIFEKDWGEGYITDHMFINLNVFFNAYKTYLLCFHRGYGKA

KLECDMNTSDLLCVLELIDSSYWKSMSKVFLEQKVIKYIVNQDASLHRIKGCHSFKLW
FLKRLNNAKFTVCPWVVNIDYHPTHMKAILSYIDLVRMGLINVDKLTIKNKNKFNDEF
YTSNLFYISYNFSDNTHLLTKQIRIANSELEDNYNKLYQPTPETLENISLIPVKSNNR
NKPKFCISGNTESMMTSTFSNKMHIKSSTVTTRFNYSRQDLYNLFPIVVIDRIIDHSG
NTEKSNQLYTTTSHQTSLVRNSASLYCMLPWHHVNRFNFVFSSTGCKISIEYILKDLK
IKDPSCIAFIGEGAGNLLLRTVVELHPDIRYIYRSLKDCNDHSLPIEFLRLYNGHINI
DYGENLTIPATDATNNIHWSYLHIKFAEPISIFVCDAELPVTTNWSKIIIEWSKHVRK
CKYCSSVNRCILIAKYHAQDDIDFKLDNITILKTYVCLGSKLKGSEVYLVLTIGPANI
LPVFDVVQNAKLILSRTKNFIMPKKIDKESIDANIKSLIPFLCYPITKNGIKTSLSKL
KSVVNGDILSYSIAGRNEVFSNKLINHKHMNILKWLDHVLNFRSAELNYNHLYMIEST
YPYLSELLNSLTTNELKKLIKITGSVLYNLPNEQ"

ORIGIN

```
       1 aaatgcgtac tacaaacttg cacactcgga aaaaatgggg caaataagaa cttgataagt
      61 gctatttaag tctaaccttt ttaatcagaa atggggtgca attcactgag catgataaag
     121 gttagattac aaaatttatt tgacaatgat gaagtagcat tgttaaaaat aacatgttat
     181 actgacaaat taattcttct gactaatgca ttagccaaag caacaataca tacaattaaa
     241 ttaaacggca tagtttttat acatgttata acaagcagtg aagtgtgccc tgataacaat
     301 attgtagtga aatctaactt tacaacaatg ccaatattac aaaatggagg atacatatgg
     361 gagttgattg aattgacaca ctgctctcaa ttaaatggtc taatagatga taattgtgaa
     421 atcaaatttt ctaaaagact aagtgactca gtaatgactg attatatgaa tcaaatatct
     481 gatttacttg ggcttgatct ccattcatga attatgttta gtctaattca atagacatgt
     541 gtttattacc attttagtta atataaaacc tcatcaaagg gaaatggggc aaataaattc
     601 acccaatcaa tcaaaccatg agcactacaa acgacaacac caccatgcaa agattgatga
     661 tcacagacat gagacccctg tcgatggatt caataataac atctctcacc aaagaaatca
     721 tcacacacaa attcatatat ttgataaaca atgaatgtat tgtaagaaaa ctcgatgaga
     781 gacaagctac atttacattc ctagtcaatt atgagatgaa gctattgcac aaagtaggga
     841 gtaccaaata caagaaatac actgaatata atacaaaata tggcacattc cctatgccta
     901 tatttatcaa tcatggcggg tttctagaat gtattggcat taagcctaca aaacatactc
     961 ctataatata caaatatgac ctcaacccgt aacttccaac aaaaaaacca actcacccaa
    1021 accaagctat tctctaaaca acagtgctca acagttaaga agaagctaat ccattttagt
    1081 aattaaaaat aagggtgaag ccagtaacat aaattggggc aaatacaaag atggctctta
    1141 gcaaagtcaa gttgaatgat acattaaata aggatcagtt gctgtcatcc agcaaataca
    1201 ctattcaacg tagtacagga gataatattg acactcccaa ttatgatgtg caaaaacacc
    1261 taaacaaact atgtggtatg ctattaatca ctgaagatgc aaatcataaa tttacaggat
    1321 taataggtat gctatatgct atgtccaggt taggaaggga agacactata aagatactta
    1381 aagatgctgg atatcatgtt aaagctaatg gagtagatat aacaacatat cgtcaagata
    1441 taaatggaaa ggaaatgaaa ttcgaagtat taacattatc aagcttgaca tcagaaatac
    1501 aagtcaatat tgagatagaa tctagaaagt cctacaaaaa aatgctaaaa gagatgggag
    1561 aagtggctcc agaatatagg catgattctc cagactgtgg gatgataata ctatgtatag
    1621 ctgcccttgt aataaccaaa ttagcagcag gagatagatc aggtcttaca gcagtaatta
    1681 ggagggcaaa caatgtctta aaaaacgaaa taaaacgcta caagggcctg ataccaaagg
    1741 acatagccaa cagtttttat gaagtgtttg aaaaacaccc tcatcttata gatgtttttg
    1801 tgcactttgg cattgcacaa tcatccacaa gagggggtag tagagttgaa ggaatctttg
    1861 caggattgtt tatgaatgcc tatggttcag gacaagtaat gctaagatgg ggagttttag
```

1921 ccaaatctgt aaaaaatatc atgctaggac atgctagtgt ccaagcagaa atggagcaag
1981 ttgtggaagt ctatgagtat gcacagaagt tgggaggaga agctggtttc taccatatat
2041 tgaacaatcc aaaagcatca ttgctgtcat taactcaatt tcctaacttc tcaagtgtgg
2101 tcctaggcaa tgcagcaggt ctaggcataa tgggagagta tagaggtaca ccaagaaacc
2161 aagatctcta tgatgcagcc aaagcatatg cagagcaact caaagaaaat ggagtaataa
2221 actacagtgt attagactta acaacagaag aattggaagc cataaagcat caactcaacc
2281 ccaaagaaga tgacgtagag ctttaagtta acaaaaaata cggggcaaat aagtcaacat
2341 ggagaagttt gcacctgaat ttcatggaga agatgcaaat aacaaggcta ccaaattcct
2401 agaatcaata aaaggcaagt ttgcatcatc caaagatcct aagaagaaag atagcataat
2461 atctgtcaac tcaatagaca tagaagtcac taaagagagc ccaataacat ctggcaccaa
2521 cattatcaat ccaacaagcg aagctgacag taccctagaa accaaagcca actacccaag
2581 aaaaccccta gtaagcttca aagaagatct caccccaagt gataaccctt tctccaagtt
2641 gtacaaagaa accatagaaa catttgataa caatgaagaa gaatctagct actcatatga
2701 ggagatcaat gatcaaacaa atgacaacat tacagcaaga ctagatagaa ttgatgaaaa
2761 attaagtgaa atattaggaa tgctccatac attagtagtt gcaagtgctg gacccacttc
2821 ggctcgtgat ggaataagag atgctatggt tggtctaaga gaagaaatga tagaaaaaat
2881 aagagcagaa gcattaatga ccaatgatag gttagaggct atggcaagac ttaggaatga
2941 ggaaagcgaa aagatgacaa aagacacctc agatgaagtg tctctcaatc caacctccaa
3001 aaaattgagt gacttgttag aagacaacga tagcgacaat gatctatcac ttgatgattt
3061 ttgatcagtg atcaactcac tcagcaatca acaacatcaa taaaacagac accaatccat
3121 tgaatcaatt gccagactga aaaaacaacc atccatcagc agaaccacca accaatcgat
3181 caaccaattg atcaatcagc accctgacga aattaacaat atagtaacaa aaaaaggaac
3241 aagatggggc aaatatggaa acatacgtga acaagcttca cgaaggctcc acatacacag
3301 cagctgttca gtacaatgtt ctagaaaaag atgatgatcc cgcatcacta acaatatggg
3361 tgcctatgtt ccagtcatct gtgccagcag acttgctcat aaaagaactt gcaagcatca
3421 acatactagt aaagcagatc tctacgccca aaggaccttc actacgggtc acaatcaact
3481 caagaagtgc tgtgctggct caaatgccta gtaatttcac cataagtgca aatgtatcat
3541 tagatgaaag aagcaaatta gcatatgatg taactacacc ttgtgaaatc aaagcatgca
3601 gtctaacatg cttaaaagta aaaagtatgt taactacagt caaagatcta accatgaaga
3661 cattcaaccc cactcatgag atcattgctc tatgtgaatt tgaaaatatt atgacatcaa
3721 aaagagtaat aataccaacc tatctaagat caattagtgt caaaaacaag gacctgaact
3781 cactagaaaa tatagcaacc actgaattca aaaatgctat caccaatgct aaaattattc
3841 cctatgcggg attagtattg gttatcacgg ttactgataa caaaggagca ttcaaatata
3901 tcaagccaca gagtcaattc atagtggatc ttggcgccta cctagaaaaa gagagcatat
3961 attatgtgac taccaattgg aagcacacag ctacacgctt ttcaatcaaa ccactagagg
4021 attaaaccaa attatcaaca ttgaatgaca gattcacata catcctcaac tgcacactat
4081 atctaaacat cataaacatc cacactacac acttcatcac acaaaccaat cccactcaaa
4141 atccaaaatc acttccagcc attgtctgcc agacatagag tgtgaatagg taaataaaac
4201 cagaatatgg ggtaaataga tatcagttag agttcaatca atctcaacaa ccatctatac
4261 cgccaattca atacatatac tgcaaatctc aaaatgggaa acacatccat cacaatagaa
4321 ttcacaagca aattttggcc ctattttaca ctaatacata tgatcttaac tctaatctcc
4381 ttactaatta taatcactat tatgattgca atactaaata agctaagtga acataaaaca
4441 ttctgtaacg aaactcttga acaaggacag atgtatcaaa tcaacacata gtgttctccc
4501 attatgctgt gtcaaattat aatcttgtat atataaataa acaaatccaa tcttctcata

4561 gagtcatggt atcacaaaac catgccaacc attatggtag catagagtag ttatttaaaa
4621 attaacataa tgatgaatta ttagtatggg atcaaaaaca acattggggc aaatgcaacc
4681 atgtccaaaa acaagaatca acgcactgcc aggactctag aaaagacctg ggatactctt
4741 aatcatctaa ttgtaatatc ctcttgttta tacaaattaa atttaaaatc tatagcacaa
4801 atagcactat cagttttggc aatgataatc tcaacctctc tcataattgc agccataata
4861 ttcatcatct ctgctaatca caaagttaca ctaacaactg tcacagttca aacaataaaa
4921 aaccacactg agaaaaacat aaccacttac cttactcaag tctcaccaga aagggttagc
4981 ccatccaacc aacccacaac cacaccacca atccacacaa actcagccac aatatcacct
5041 aatacaaaat cagaaacaca ccatacaaca gcacaaacca aaggcagaac ctctactcca
5101 acacagaaca acaagccaaa cacaaaacca cgtccaaaaa atccaccaaa aaaagatgat
5161 taccattttg aagtgttcaa cttcgttccc tgtagtatat gtggcaacaa tcaactctgc
5221 aaatccatct gcaaaacaat accaagcaat aaaccaaaga aaaaaccaac cacaaaaccc
5281 acaaacaaac cacccaccaa aaccacaaac aaaagagacc ccaaaacact agccaaaaca
5341 ccgaaaaaag aaaccaccat taacccaaca aaaaaaccaa cccccaagac cacagaaaga
5401 gacaccagca ccccacaatc cactgtgctc gacacaacca catcgaaaca cacagaaaga
5461 gacaccagca cctcacaatc cattgcgctt gacacaacca catcaaaaca cacaatccaa
5521 cagcaatccc tctactcaac caccccccgaa aacacaccaa actccacaca aacacccaca
5581 gcatccgagc cctctacatc aaattccacc caaaaactcc agtcatatgc ttagttattt
5641 aaaaactaca tcttagcaga gaaccgtgat ccctcaagca agaacgaaat taaatctggg
5701 gcaaataacc atggagttgc tgatccatag atcaagtgca atcttcctaa cttttgctat
5761 taatgcattg tacctcacct caagtcagaa cataactgag gagttttacc aatcgacatg
5821 tagtgcagtt agcagaggtt acttgagtgc tttaagaaca ggttggtata ccagtgtcat
5881 aacgatagaa ttaagtaata taaaagaaac caaatgcaat ggaactgaca ctaaagtaaa
5941 acttataaaa caagaattag ataagtataa gaatgcagta acagaattac agttacttat
6001 gcaaaacaca ccagctgcca acaaccgggc tagaagagaa gcaccacagt atatgaacta
6061 cacaatcaat accactaaaa acctaaatgt atcaataagc aaaaagagga aacgaagatt
6121 tctgggcttc ttattaggtg taggatctgc aatagcaagt ggtatagctg tatccaaagt
6181 tctacacctt gaaggagaag tgaacaagat caaaaatgct ttgctgtcta caaacaaagc
6241 tgtagtcagt ctatcaaatg gggtcagtgt tttaaccagc aaagtgttag atctcaagaa
6301 ttatataaac aaccaattat tacctatagt aaatcaacaa agttgtcgca tttccaacat
6361 tgaaacagtt atagaattcc agcagaagaa cagcagattg ttggaaatca ccagagaatt
6421 tagtgtcaat gcaggtgtaa caacaccttt aagcacctac atgttaacaa acagtgagtt
6481 actatcatta atcaatgaca tgcctataac aaatgatcag aaaaaattaa tgtcaagcaa
6541 tgttcagata gtaaggcaac aaagttattc tatcatgtct ataataaagg aagaagtcct
6601 tgcatatgtt gtacagctac ctatctatgg tgtaattgat acaccttgct ggaaattaca
6661 cacatcacct ctgtgcacca ccaacatcaa agaaggatca aatatttgtt taacaaggac
6721 tgatagagga tggtactgtg ataatgcagg atcagtatcc ttctttccgc aggctgacac
6781 ttgtaaagta cagtccaatc gagtattttg tgacactatg aacagtttga cattaccaag
6841 tgaagtcagc ctttgtaaca ctgacatatt caattccaag tatgactgca aaattatgac
6901 atcaaaaaca gacataagca gctcagtaat tacttctcta ggagctatag tgtcatgcta
6961 tggtaaaact aaatgcactg catccaacaa aaatcgtgga attataaaga cattttctaa
7021 tggttgtgat tatgtgtcaa acaaaggagt agatactgta tcagtgggca acactttata
7081 ctatgtcaac aagctggaag gaaaaaacct ttatgtaaaa ggggaaccta taataaatta
7141 ctatgaccct ctagtgtttc cttctgatga gtttgatgca tcaatatctc aagtcaatga

7201 aaaaattaat caaagtttag cttttattcg tagatccgat gaattattac ataatgtaaa
7261 cactggaaaa tctactacaa atattatgat aactgcaatt attatagtaa tcattgtagt
7321 attgttatca ttaatagcta ttggtttact gttgtattgc aaagccaaaa acacaccagt
7381 tacactaagc aaagaccaac taagtggaat caataacatt gcattcagca aatagacaaa
7441 aaaccacctg atcatgtttc aacaacaatc tgctgaccac caatcccaaa tcaacttaca
7501 acaaatactt caacatcaca gcacaggctg aatcattccc tcgcatcatg atacccacac
7561 aactaagcta gatccttaac tcatagttat ataaaaccct caaatatcac aatcaacact
7621 aaatcaacac atcattcaca aaactaacag ctggggcaaa tatgtcgcgg agaaatccct
7681 gcaaatttga gattagaggt cattgcttga atggtagaag atgccactac agtcataatt
7741 actttgaatg gcctcctcat gcattgctag tgaggcaaaa cttcatgtta aacaagatac
7801 ttaagtcaat ggacaagagc atagacactt tgtctgaaat aagtggagct gctgaacttg
7861 atagaacaga agaatatgct cttggtatag ttggagtgct agagagttac ataggatcta
7921 taaacaacat aacaaaacaa tcagcatgtg ttgctatgag taaacttctt attgagatca
7981 atagtgatga cattaaaaag ctgagagaca atgaagaacc caattcacct aagataagag
8041 tatacaatac tgttatatca tacatcgaga gcaatagaaa aaacagcaag caaaccatcc
8101 atctactcaa acgattacca gcagacgtgc tgaagaagac aataaagaac acattagata
8161 tccacaaaag cataaccata agcaacccaa aagagtcaac cgtaagtgat caaaatgacc
8221 aaaccaaaaa taatgatatt accggataaa tatccttgta gtatatcatc catattgatc
8281 tcaagtgaaa acatgattgc tacattcaat cataaagaca tattacaatt taaccacaac
8341 catttggata atcaccagtg tttattaaat catatatttg atgaaattca ttggacacct
8401 aaaaacttat tagatgccac tcaacaattt ctccaacatc ttaacatccc tgaagatata
8461 tatacagtat atatattagt atcataatgc ttgatcataa cgattctata tcatccagcc
8521 ataaaactgt cttaataagg ttatgggaca aaatggatcc cattattaat ggaagctctg
8581 ctaatgtata tctaactgat agttatctaa aaggtgttat ctctttttca gaatgtaatg
8641 ctttagggag ttacctttt aacggccctt atcttaaaaa tgattatacc aacttaatta
8701 gtagacaaag cccactacta gagcatatga atctaaaaaa actaactata acacagtcat
8761 taatatctag ataccataaa ggtgaactga aattagaaga accaacttat ttccagtcat
8821 tacttatgac atataaaagc atgtcctcgt ctgaacaaat tgctacaact aacttactta
8881 aaaaaataat acgaagagct atagaaataa gtgatgtaaa ggtgtacgcc atcttgaata
8941 aactaggact aaaggaaaag gacagagtta agcccaacaa caattcaggt gatgaaaact
9001 cagtacttac aaccataatt aaagatgata tactctcagc tgtggaaaac aatcaatcat
9061 atacaaattc agacaaaaat tactcagtaa atcaaaatat caatatcaaa acaacactct
9121 taaaaaaatt gatgtgttca atgcaacatc ctccatcatg gttaatacac tggttcaatt
9181 tatatacaaa attaaataac atattaacac aatatcgatc aaatgaggta aaaagtcatg
9241 ggtttatatt aatagataat caaactttga gtggttttca gtttatttta aatcaatatg
9301 gttgcattgt ttatcataaa gggctcaaaa aaatcacaac tactacatac aatcaatttt
9361 tgacatggaa agacatcagc cttagcagat taaatgtttg cttaattact tggataagta
9421 attgtttaaa tacattaaat aaaagcttag ggttgagatg cggattcaat aatgttgtgc
9481 tatcacaatt attcctgtat ggagattgta tactgaaatt atttcataat gagggctttt
9541 acataataaa agaagtagaa ggatttatta tgtctttaat tctaaacata acagaagaag
9601 atcaatttag gaaacgattt tataatagca tgctaaataa catcacagat gcagctatta
9661 aggctcaaaa ggacctacta tcaagagtat gtcacacttt attagacaag acagtgtctg
9721 ataatatcat aaatggtaaa tggataattc tattaagtaa atttcttaaa ttgattaagc
9781 ttgcaggtga taataatctc aataacttga gtgagctata ttttctcttc agaatctttg

```
 9841 gacatccaat ggttgatgaa agacaagcaa tggatgctgt aagaattaac tgcaatgaaa
 9901 ctaagttcta tttattaagt agcctaagta cgttgagagg tgctttcatt tatagaatca
 9961 taaaagggtt tgtaaatact tacaacagat ggcccacttt aaggaatgct attgtcctac
10021 ctctaagatg gttaaactat tataaactta atacttatcc atctttactt gaaatcacag
10081 aaaatgattt gattatttta tcaggattgc ggttctatcg tgagtttcat ctgcctaaaa
10141 aagtggatct tgaaatgata ataaatgaca aagctatttc tcctccaaaa gatctaatat
10201 ggactagttt tcctagaaat tacatgccat cacatataca aaattatata gaacatgaaa
10261 agttgaagtt ctctgaaagc gacagatcaa gaagagtact agagtattac ttgagagata
10321 ataaattcaa tgaatgtgat ctatacaatt gtgtagttaa tcaaagctat ctcaacaact
10381 ctaatcatgt ggtatcacta actggtaaag aaagagagct cagtgtgggt agaatgtttg
10441 ctatgcaacc aggtatgttt aggcaaatcc aaatcttagc agagaaaatg atagccgaaa
10501 atattttaca attcttccct gagagtttga caagatatgg tgatctagag cttcaaaaga
10561 tattagaatt aaaagcagga ataagcaaca agtcaaatcg ttataatgat aactacaaca
10621 attatatcag taaatgttct ataataacag atcttagcaa atttaatcaa gcatttagat
10681 atgaaacatc atgtatctgc agtgatgtat tagatgaact gcatggagta caatctctat
10741 tctcttggtt gcatttaaca atacctcttg tcacaataat atgtacatat agacatgcac
10801 ctccttttat aaaggatcat gttgtcaatc ttaatgaagt tgatgaacaa agtgggttgt
10861 acagatatca tatgggtggt attgagggct ggtgtcaaaa actgtggacc attgaagcca
10921 tatcattatt agatctaata tctcttaaag gtaaattctc catcacagct ctgataaatg
10981 gtgataatca gtcaattgat ataagtaaac cagttagact tatagagggt cagacccatg
11041 ctcaagcaga ttatttgtta gcattaaata gccttaaatt gctatataaa gagtatgcag
11101 gcataggcca taagcttaag ggaactgaga cctatatatc ccgagatatg cagttcatga
11161 gcaaaactat ccagcacaat ggagtgtact atccagccag tatcaaaaaa gtcctgagag
11221 taggtccatg gataaataca atacttgatg attttaaagt tagtttagaa tctataggta
11281 gcttaacaca ggagttagaa tacagaggag aaagcttatt atgcagttta atatttagga
11341 acatttggtt atataatcaa attgctctgc aactccgaaa tcatgcatta tgtaataata
11401 agctatattt agatatcttg aaagtattaa aacacttaaa aacctttttt aatcttgata
11461 gtatcgatac ggcgttatca ttgtatatga acttgcctat gctacttggt ggtggtgatc
11521 ctaatttgtt atatcgaagc ttttatagga gaactccaga cttccttaca gaagctatag
11581 tacattcagt gttcgtgttg agctattata ctggtcacga tctacaagat aagctccagg
11641 atcttccaga tgatagactg aacaaattct tgacttgtgt catcacattt gataaaaatc
11701 caaatgccga gtttgtaaca ttgatgaggg atccacaggc tttagggtct gaaaggcaag
11761 ctaaaattac tagtgagatt aatagattag cagtaacaga agtcttaagt atagctccaa
11821 acaaaatatt ttctaaaagt gcgcaacact atactaccac tgagattgat ctaaatgaca
11881 ttatgcaaaa tatagaacca acttaccctc atggattaag agttgtttat gaaagtttac
11941 ctttttataa agcagaaaaa atagttaatc ttatatcagg aacaaaatcc ataactaata
12001 tacttgaaaa aacatcagcg atagatacaa ctgatattaa tagggctact gatatgatga
12061 gaaaaaatat aaccttactt ataaggatac ttccactaga ttgtaacaag gacaaaagag
12121 agttattaag tttagaaaat cttagcataa ctgaattaag caagtatgta agagaaagat
12181 cttggtcatt atccaatata gtaggagtaa catcgccaag tattatgttc acaatggaca
12241 ttaaatatac aactagcact atagccagtg gtataattat agaaaaatat aatgttaatg
12301 gtttaactcg tggtgaaaga ggacctacta agccatgggt aggttcatct acgcaggaga
12361 aaaaaacaat gccagtgtac aatagacaag ttttaaccaa aaagcaaaga gaccaaatag
12421 atttattagc aaaattagac tgggtatatg catccataga caacaaagat gaattcatgg
```

12481 aagaactaag tactggaaca cttggactgt catatgaaaa agccaaaaag ttgtttccac
12541 aatatctaag tgtcaattat ttacaccggt taacagtcag tagtagacca tgcgaattcc
12601 ctgcctctat accagcttat agaacaacaa attatcattt tgatactagt cctatcaatc
12661 atgtattaac agaaaagtat ggagatgaag atattgacat tgtgtttcaa aattgcataa
12721 gttttggtct tagtttgatg tcagttgtgg aacaattcac aaacatatgt cctaatagaa
12781 ttattctcat accgaagctg aatgagatac atttgatgaa acccccctata tttacaggag
12841 atgttgatat catcaagttg aagcaagtga tacaaaaaca gcatatgttc ctaccagata
12901 aaataagttt aacccaatat gtagaattat tcttaagtaa caaagcactt aaatctggat
12961 cccacatcaa ctctaattta atattagtac ataaaatgtc tgattatttt cataatgcgt
13021 atattttaag tactaattta gctggacatt ggattctgat tattcaactt atgaaagatt
13081 caaaaggtat ttttgaaaaa gattggggag aagggtatat aactgatcat atgttcatta
13141 atttgaatgt tttctttaat gcttataaga cttatttgct atgttttcat agaggttatg
13201 gtaaagcgaa attagaatgt gatatgaaca cttcagatct tctttgtgtt ttggagttaa
13261 tagacagtag ctactggaaa tctatgtcta aagttttcct ggaacaaaaa gtcataaaat
13321 acatagtcaa tcaagacgca agtttgcata gaataaaagg ctgtcacagt tttaagttgt
13381 ggtttttaaa acgccttaat aatgctaaat ttaccgtatg cccctgggtt gttaacatag
13441 attatcaccc aacacacatg aaagctatat tatcttacat agatttagtt agaatggggt
13501 taataaatgt agataaatta accattaaaa ataaaaacaa attcaatgat gaatttttaca
13561 catcaaatct cttttacatt agttataact tttcagacaa cactcatctg ctaacaaaac
13621 aaataagaat tgctaattca gaattagaag ataattataa caaactatat caaccaaccc
13681 cagaaacttt agaaaatata tcattaatcc ctgttaaaag taataataga aacaaaccta
13741 aattttgtat aagtggaaat actgaatcta tgatgacgtc aacattctct aataaaatgc
13801 atattaaatc ttccactgtt accacaagat tcaattatag cagacaagac ttgtacaatt
13861 tatttccaat tgttgtgata gacaggatta tagatcattc aggtaataca gaaaaatcta
13921 accaacttta caccaccact tcacatcaga catctttagt aaggaatagt gcatcacttt
13981 attgcatgct tccttggcat catgtcaata gatttaactt tgtatttagt tccacaggat
14041 gcaagatcag tatagaatat attttaaaag atctcaagat taaagatccc agttgtatag
14101 cattcatagg tgaaggagct ggtaacttat tattacgtac ggtagtagaa cttcatcctg
14161 acataagata tatttacaga agtttaaaag attgcaatga tcatagttta cctattgaat
14221 ttctaaggtt atacaacggg catataaaca tagattatgg tgagaattta accattcctg
14281 ctacagatgc aactaacaac atacattggt cttatttaca tataaaattt gcagaaccta
14341 ttagtatctt tgtctgcgat gctgaattac ctgtcacaac caattggagt aaaattataa
14401 ttgaatggag taagcatgta agaaagtgca agtactgttc ttctgtaaat agatgcattt
14461 taattgcaaa atatcatgct caagatgata ttgatttcaa attagataac attactatat
14521 taaaaactta tgtgtgccta ggtagcaagt taaaaggatc tgaagtttat ttagtcctta
14581 caataggccc tgcaaatata cttcctgttt ttgatgttgt gcaaaatgct aaattgattc
14641 tttcaagaac taaaaatttc attatgccta aaaagattga caaggaatct atcgatgcaa
14701 atattaaaag cttaatacct ttcctttgtt accctataac aaaaaatgga attaagactt
14761 cattgtcaaa attgaagagt gtagttaatg gagatatatt atcatattct atagctggac
14821 gtaatgaagt attcagcaac aagcttataa accacaagca tatgaatatc ttaaaatggc
14881 tggatcatgt tttaaacttt agatcagctg aacttaatta caatcattta tacatgatag
14941 agtctacata tccttacttg agtgaattgt taaatagttt aacaaccaat gagctcaaga
15001 agctgattaa aataacaggt agtgtactat acaaccttcc taatgagcag taactcaaaa
15061 tatcattaac aagtttggtc aactttagat gctaacacat cattatatta tagttattaa

15121 aaaatatgca aacttttcaa taatttagca tattgattcc aaaattacca ttttagtctt
15181 aagggattaa ataaaagtct aaaactaaca attacacatg tgcatttaca acacaacgag
15241 acattagttt t