Sendai virus genomic RNA, complete genome, strain: Z
GenBank: AB855655.1

FASTA Graphics
Go to:

```
LOCUS       AB855655            15384 bp    cRNA    linear   VRL 10-OCT-2013
DEFINITION  Sendai virus genomic RNA, complete genome, strain: Z.
ACCESSION   AB855655
VERSION     AB855655.1
KEYWORDS    .
SOURCE      Murine respirovirus
  ORGANISM  Murine respirovirus
            Viruses; Riboviria; Orthornavirae; Negarnaviricota;
            Haploviricotina; Monjiviricetes; Mononegavirales; Paramyxoviridae;
            Orthoparamyxovirinae; Respirovirus.
REFERENCE   1
  AUTHORS   Yoshida,A., Kawabata,R., Sakaguchi,T. and Irie,T.
  TITLE     Paramyxovirus Sendai virus N protein plays a critical role on
            restricted production of copyback-type defective-interfering
            genomes to escape from detection by host innate immunity
  JOURNAL   Unpublished
REFERENCE   2  (bases 1 to 15384)
  AUTHORS   Yoshida,A. and Irie,T.
  TITLE     Direct Submission
  JOURNAL   Submitted (21-SEP-2013) Contact:Asuka Yoshida Institute of
            Biomedical & Health Sciences, Department of Virology; 1-2-3,
            Kasumi, Minami-ku, Hiroshima, Hiroshima 734-8551, Japan URL
            :http://home.hiroshima-u.ac.jp/isaikin/
FEATURES             Location/Qualifiers
     source          1..15384
                     /organism="Murine respirovirus"
                     /mol_type="viral cRNA"
                     /strain="Z"
                     /host="Mus musculus"
                     /db_xref="taxon:11191"
     gene            120..1694
                     /gene="N"
     CDS             120..1694
                     /gene="N"
                     /codon_start=1
                     /product="nucleoprotein"
                     /protein_id="BAN84667.1"
                     /translation="MAGLLSTFDTFSSRRSESINKSGGGAVIPGQRSTVSVFVLGPSV
                     TDDADKLFIATTFLAHSLDTDKQHSQRGGFLVSLLAMAYSSPELYLTTNGVNADVKYV
```

```
                     IYNIEKDPKRTKTDGFIVKTRDMEYERTTEWLFGPMVNKSPLFQGQRDAADPDTLLQI
                     YGYPACLGAIIVQVWIVLVKAITSSAGLRKGFFNRLEAFRQDGTVKGALVFTGETVEG
                     IGSVMRSQQSLVSLMVETLVTMNTARSDLTTLEKNIQIVGNYIRDAGLASFMNTIKYG
                     VETKMAALTLSNLRPDINKLRSLIDTYLSKGPRAPFICILKDPVHGEFAPGNYPALWS
                     YAMGVAVVQNKAMQQYVTGRTYLDMEMFLLGQAVAKDAESKISSALEDELGVTDTAKG
                     RLRHHLANLSGGDGAYHKPTGGGAIEVALDNADIDLETKAHADQDARGWGGDSGERWA
                     RQVSGGHFVTLHGAERLEEETNDEDVSDIERRIAMRLAERRQEDSATHGDEGRNNGVD
                     HDEDDDAAAVAGIGGI"
     gene            1844..3550
                     /gene="P"
     CDS             1844..3550
                     /gene="P"
                     /codon_start=1
                     /product="phosphoprotein"
                     /protein_id="BAN84668.1"
                     /translation="MDQDAFILKEDSEVEREAPGGRESLSDVIGFLDAVLSSEPTDIG
                     GDRSWLHNTINTPQGPGSAHRAKSEGEGEVSTPSTQDNRSGEESRVSGRTSKPEAEAH
                     AGNLDKQNIHRAFGGRTGTNSVSQDLGDGGDSGILENPPNERGYPRSGIEDENREMAA
                     HPDKRGEDQAEGLPEEVRGSTSLPDEGEGGASNNGRSMEPGSSHSARVTGVLVIPSPE
                     LEEAVLRRNKRRPTNSGSKPLTPATVPGTRSPPLNRYNSTGSPPGKPPSTQDEHINSG
                     DTPAVRVKDRKPPIGTRSVSDCPANGRPIHPGLETDSTKKGIGENTSSMKEMATLLTS
                     LGVIQSAQEFESSRDASYVFARRALKSANYAEMTFNVCGLILSAEKSSARKVDENKQL
                     LKQIQESVESFRDIYKRFSEYQKEQNSLLMSNLSTLHIITDRGGKTDNTDSLTRSPSV
                     FAKSKENKTKATRFDPSMETLEDMKYKPDLIREDEFRDEIRNPVYQERDTEPRASNAS
                     RLLPSKEKPTMHSLRLVIESSPLSRAEKVAYVKSLSKCKTDQEVKAVMELVEEDIESL
                     TN"
     gene            3669..4715
                     /gene="M"
     CDS             3669..4715
                     /gene="M"
                     /codon_start=1
                     /product="matrix protein"
                     /protein_id="BAN84669.1"
                     /translation="MADIYRFPKFSYEDNGTVEPLPLRTGPDKKAIPHIRIVKVGDPP
                     KHGVRYLDLLLLGFFETPKQTTNLGSVSDLTEPTSYSICGSGSLPIGVAKYYGTDQEL
                     LKACTDLRITVRRTVRAGEMIVYMVDSIGAPLLPWSGRLRQGMIFNANKVALAPQCLP
                     VDKDIRLRVVFVNGTSLGAITIAKIPKTLADLALPNSISVNLLVTLKTGISTEQKGVL
                     PVLDDQGEKKLNFMVHLGLIRRKVGKIYSVEYCKSKIERMRLIFSLGLIGGISFHVQV
                     NGTLSKTFMSQLAWKRAVCFPLMDVNPHMNMVIWAASVEITGVDAVFQPAIPRDFRYY
                     PNVVAKNIGRIRKL"
     gene            4866..6563
                     /gene="F"
     CDS             4866..6563
                     /gene="F"
```

/codon_start=1
/product="fusion protein"
/protein_id="BAN84670.1"
/translation="MTAYIQRSQCISTSLLVVLTTLVSCQIPRDRLSNIGVIVDEGKS
LKIAGSHESRYIVLSLVPGVDFENGCGTAQVIQYKSLLNRLLIPLRDALDLQEALITV
TNDTTQNAGAPQSRFFGAVIGTIALGVATSAQITAGIALAEAREAKRDIALIKESMTK
THKSIELLQNAVGEQILALKTLQDFVNDEIKPAISELGCETAALRLGIKLTQHYSELL
TAFGSNFGTIGEKSLTLQALSSLYSANITEIMTTIRTGQSNIYDVIYTEQIKGTVIDV
DLERYMVTLSVKIPILSEVPGVLIHKASSISYNIDGEEWYVTVPSHILSRASFLGGAD
ITDCVESRLTYICPRDPAQLIPDSQQKCILGDTTRCPVTKVVDSLIPKFAFVNGGVVA
NCIASTCTCGTGRRPISQDRSKGVVFLTHDNCGLIGVNGVELYANRRGHDATWGVQNL
TVGPAIAIRPVDISLNLADATNFLQDSKAELEKARKILSEVGRWYNSRETVITIIVVM
VVILVVIIVIIIVLYRLRRSMLMGNPDDRIPRDTYTLEPKIRHMYTNGGFDAMAEKR"
gene 6693..8420
/gene="HN"
CDS 6693..8420
/gene="HN"
/codon_start=1
/product="hemagglutinin-neuraminidase"
/protein_id="BAN84671.1"
/translation="MDGDRGKRDSYWSTSPSGSTTKPASGWERSSKADTWLLILSFTQ
WALSIATVIICIIISARQGYSMKEYSMTVEALNMSSREVKESLTSLIRQEVIARAVNI
QSSVQTGIPVLLNKNSRDVIQMIDKSCSRQELTQHCESTIAVHHADGIAPLEPHSFWR
CPVGEPYLSSDPEISLLPGPSLLSGSTTISGCVRLPSLSIGEAIYAYSSNLITQGCAD
IGKSYQVLQLGYISLNSDMFPDLNPVVSHTYDINDNRKSCSVVATGTRGYQLCSMPTV
DERTDYSSDGIEDLVLDVLDLKGRTKSHRYRNSEVDLDHPFSALYPSVGNGIATEGSL
IFLGYGGLTTPLQGDTKCRTQGCQQVSQDTCNEALKITWLGGKQVVSVIIQVNDYLSE
RPKIRVTTIPITQNYLGAEGRLLKLGDRVYIYTRSSGWHSQLQIGVLDVSHPLTINWT
PHEALSRPGNKECNWYNKCPKECISGVYTDAYPLSPDAANVATVTLYANTSRVNPTIM
YSNTTNIINMLRIKDVQLEAAYTTTSCITHFGKGYCFHIIEINQKSLNTLQPMLFKTS
IPKLCKAES"
gene 8556..15242
/gene="L"
CDS 8556..15242
/gene="L"
/codon_start=1
/product="large protein"
/protein_id="BAN84672.1"
/translation="MDGQESSQNPSDILYPECHLNSPIVRGKIAQLHVLLDVNQPYRL
KDDSIINITKHKIRNGGLSPRQIKIRSLGKALQRTIKDLDRYTFEPYPTYSQELLRLD
IPEICDKIRSVFAVSDRLTRELSSGFQDLWLNIFKQLGNIEGREGYDPLQDIGTIPEI
TDKYSRNRWYRPFLTWFSIKYDMRWMQKTRPGGPLDTSNSHNLLECKSYTLVTYGDLV
MILNKLTLTGYILTPELVLMYCDVVEGRWNMSAAGHLDKKSIGITSKGEELWELVDSL
FSSLGEEIYNVIALLEPLSLALIQLNDPVIPLRGAFMRHVLTELQTVLTSRDVYTDAE

ADTIVESLLAIFHGTSIDEKAEIFSFFRTFGHPSLEAVTAADKVRAHMYAQKAIKLKT
LYECHAVFCTIIINGYRERHGGQWPPCDFPDHVCLELRNAQGSNTAISYECAVDNYTS
FIGFKFRKFIEPQLDEDLTIYMKDKALSPRKEAWDSVYPDSNLYYKAPESEETRRLIE
VFINDENFNPEEIINYVESGDWLKDEEFNISYSLKEKEIKQEGRLFAKMTYKMRAVQV
LAETLLAKGIGELFSENGMVKGEIDLLKRLTTLSVSGVPRTDSVYNNSKSSEKRNEGM
ENKNSGGYWDEKKRSRHEFKATDSSTDGYETLSCFLTTDLKKYCLNWRFESTALFGQR
CNEIFGFKTFFNWMHPVLERCTIYVGDPYCPVADRMHRQLQDHADSGIFIHNPRGGIE
GYCQKLWTLISISAIHLAAVRVGVRVSAMVQGDNQAIAVTSRVPVAQTYKQKKNHVYE
EITKYFGALRHVMFDVGHELKLNETIISSKMFVYSKRIYYDGKILPQCLKALTKCVFW
SETLVDENRSACSNISTSIAKAIENGYSPILGYCIALYKTCQQVCISLGMTINPTISP
TVRDQYFKGKNWLRCAVLIPANVGGFNYMSTSRCFVRNIGDPAVAALADLKRFIRADL
LDKQVLYRVMNQEPGDSSFLDWASDPYSCNLPHSQSITTIIKNITARSVLQESPNPLL
SGLFTETSGEEDLNLASFLMDRKVILPRVAHEILGNSLTGVREAIAGMLDTTKSLVRA
SVRKGGLSYGILRRLVNYDLLQYETLTRTLRKPVKDNIEYEYMCSVELAVGLRQKMWI
HLTYGRPIHGLETPDPLELLRGIFIEGSEVCKLCRSEGADPIYTWFYLPDNIDLDTLT
NGCPAIRIPYFGSATDERSEAQLGYVRNLSKPAKAAIRIAMVYTWAYGTDEISWMEAA
LIAQTRANLSLENLKLLTPVSTSTNLSHRLKDTATQMKFSSATLVRASRFITISNDNM
ALKEAGESKDTNLVYQQIMLTGLSLFEFNMRYKKGSLGKPLILHLHLNNGCCIMESPQ
EANIPPRSTLDLEITQENNKLIYDPDPLKDVDLELFSKVRDVVHTVDMTYWSDDEVIR
ATSICTAMTIADTMSQLDRDNLKEMIALVNDDDVNSLITEFMVIDVPLFCSTFGGILV
NQFAYSLYGLNIRGREEIWGHVVRILKDTSHAVLKVLSNALSHPKIFKRFWNAGVVEP
VYGPNLSNQDKILLALSVCEYSVDLFMHDWQGGVPLEIFICDNDPDVADMRRSSFLAR
HLAYLCSLAEISRDGPRLESMNSLERLESLKSYLELTFLDDPVLRYSQLTGLVIKVFP
STLTYIRKSSIKVLRTRGIGVPEVLEDWDPEADNALLDGIAAEIQQNIPLGHQTRAPF
WGLRVSKSQVLRLRGYKEITRGEIGRSGVGLTLPFDGRYLSHQLRLFGINSTSCLKAL
ELTYLLSPLVDKDKDRLYLGEGAGAMLSCYDATLGPCINYYNSGVYSCDVNGQRELNI
YPAEVALVGKKLNNVTSLGQRVKVLFNGNPGSTWIGNDECEALIWNELQNSSIGLVHC
DMEGGDHKDDQVVLHEHYSVIRIAYLVGDRDVVLISKIAPRLGTDWTRQLSLYLRYWD
EVNLIVLKTSNPASTEMYLLSRHPKSDIIEDSKTVLASLLPLSKEDSIKIEKWILIEK
AKAHEWVTRELREGSSSSGMLRPYHQALQTFGFEPNLYKLSRDFLSTMNIADTHNCMI
AFNRVLKDTIFEWARITESDKRLKLTGKYDLYPVRDSGKLKTISRRLVLSWISLSMST
RLVTGSFPDQKFEARLQLGIVSLSSREIRNLRVITKTLLDRFEDIIHSITYRFLTKEI
KILMKILGAVKMFGARQNEYTTVIDDGSLGDIEPYDSS"

ORIGIN

```
      1 accaaacaag agaaaaaaca tgtatgggat atgtaatgaa gttatacagg attttagggt
     61 caaagtatcc accctgagga gcaggttcca gacccтttgc tttgctgcca aagttcacga
    121 tggccgggtt gttgagcacc ttcgatacat ttagctctag gaggagcgaa agtattaata
    181 agtcgggagg aggtgctgtt atcccggcc agaggagcac agtctcagtg ttcgtactag
    241 gcccaagtgt gactgatgat gcagacaagt tattcattgc aactaccttc ctagctcact
    301 cattggacac agataagcag cactctcaga gaggggggtt cctcgtctct ctgcttgcca
    361 tggcttacag tagtccagaa ttgtacttga caacaaacgg agtaaacgcc gatgtcaaat
    421 atgtgatcta caacatagag aaagacccta agaggacgaa gacagacgga ttcattgtga
    481 agacgagaga tatggaatat gagaggacca cagaatggct gtttggacct atggtcaaca
    541 agagcccact cttccagggt caacgggatg ctgcagaccc tgacacactc cttcaaatct
```

601 atgggtatcc tgcatgccta ggagcaataa ttgtccaagt ctggattgtg ctggtgaagg
661 ccatcacaag cagcgccggc ttaaggaaag ggttcttcaa caggttagag gcgttcagac
721 aagacggcac cgtgaaaggt gccttagttt tcactgggga gacagttgag gggataggct
781 cggttatgag atctcagcaa agccttgtat ctctcatggt tgagaccctt gtgactatga
841 atactgcaag atctgatctc accacattag agaagaacat ccagatcgtt gggaactaca
901 tccgagatgc agggctggct tccttcatga acactattaa atatggggtg gaaacaaaga
961 tggcagctct aacgttgtca aacctgaggc ccgatattaa taagcttaga agcctcatag
1021 acacctacct gtcaaaaggc cccagagctc cctttatctg tatcctcaag gaccctgttc
1081 atggtgaatt tgctccaggc aattatcctg cactatggag ttacgccatg ggagtcgccg
1141 tcgtacagaa caaggcaatg cagcagtacg tcacagggag gacatacctt gatatggaaa
1201 tgttcttact aggacaagcc gtggcaaagg atgctgaatc gaagatcagc agtgccttgg
1261 aagatgagtt aggagtgacg gatacagcca aggggaggct cagacatcat ctggcaaact
1321 tgtccggtgg ggatggtgct taccacaaac caacaggcgg tggtgcaatt gaggtagctc
1381 tagacaatgc cgacatcgac ctagaaacaa aagcccatgc ggaccaggac gctaggggtt
1441 ggggtggaga tagtggtgaa agatgggcac gtcaggtgag tggtggccac tttgtcacac
1501 tacatggggc tgaacggtta gaggaggaaa ccaatgatga ggatgtatca gacatagaga
1561 gaagaatagc catgagactc gcagagagac ggcaagagga ttctgcaacc catggagatg
1621 aaggccgcaa taacggtgtc gatcatgacg aagatgacga tgccgcagca gtagctggga
1681 taggaggaat ctaggatcat acgaggcttc aaggtacttg atccgtagta agaaaaactt
1741 agggtgaaag ttcatccacc gatcggctca ggcaaggcca cacccaaccc caccgaccac
1801 acccagcagt cgagacagcc acggcttcgg ctacacttac cgcatggatc aagatgcctt
1861 cattcttaaa gaagattctg aagttgagag ggaggcgcca ggaggacgag agtcgctctc
1921 ggatgttatc ggattcctcg atgctgtcct gtcgagtgaa ccaactgaca tcggagggga
1981 cagaagctgg ctccacaaca ccatcaacac tccccaagga ccaggctctg ctcatagagc
2041 caaaagtgag ggcgaaggag aagtctcaac accgtcgacc caagataatc gatcaggtga
2101 ggagagtaga gtctctggga gaacaagcaa gccagaggca gaagcacatg ctggaaacct
2161 tgataaacaa aatatacacc gggcctttgg gggaagaact ggtacaaact ctgtatctca
2221 ggatctgggc gatggaggag actccggaat ccttgaaaat cctccaaatg agagaggata
2281 tccgagatca ggtattgaag atgaaaacag agagatggct gcgcaccctg ataagagggg
2341 agaagaccaa gctgaaggac ttccagaaga ggtacgagga agtacatccc tacctgatga
2401 aggagaaggt ggagcaagta ataatggaag aagcatggag cctggcagct cacatagtgc
2461 aagagtaact ggggtcctgg tgattcctag ccccgaactt gaagaggctg tgctacggag
2521 gaacaaaaga agacctacca acagtgggtc caaacctctt actccagcaa ccgtgcctgg
2581 cacccggtcc ccaccgctga atcgttacaa cagcacaggg tcaccaccag gaaaaccccc
2641 atctacacag gatgagcaca tcaactctgg ggacaccccc gccgtcaggg tcaaagaccg
2701 gaaaccacca atagggaccc gctctgtctc agattgtcca gccaacggcc gcccaatcca
2761 cccgggtcta gagaccgact caacaaaaaa gggcatagga gagaacacat catctatgaa
2821 agagatggct acattgttga cgagtcttgg tgtaatccag tctgctcaag aattcgaatc
2881 atcccgagac gcgagttatg tgtttgcaag acgtgcccta aagtctgcaa actatgcaga
2941 gatgacattc aatgtatgcg gcctgatcct ttctgccgag aaatcttccg ctcgtaaggt
3001 agatgagaac aaacaactgc tcaaacagat ccaagagagc gtggaatcat tccgggatat
3061 ttacaagaga ttctctgagt atcagaaaga acagaactca ttgctgatgt ccaacctatc
3121 tacacttcat atcatcacag atagaggtgg caagactgac aacacagact cccttacaag
3181 gtccccctcc gtttttgcaa aatcaaaaga gaacaagact aaggctacca ggtttgaccc

```
3241 atctatggag accctagaag atatgaagta caaaccggac ctaatccgag aggatgaatt
3301 tagagatgag atccgcaacc cggtgtacca agagagggac acagaaccca gggcctcaaa
3361 cgcatcacgt ctcctcccct ccaaagagaa gcccacaatg cactctctca ggctcgtcat
3421 agagagcagt cccctaagca gagctgagaa agtagcatat gtgaaatcat tatccaagtg
3481 caagacagac caagaggtta aggcagtcat ggaactcgta gaagaggaca tagagtcact
3541 gaccaactag atcccgggtg aggcatccta ccatcctcag tcatagagag atccaatcta
3601 ccatcagcat cagccagtaa agattaagaa aaacttaggg tgaaagaaat ttcacctaac
3661 acggcgcaat ggcagatatc tatagattcc ctaagttctc atatgaggat aacggtactg
3721 tggagcccct gcctctgaga actggtccgg ataagaaagc catcccccac atcaggattg
3781 tcaaggtagg agaccctcct aaacatggag tgagatacct agatttattg ctcttgggtt
3841 tctttgagac accgaaacaa acaaccaatc tagggagcgt atctgacttg acagagccga
3901 ccagctactc aatatgcggc tccgggtcgt tacccatagg tgtggccaaa tactacggga
3961 ctgatcagga actcttaaag gcctgcaccg atctcagaat tacggtgagg aggactgttc
4021 gagcaggaga gatgatcgta tacatggtgg attcgattgg tgctccactc ctaccatggt
4081 caggcaggct gagacaggga atgatattta atgcaaacaa ggtcgcacta gctccccaat
4141 gcctccctgt ggacaaggac ataagactca gagtggtgtt tgtcaatggg acatctctag
4201 gggcaatcac catagccaaa atcccaaaga cccttgcaga ccttgcattg cccaactcta
4261 tatctgttaa tttactggtg acactcaaga ccgggatctc cacagaacaa aaggggggtac
4321 tcccagtact tgatgatcaa ggggagaaaa agctcaattt tatggtgcac ctcgggttga
4381 tcaggagaaa ggtcgggaag atatactctg ttgagtactg caagagcaag attgagagaa
4441 tgcggctgat tttctcactt gggttaatcg gcggtataag cttccatgtt caggttaacg
4501 ggacactatc taagacattc atgagtcagc tcgcatggaa gagggcagtc tgcttcccat
4561 taatggatgt gaatccccat atgaacatgg tgatttgggc ggcatctgta gaaatcacag
4621 gcgtcgatgc ggtgttccaa ccggccatcc ctcgtgattt ccgctactac cctaatgttg
4681 tggctaagaa catcggaagg atcagaaagc tgtaaatgtg cacccatcag agacctgcga
4741 caatgcccca agcagacacc acctggcagt cggagccacc gggtcactcc ttgtcttaaa
4801 taagaaaaac ttagggataa agtcccttgt gagtgcttgg ttgcaaaact ctccccttgg
4861 gaaacatgac agcatatatc cagagatcac agtgcatctc aacatcacta ctggttgttc
4921 tcaccacatt ggtctcgtgt cagattccca gggataggct ctctaacata ggggtcatag
4981 tcgatgaagg gaaatcactg aagatagctg gatcccacga atcgaggtac atagtactga
5041 gtctagttcc gggggtagac tttgagaatg ggtgcggaac agcccaggtt atccagtaca
5101 agagcctact gaacaggctg ttaatcccat tgagggatgc cttagatctt caggaggctc
5161 tgataactgt caccaatgat acgacacaaa atgccggtgc tccccagtcg agattcttcg
5221 gtgctgtgat tggtactatc gcacttggag tggcgacatc agcacaaatc accgcaggga
5281 ttgcactagc cgaagcgagg gaggccaaaa gagacatagc gctcatcaaa gaatcgatga
5341 caaaaacaca caagtctata gaactgctgc aaaacgctgt gggggaacaa attcttgctc
5401 taaagacact ccaggatttc gtgaatgatg agatcaaacc cgcaataagc gaattaggct
5461 gtgagactgc tgccttaaga ctgggtataa aattgacaca gcattactcc gagctgttaa
5521 ctgcgttcgg ctcgaatttc ggaaccatcg gagagaagag cctcacgctg caggcgctgt
5581 cttcacttta ctctgctaac attactgaga ttatgaccac aatcaggaca gggcagtcta
5641 acatctatga tgtcatttat acagaacaga tcaaaggaac ggtgatagat gtggatctag
5701 agagatacat ggtcaccctg tctgtgaaga tccctattct ttctgaagtc ccaggtgtgc
5761 tcatacacaa ggcatcatct atttcttaca acatagacgg ggaggaatgg tatgtgactg
5821 tccccagcca tatactcagt cgtgcttctt tcttaggggg tgcagacata accgattgtg
```

5881 ttgagtccag attgacctat atatgcccca gggatcccgc acaactgata cctgacagcc
5941 agcaaaagtg tatcctgggg gacacaacaa ggtgtcctgt cacaaaagtt gtggacagcc
6001 ttatccccaa gtttgctttt gtgaatgggg gcgttgttgc taactgcata gcatccacat
6061 gtacctgcgg gacaggccga agaccaatca gtcaggatcg ctctaaaggt gtagtattcc
6121 taacccatga caactgtggt cttataggtg tcaatggggt agaattgtat gctaaccgga
6181 gagggcacga tgccacttgg ggggtccaga acttgacagt cggtcctgca attgctatca
6241 gacccgttga tatttctctc aaccttgctg atgctacgaa tttcttgcaa gactctaagg
6301 ctgagcttga gaaagcacgg aaaatcctct cggaggtagg tagatggtac aactcaagag
6361 agactgtgat tacgatcata gtagttatgg tcgtaatatt ggtggtcatt atagtgatca
6421 tcatcgtgct ttatagactc agaaggtcaa tgctaatggg taatccagat gaccgtatac
6481 cgagggacac atacacatta gagccgaaga tcagacatat gtacacaaac ggtgggtttg
6541 atgcaatggc tgagaaaaga tgatcacgac cattatcaga tgtcttgtaa agcaggcata
6601 gtatccgttg agatctgtat ataataagaa aaacttaggg tgaaagtgag gtcgcgcggt
6661 actttagctt tcacctcaaa caagcacaga tcatggatgg tgataggggc aaacgtgact
6721 cgtactggtc tacttctcct agtggtagca ccacaaaacc agcatcaggt tgggagaggt
6781 caagtaaagc cgacacatgg ttgctgattc tctcattcac ccagtgggct ttgtcaattg
6841 ccacagtgat catctgtatc ataatttctg ctagacaagg gtatagtatg aaagagtact
6901 caatgactgt agaggcattg aacatgagca gcagggaggt gaaagagtca cttaccagtc
6961 taataaggca agaggttata gcaagggctg tcaacattca gagctctgtg caaaccggaa
7021 tcccagtctt gttgaacaaa aacagcaggg atgtcatcca gatgattgat aagtcgtgca
7081 gcagacaaga gctcactcag cactgtgaga gtacgatcgc agtccaccat gccgatggaa
7141 ttgccccact tgagccacat agtttctgga gatgccctgt cggagaaccg tatcttagct
7201 cagatcctga aatctcattg ctgcctggtc cgagcttgtt atctggttct acaacgatct
7261 ctggatgtgt taggctccct tcactctcaa ttggcgaggc aatctatgcc tattcatcaa
7321 atctcattac acaaggttgt gctgacatag ggaaatcata tcaggtcctg cagctagggt
7381 acatatcact caattcagat atgttccctg atcttaaccc cgtagtgtcc cacacttatg
7441 acatcaacga caatcggaaa tcatgctctg tggtggcaac cgggactagg ggttatcagc
7501 tttgctccat gccgactgta gacgaaagaa ccgactactc tagtgatggt attgaggatc
7561 tggtccttga tgtcctggat ctcaaaggga gaactaagtc tcaccggtat cgcaacagcg
7621 aggtagatct tgatcacccg ttctctgcac tataccccag tgtaggcaac ggcattgcaa
7681 cagaaggctc attgatattt cttgggtatg gtggactaac cacccctctg cagggtgata
7741 caaaatgtag gacccaagga tgccaacagg tgtcgcaaga cacatgcaat gaggctctga
7801 aaattacatg gctaggaggg aaacaggtgg tcagcgtgat catccaggtc aatgactatc
7861 tctcagagag gccaaagata agagtcacaa ccattccaat cactcaaaac tatctcgggg
7921 cggaaggtag attattaaaa ttgggtgatc gggtgtacat ctatacaaga tcatcaggct
7981 ggcactctca actgcagata ggagtacttg atgtcagcca ccctttgact atcaactgga
8041 cacctcatga agccttgtct agaccaggaa ataaagagtg caattggtac aataagtgtc
8101 cgaaggaatg catatcaggc gtatacactg atgcttatcc attgtcccct gatgcagcta
8161 acgtcgctac cgtcacgcta tatgccaata catcgcgtgt caacccaaca atcatgtatt
8221 ctaacactac taacattata aatatgttaa ggataaagga tgttcaatta gaggctgcat
8281 ataccacgac atcgtgtatc acgcattttg gtaaaggcta ctgctttcac atcatcgaga
8341 tcaatcagaa gagcctgaat accttacagc cgatgctctt taagactagc atccctaaat
8401 tatgcaaggc cgagtcttaa atttaactga ctagcaggct tgtcggcctt gctgacacta
8461 gagtcatctc cgaacatcca caatatctct cagtctctta cgtctctcac agtattaaga

8521 aaaacccagg gtgaatggga agcttgccat aggtcatgga tgggcaggag tcctcccaaa
8581 acccttctga catactctat ccagaatgcc acctgaactc tcccatagtc agggggaaga
8641 tagcacagtt gcacgtcttg ttagatgtga accagcccta cagactgaag gacgacagca
8701 taataaatat tacaaagcac aaaattagga acggaggatt gtccccccgt caaattaaga
8761 tcaggtctct gggtaaggct cttcaacgca caataaagga tttagaccga tacacgtttg
8821 aaccgtaccc aacctactct caggaattac ttaggcttga tataccagag atatgtgaca
8881 aaatccgatc cgtcttcgcg gtctcggatc ggctgaccag ggagttatct agtgggttcc
8941 aggatctttg gttgaatatc ttcaagcaac taggcaatat agaaggaaga gaggggtacg
9001 atccgttgca ggatatcggc accatcccgg agataactga taagtacagc aggaatagat
9061 ggtataggcc attcctaact tggttcagca tcaaatatga catgcggtgg atgcagaaga
9121 ccagaccggg gggacccctc gatacctcta attcacataa cctcctagaa tgcaaatcat
9181 acactctagt aacatacgga gatcttgtca tgatactgaa caagttgaca ttgacagggt
9241 atatcctaac ccctgagctg gtcttgatgt attgtgatgt tgtagaagga aggtggaata
9301 tgtctgctgc agggcatcta gataagaagt ccattgggat aacaagcaaa ggtgaggaat
9361 tatgggaact agtggattcc ctcttctcaa gtcttggaga ggaaatatac aatgtcatcg
9421 cactattgga gcccctatca cttgctctca tacaactaaa tgatcctgtt atacctctac
9481 gtggggcatt tatgaggcat gtgttgacag agctacagac tgttttaaca agtagagacg
9541 tgtacacaga tgctgaagca gacactattg tggagtcgtt actcgccatt ttccatggaa
9601 cctctattga tgagaaagca gagatctttt ccttctttag gacatttggc caccccagct
9661 tagaggctgt cactgccgcc gacaaggtaa gggcccatat gtatgcacaa aaggcaataa
9721 agcttaagac cctatacgag tgtcatgcag ttttttgcac tatcatcata aatgggtata
9781 gagagaggca tggcggacag tggccccccc gtgacttccc tgatcacgtg tgtctagaac
9841 taaggaacgc tcaagggtcc aatacggcaa tctcttatga atgtgctgta gacaactata
9901 caagtttcat aggcttcaag tttcggaagt ttatagaacc acaactagat gaagatctca
9961 caatatatat gaaagacaaa gcactatccc ccaggaagga ggcatgggac tctgtatacc
10021 cggatagtaa tctgtactat aaagccccag agtctgaaga gacccggcgg cttattgaag
10081 tgttcataaa tgatgagaat ttcaacccag aagaaattat caattatgtg gagtcaggag
10141 attggttgaa agacgaggag ttcaacatct cgtacagtct caaagagaaa gagatcaagc
10201 aagagggtcg tctattcgca aaaatgactt ataagatgcg agccgtacag gtgctggcag
10261 agacactact ggctaaagga ataggagagc tattcagcga aaatgggatg gttaaaggag
10321 agatagacct acttaaaaga ttgactactc tttctgtctc aggcgtcccc aggactgatt
10381 cagtgtacaa taactctaaa tcatcagaga agagaaacga aggcatggaa aataagaact
10441 ctgggggggta ctgggacgaa aagaagaggt ccagacatga attcaaggca acagattcat
10501 caacagacgg ctatgaaacg ttaagttgct tcctcacaac agacctcaag aaatactgct
10561 taaactggag atttgagagt actgcattgt ttggtcagag atgcaacgag atatttggct
10621 tcaagacctt ctttaactgg atgcatccag tccttgaaag gtgtacaata tatgttggag
10681 atccttactg tccagtcgcc gaccggatgc atcgacaact ccaggatcat gcagactctg
10741 gcattttcat acataatcct agggggggca tagaaggtta ctgccagaag ctgtggacct
10801 taatctcaat cagtgcaatc cacctagcag ctgtgagagt gggtgtcagg gtctctgcaa
10861 tggttcaggg tgacaatcaa gctatagccg tgacatcaag agtacctgta gctcagactt
10921 acaagcagaa gaaaaatcat gtctatgagg agatcaccaa atatttcggt gctctaagac
10981 acgtcatgtt tgatgtaggg cacgagctaa aattgaacga gaccatcatt agtagcaaga
11041 tgtttgtcta tagtaaaagg atatactatg atgggaagat tttaccacag tgcctgaaag
11101 ccttgaccaa gtgtgtattc tggtccgaga cactggtaga tgaaaacaga tctgcttgtt

11161 cgaacatctc aacatccata gcaaaagcta tcgaaaatgg gtattctcct atactaggct
11221 actgcattgc gttgtataag acctgtcagc aggtgtgcat atcactaggg atgactataa
11281 atccaactat cagcccgacc gtaagagatc aatactttaa gggtaagaat tggctgagat
11341 gtgcagtgtt gattccagca aatgttggag gattcaacta catgtctaca tctagatgct
11401 ttgttagaaa tattggagac cccgcagtag cagccctagc tgatctcaaa agattcatca
11461 gagcggatct gttagacaag caggtattat acagggtcat gaatcaagaa cccggtgact
11521 ctagttttct agattgggct tcagaccctt attcgtgtaa cctcccgcat tctcagagta
11581 taactacgat tataaagaat atcactgcta gatctgtgct gcaggaatcc ccgaatcctc
11641 tactgtctgg tctcttcacc gagactagtg gagaagagga tctcaacctg gcctcgttcc
11701 ttatggaccg gaaagtcatc ctgccgagag tggctcatga gatcctgggt aattccttaa
11761 ctggagttag ggaggcgatt gcagggatgc ttgatacgac caagtctcta gtgagagcca
11821 gcgttaggaa aggaggatta tcatatggga tattgaggag gcttgtcaat tatgatctat
11881 tgcagtacga gacactgact agaactctca ggaaaccggt gaaagacaac atcgaatatg
11941 agtatatgtg ttcagttgag ctagctgtcg gtctaaggca gaaaatgtgg atccacctga
12001 cttacgggag acccatacat gggctagaaa caccagaccc tttagagctc ttgaggggaa
12061 tatttatcga aggttcagag gtgtgcaagc tttgcaggtc tgaaggagca gaccccatct
12121 atacatggtt ctatcttcct gacaatatag acctggacac gcttacaaac ggatgtccgg
12181 ctataagaat cccctatttt ggatcagcca ctgatgaaag gtcggaagcc caactcgggt
12241 atgtaagaaa tctaagcaaa cccgcaaagg cggccatccg gatagctatg gtgtatacgt
12301 gggcctacgg gactgatgag atatcgtgga tggaagccgc tcttatagcc caaacaagag
12361 ctaatctgag cttagagaat ctaaagctgc tgactcctgt ttcaacctcc actaatctat
12421 ctcataggtt gaaagatacg gcaacccaga tgaagttctc tagtgcaaca ctagtccgtg
12481 caagtcggtt cataacaata tcaaatgata acatggcact caaagaagca ggggagtcga
12541 aggatactaa tctcgtgtat cagcagatta tgctaactgg gctaagcttg ttcgagttca
12601 atatgagata taagaaaggt tccttaggga agccactgat attgcactta catcttaata
12661 acgggtgctg tataatggag tccccacagg aggcgaatat ccccccaagg tccacattag
12721 atttagagat tacacaagag aacaataaat tgatctatga tcctgatcca ctcaaggatg
12781 tggaccttga gctatttagc aaggtcagag atgttgtaca cacagttgac atgacttatt
12841 ggtcagatga tgaagttatc agagcaacca gtatctgtac tgcaatgacg atagctgata
12901 caatgtctca attagataga gacaacttaa aagagatgat cgcactagta aatgacgatg
12961 atgtcaacag cttgattact gagtttatgg tgattgatgt tcctttattt tgctcaacgt
13021 tcgggggtat tctagtcaat cagtttgcat actcactcta cggcttaaac atcagaggaa
13081 gggaagaaat atggggacat gtagtccgga ttcttaaaga tacctcccac gcagttttaa
13141 aagtcttatc taatgctcta tctcatccca aaatcttcaa acgattctgg aatgcaggtg
13201 tcgtggaacc tgtgtatggg cctaacctct caaatcagga taagatactc ttggccctct
13261 ctgtctgtga atattctgtg gatctattca tgcacgattg gcaagggggt gtaccgcttg
13321 agatctttat ctgtgacaat gacccagatg tggccgacat gaggaggtcc tctttcttgg
13381 caagacatct tgcataccta tgcagcttgg cagagatatc tagggatggg ccaagattag
13441 aatcaatgaa ctctctagag aggctcgagt cactaaagag ttacctggaa ctcacatttc
13501 ttgatgaccc ggtactgagg tacagtcagt tgactggcct agtcatcaaa gtattcccat
13561 ctactttgac ctatatccgg aagtcatcta taaaagtgtt aaggacaaga ggtataggag
13621 tccctgaagt cttagaagat tgggatcccg aggcagataa tgcactgtta gatggtatcg
13681 cggcagaaat acaacagaat attcctttgg gacatcagac tagagcccct ttttgggggt
13741 tgagagtatc caagtcacag gtactgcgtc tccgggggta caaggagatc acaagaggtg

```
13801 agataggcag atcaggtgtt ggtctgacgt taccattcga tggaagatat ctatctcacc
13861 agctgaggct ctttggcatc aacagtacta gctgcttgaa agcacttgaa cttacctacc
13921 tattgagccc cttagttgac aaggataaag ataggctata tttaggggaa ggagctgggg
13981 ccatgctttc ctgttatgac gctactcttg gcccatgcat caactattat aactcagggg
14041 tatactcttg tgatgtcaat gggcagagag agttaaatat atatcctgct gaggtggcac
14101 tagtgggaaa gaaattaaac aatgttacta gtctgggtca aagagttaaa gtgttattca
14161 acgggaatcc tggctcgaca tggattggga atgatgagtg tgaggctttg atttggaatg
14221 aattacagaa tagctcgata ggcctagtcc actgtgacat ggagggagga gatcataagg
14281 atgatcaagt tgtactgcat gagcattaca gtgtaatccg gatcgcgtat ctggtggggg
14341 atcgagacgt tgtgcttata agcaagattg ctcccaggct gggcacggat tggaccaggc
14401 agctcagcct atatctgaga tactgggacg aggttaacct aatagtgctt aaaacatcta
14461 accctgcttc cacagagatg tatctcctat cgaggcaccc caaatctgac attatagagg
14521 acagcaagac agtgttagct agtctcctcc ctttgtcaaa agaagatagc atcaagatag
14581 aaaagtggat cttaatagag aaggcaaagg ctcacgaatg ggttactcgg gaattgagag
14641 aaggaagctc ttcatcaggg atgcttagac cttaccatca agcactgcag acgtttggct
14701 ttgaaccaaa cttgtataaa ttgagcagag atttcttgtc caccatgaac atagctgata
14761 cacacaactg catgatagct ttcaacaggg ttttgaagga tacaatcttc gaatgggcta
14821 gaataactga gtcagataaa aggcttaaac taactggtaa gtatgacctg tatcctgtga
14881 gagattcagg caagttgaag acaatttcta gaagacttgt gctatcttgg atatctttat
14941 ctatgtccac aagattggta actgggtcat tccctgacca gaagtttgaa gcaagacttc
15001 aattgggaat agtttcatta tcatcccgtg aaatcaggaa cctgagggtt atcacaaaaa
15061 ctttattaga caggtttgag gatattatac atagtataac gtatagattc ctcaccaaag
15121 aaataaagat tttgatgaag attttagggg cagtcaagat gttcggggcc aggcaaaatg
15181 aatacacgac cgtgattgat gatggatcac taggtgatat cgagccatat gacagctcgt
15241 aataattagt ccctatcgtg cagaacgatc gaagctccgc ggtacctgga agtcttggac
15301 ttgtccatat gacaatagta agaaaaactt acaagaagac aagaaaattt aaaaggatac
15361 atatctctta aactcttgtc tggt
//
```