



COVID-19 Information

[Public health information \(CDC\)](#)

[Research information \(NIH\)](#)

[SARS-CoV-2 data \(NCBI\)](#)

[Prevention and treatment information \(HHS\)](#)

[Español](#)

Notice of Scheduled eRA Maintenance: Please note that eRA systems will be undergoing scheduled maintenance from 10am until 10pm Eastern US time on April 24, 2021. During this window, eRA-dependent services such as MyBibliography and Grant Reporting may be unavailable. More information is available on the [eRA website](#).

GenBank

Vesicular stomatitis Indiana virus strain 98COE, complete genome

GenBank: AF473864.1

[FASTA](#) [Graphics](#)

Go to:

LOCUS AF473864 11162 bp RNA linear VRL 24-SEP-2002

DEFINITION Vesicular stomatitis Indiana virus strain 98COE, complete genome.

ACCESSION AF473864

VERSION AF473864.1

KEYWORDS .

SOURCE Vesicular stomatitis Indiana virus

ORGANISM [Vesicular stomatitis Indiana virus](#)
Viruses; Riboviria; Orthornavirae; Negarnaviricota;
Haploviricotina; Monjiviricetes; Mononegavirales; Rhabdoviridae;
Vesiculovirus.

REFERENCE 1 (bases 1 to 11162)

AUTHORS Rodriguez,L.L., Pauszek,S.J., Bunch,T.A. and Schumann,K.R.

TITLE Full-length genome analysis of natural isolates of vesicular
stomatitis virus (Indiana 1 serotype) from North, Central and South
America

JOURNAL J. Gen. Virol. 83 (Pt 10), 2475-2483 (2002)

PUBMED [12237430](#)

REFERENCE 2 (bases 1 to 11162)

AUTHORS Rodriguez,L.L., Pauszek,S.J., Bunch,T.A. and Schumann,K.R.

TITLE Direct Submission

JOURNAL Submitted (24-JAN-2002) Foot and Mouth Diseased Unit, Plum Island
Animal Disease Center, U.S. Department of Agriculture, Agricultural
Research Service, P.O. Box 848, Greenport, NY 11944-0848, USA

FEATURES

source Location/Qualifiers

1..11162
/organism="Vesicular stomatitis Indiana virus"
/mol_type="genomic RNA"
/strain="98COE"
/serotype="Indiana 1"
/host="equine"
/db_xref="taxon:11277"
/country="USA: Colorado"
/note="isolated in 1998"

[misc RNA](#) 1..47
/note="3' leader sequence"

[misc feature](#) 48..50
/note="non-transcribed intergenic nucleotides"

[mRNA](#) 51..1383
/product="nucleocapsid protein"

[CDS](#) 64..1332
/note="N protein"
/codon_start=1
/product="nucleocapsid protein"
/protein_id="AAN16980_1"
/translation="MSVTVKRIIDNTVIVPKLPANEDPVEYPADYFRKSKEIPLYINT
TKLSLDLRGYYVYQGLKSGNVSIHVNYSYLYGALKDIRGLDKDWSSFGINIGKAGDTI
GIFDLVSLKALDGVLPDGVSDASRTSADDKWLPLYLLGLYRVGRTPMPEYRKKLMDGL
TNQCKMINEQFEPLVPEGRDIFDVMGNDSNYTKIVAAVDMFFHMFKHECASFRTYGI
VSRFKDCAALATFGHLCKITGMSTEDVTTWILNREVADEMVMMLPGQEIDKADSYMP
YLIDFGLSSKSPYSSVKNPAFHFWGQLTALLLRSTRARNARQPDDIEYTSLTAGLLY

AYAVGSSADLAQQFCVGDNKYTPDDSTGGLTTNAPPQGRDVVEWLGWFEDQNRKPTPD
MMQYAKRAVMSLQGLREKTIGKYAKSEFDK"

misc feature

1384..1385
/note="non-transcribed intergenic nucleotides"

mRNA

1386..2206
/product="phosphoprotein"

CDS

1396..2193
/note="P protein"
/codon_start=1
/product="phosphoprotein"
/protein_id="AAN16981.1"
/translation="MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRDEKSNYELFQEDG
VEEHTKPSYFQAADSDTESEPEIEDNQGLYVPDPEAEQVEGFIQGPLDDYADEEVDV
VFTSDWQPELKSDEHGKTLRLTLPEGLSGEQKSQWLSTIKAVVQSAKYWNLAECTFE
ASREGVIMEERQMPDVYKVPVMNTHPSQSEAVSDVWSLSKTSMTFQPKKASLQPLT
ISLDELFSRRGEFISVGGNGRMSHKEAILLGLRYKKLYNQARVKYSL"

misc feature

2207..2208
/note="non-transcribed intergenic nucleotides"

mRNA

2209..3046
/product="matrix protein"

CDS

2250..2939
/note="M protein"
/codon_start=1
/product="matrix protein"
/protein_id="AAN16982.1"
/translation="MSSLKKILGLKGGKSKKLGIAAPPYEEDTSMEYAPSAPIDKS
YFGVDEMTHDPNQLRYEKFFTVKLTVRSNRPFRYSDVAAAVSHWDMYIGMAGKR
PFYKILAFGLSSNLKATPAVLADQGPPEYHAHCEGRAYLPHRMGKTPMMLNVPEHFR
PFNIGLYKGTIELTMTIYDDESLEAAPMIWDHFNSSKFSDFREKALMFGLIVEKASG
AWILDSVSHFK"

misc feature

3047..3048
/note="non-transcribed intergenic nucleotides"

mRNA

3049..4721
/product="glycoprotein"

CDS

3078..4613
/note="G protein"
/codon_start=1
/product="glycoprotein"
/protein_id="AAN16983.1"
/translation="MKCLLYLAFLSIGVNCKFTIVFPHNQKGTWKNVPSNYHYCPSS
DLNWHNDLIGTALQVMPKSKHAIQADGWMCHASKWVTTCDFRWYGPKYITHSIRSFT
PSVEQCRESIEQTKQGTWLNPGFPPQSCGYATVTDAAEAVIVQVTPHHVLVEYTG
DSQFINGKCSNDICPTVHNSTTWHSYKVKGLCDSNLISMDITFFSEDELSSLGKEG
TGRFSNHAFAYETGDKACKMQYCKHWGVRVPSGVWFEMADQDLFAAARFPECEP
SSISAPSQTSVDVSLIQDVERILDYSLCQETWSKIGAGLTPSPVDLSYLAPKNPGT
GPAFTIINGTLKYFETRYIRVDIAAPILSRMVGMI SGTTERELWDDWAPYEDVE
IGPNGVLRSSGKYFPLYMIGHGMLSDSLHLSKAQVFEHPHIQDAASQLPDETLFF
GDTGLSKNP IELVEGWSGWSKSSIASFFFIIIGLIIGLFLVLRVGIYLCIKLKH
TKRQIYTDIEMNRLGK"

misc feature

4722..4723
/note="non-transcribed intergenic nucleotides"

mRNA

4724..11103
/product="L polymerase protein"

CDS

4734..11063
/codon_start=1
/product="L polymerase protein"
/protein_id="AAN16984.1"
/translation="MEVHDFETDEFNDFNEDDYATREFLNPDERMTYLNHADYNLNSP
LISDDIDNLRKFNLSLIPSMWDSKNWDGVLMLTSCQANP IPTSRMHKWMGNWMSD
NHDASQGYSFLEVDKAEITFDVVETFRGWGNKPIEYIKKEKWTDSFKILAYLCQK
FLDLHLKTLTLNAVSEVELLNLARTFKGKVRSSHGNTNCRLRVPSLGPTEISEGWAY
FKKLDILMDRNFLLMVKDVIGRMQTVLSMVGRI DNL FSEQDIFSLNIIYRIGDKIVE
RLGNFSYDLIKMVEPICNLKMLKLAERSRPLVPQFPFHENIKTSVDEGAKIDRGINF
LHDQIMSVKTVDLTLVIYGSFRHWGHPFIDYAGLEKLHSQVTMKKIDIDVSYAKALAS
DLARIVLYQQFNDHKKWFVNGDLLPHDHPFKSHVKENTWPTAAQVQDFGDKWHELPLI
KCFEIPDLDPSTIISDKSHSMNRSEVLKHVRMNPNTPIPSKKVLQTLMDTKATNWE
FLKEIDEKGLDDDDLIIGLKGKEREKLAGRFFSLMSWKLREYFVITEYLKTHFVPM
FKGLTMADDLTAVIKKMLDSSSGGLKSYEAICIANHIDYEKWNHQRKLSNGPVFRV
MGQFLGYPSLIERTHEFFEKSLIYNGRPDLMRVQNNTLINSTSQRVCWQGEGLLEG
LRQKGWILNLLVIQREAKIRNTAVKVLQAGDNQVICTQYKTKKSRNVVELQGALNQ
MSVSNKEIMTAIKVGTGRLGLLVNDETMQSADYLNYGKIPIFRGVIRGLETKRWSRV
TCTNDQIPTCANIMSSVSTNALTVAHFAENPINAMIQYNYFGT FARLLMMHDPALRQ
SLYEVDQKIPGLHSSTFKYAMLYLDPISGGVSGMSLSRFLIRAFDPVTELSFWRFI
HLHARS EHLKEMSAVFNPEIAKFRITHIDKLVEDPTSLNIAMGMSANLLKTEVKKC
LIESRQIRNQVIKDATIYLYHEEDRLRSFLWSINPLFPRFLSEFKSGTFLGVADGLI
SLFQNSRTIRNSFKKHYHREDDLIVRSEVSSLTHLGLHLRRGCKMWTCSATHADT
LRYKSWGRVIGTTPHPLMLGPHRKEKTPCAPCNTSGFNYSVHCPDGHDFVSSR
GPLPAYLGSKTSESTSLQPWERESKVP LKRAIRLDAISWVFEVPSKLAAMTILSNI
HSLTGEETWKQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTRDLGD
QNFDFLFQATLLYAQITTTVARDGWTTSCTDHYHIACKSCLRPIEEITLDSMDYTPP
DVSHVLTWRNGEGSWGQEI KQIYPLEGNWKNLAPAEQSYQVGRICIGFLYGD LAYRKS
THAEDSSLFPLSIQSRIRGRGFLKGLLDGLMRASCCQVHRRSLAHLKRPANAVYGG
IYLDLKSVPFPLSLTRSGPIRDELETIPHKIPTSYPSNRDMGVIVRNYFYKQCR
IEKGKYSRSHYSQWLWFSVLSIDFLGPFISITLLQILYKPSLSGKDKNELRELANLS
SLLRSGEWEDIHVFFTKDILLCP EIRHACKFGIAKDNKMDGYPWPWGRESRGTIT
TIPVYTTTPYKMLEMPRIQNP LLSGIRLGLPTGAHYKIRSILHGMGIHYRDFLS
CGDGSGMTAALLRENVHSRGI FNSLLELSGVMRGAPEPPSALETGGDKSRVNG
ETCWEHPSDLCDPRTWDFLRLKAGLGLQIDLIVMDMEVRDSSLSK IETNVRNYVHR
ILDEQGVLIYKTYGYICESEKNAVITLGP MFKTVDLVQTEFSSQTSSEVMVCKGLK

KLIDEPNPDWSSINESWKNLYAFQSSEQEFARARKVSTYFTLTGIPSQFIPDPFVNLE
TMLQIFGVPTGVSHAAALKSSDRPADLLTISLFYMAIISYYNINHIRVGMPPNPPSD
GIAQNVGIAITGISFWLSLMEKDIPLYQQCLAVIQQSFPIRWEAVSVKGGYKQKWSTR
GDGLPKDTRISDSLAPIGNWIRSLLEVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLR
NNTGMIAWINRQISKEDRSILMLKSDLHEENSRD"

misc feature

11104..11162

/note="non-transcribed 5' trailer"

ORIGIN

```
1  acgaagacaa  acaaacatt  attaccatta  aaaggctcag  gagaaacttt  aacagtaatc
61  aaaaatgtctg  ttacagtc  gagaaatcatt  gacaacacag  tcatagttcc  aaaaacttct
121  gcaaatgagg  atccagtgga  ataccggcg  gattacttca  gaaaatcaaa  ggagattcct
181  ctttaccatca  atactcaaaa  aagttgtca  gatctaagag  gatatgtcta  ccaaggcctc
241  aaatccggaa  atgtatcaat  catacatgct  aacagctact  tgtatggagc  attaaaggac
301  atccggggta  agttggacaa  agattgttca  agtttcggaa  taaacatcgg  gaaggcagga
361  gatacaatcg  gaataattga  cttgtatcc  ctgaaagccc  tggatggcgt  acttccagat
421  ggagtatcgg  atgcttccag  aaccagcgca  gatgacaaat  ggctgccttt  gtatctactt
481  ggcttataca  gagtggcgag  aacacaaatg  cctgaataca  gaaaaaagct  catggatggg
541  ctgacaaatc  aatgcaaaat  gatcaatgaa  cagtttgaa  ctctgtgccc  agaaggtcgt
601  gacattttg  atgtgtggg  aaatgacagt  aattacacaa  aaattgtcgc  tgcagtggac
661  atgttcttc  acatgttcaa  aaaaatgaa  tgtcctcgt  tcagatcagg  aactattggt
721  tccagattca  aagattgtgc  tgcattggca  acatttggac  acctctgcaa  aataaccggg
781  atgtctacag  aagatgtaac  gacctggatc  ttgaaccgag  aagttgcaga  tgagatggtc
841  caaatgatgc  tccaggcca  agaaattgac  aaggccgatt  catacatgcc  ttatttgcac
901  gactttggat  tgtcttctaa  gtctccatat  tcttccgta  aaaaacctgc  cttccacttc
961  tgggggcaat  tgacagctct  tctgtctaga  tctactagag  caaggaaatg  cgcacaacct
1021  gatgacattg  agtatacatc  tcttactaca  gcaggtttgt  tgtacgctta  tgcagtagga
1081  tcctctgccg  acttggcaca  acagtctgt  gttggagata  acaaatcac  tccagatgat
1141  agtaccggag  gattgacgac  taatgcaccg  ccacaaggca  gagatgtggt  cgaatggcta
1201  ggatggtttg  aagatcaaaa  cagaaaaccg  actcctgata  tgatgcagta  tgcaaaaaga
1261  gcagtcattg  cattgcaagg  cctgagagag  aagacaattg  gcaagtatgc  taatgcagaa
1321  ttgacaaaat  gacccataaa  ttctcagatc  acctattata  tactatgcta  catatgaaaa
1381  aaactaacag  atatcatgga  taatctcaca  aaagtctgtg  agtatctcaa  gtcctactct
1441  cgtctagatc  aggcggtagg  agagatagat  gagatcgaa  cacaacgaga  tgaaaagtcc
1501  aattatgagt  tgttccaaga  ggacggagtg  gaagagcata  ctaagccctc  ttattttcag
1561  gcagcagatg  atcttgacac  agaactgaa  ccagaaattg  aagacaatca  aggcttctgt
1621  gtaccagatc  cggaaagctga  gcaagttgaa  ggctttatc  aaggcccttt  agatgactat
1681  gcagatgagg  aagtggatgt  tgtatttact  tcagactgga  aacagcctga  gctcaaatct
1741  gacgagcatg  gaaagacctt  acggttgaca  ttgccagagg  gtttaagtgg  agagcagaaa
1801  tcccagtgcc  tttcgacgat  taaagcagtc  gttcaaatg  ccaataactg  gaatctagca
1861  gagtgacatc  ttgaagcatc  gagagaaggg  gtcattatgg  aagagccca  gatgactccg
1921  gatgtatata  agtctactcc  agtgcagatc  acacatcctg  ccaatcaga  agcctgatca
1981  gatgtttggt  ctctctgaa  gacatccatg  accttccaac  ccaagaaagc  aagctctcag
2041  cctcttacc  tatccttgg  tgaattgttc  tcatctagag  gagaattcat  ctctgtcgg  a
2101  ggtaaccgg  gaatgtctca  taaagagccc  atcctgcttg  gctcaggatg  caaaaagtgt
2161  tacaatcagg  cgagatcaa  atattctctg  tagactatga  aaaaaagtaa  cagatatcac
2221  aatctaagtg  ttatcccaat  ccattcaca  tgagtctcct  aaagaagatt  ctcggcctga
2281  agggaaaagg  taagaagtct  aagaattag  ggatcgacc  accccttat  gaagaggaca
2341  ctacatgga  gtatgctccg  agcgcctcaa  ttgacaaatc  ctattttgga  gttgacgaga
2401  tggacactca  tgatccgaat  caattaagat  atgagaaatt  ctctttaca  gtgaaactga
2461  cggttagatc  taatctccg  ttcagaacat  actcagatgt  ggacccgct  gtatccatt
2521  gggatcacat  gtacatcgg  atggcaggg  aacggcctt  ctcaaaaatc  ttggcatttt
2581  tgggttctc  taatctaaag  gccactccag  cggattggc  agatcaaggt  caaccagagt
2641  atcacgctca  ctgcgaagg  agggcttatt  tgccacatag  aatggggaag  acccctcca
2701  tgcctcaatg  accagagcac  ttcagaagac  cattcaaat  agtctttac  aaggggacga
2761  ttgagcttac  aatgaccatc  tacgatgatg  agtactgga  agcagctcct  atgatctggg
2821  atcatttcaa  ttcttcaaa  ttttctgatt  tcagagagaa  ggcttaatg  tttggcctga
2881  ttgtcgagaa  aaaggcatct  ggagcttgg  tctggattc  tgcagccac  tcaaatgag
2941  ctagtctagc  ttctagcttc  tgaacaatcc  ccggttact  cagtatttcc  taattccagc
3001  ctttcaaaa  actaatatcc  tgtcttttt  atccctatga  aaaaaactaa  cagagatcga
3061  tctgtttct  tgacaccatg  aagtgccttt  tgtacttagc  tttttatcc  attggggtga
3121  attgcaagtt  caccatggt  tttccacaca  accaaaaagg  aacctggaaa  aatgttctt
3181  ccaattacca  ttattgccct  tcaagctcag  atttaaattg  gcataatgac  ttaataggca
3241  cagccttaca  agtcaaaatg  cccaagatc  acaaggctat  tcaagctgac  ggttggatgt
3301  gtcatgctc  ccaatgggtc  actactgtg  atttccgctg  gatggacgc  aagtataaa
3361  cacattccat  ccgatcctt  actccatctg  tagaacaatg  cagggaaagc  attgaacaaa
3421  cgaacaagg  aacttgctg  aatccaggat  tcctcctca  aagttgtgga  tatgcaactg
3481  tgacggatgc  tgaagcagtg  attgtccagg  tgactcctca  ccattgtctt  gttgatgaat
3541  acacaggaga  atgggtgat  atgggtgat  tcacagtca  tcaacggaaa  atgcagcaat  gacatagcc
3601  caactgtcca  taactccaca  acctggcatt  ctgactata  ggtaaaagg  ctatgtgatt
3661  ctaacctcat  ttccatggac  atcacttct  tctcagagga  cggagagcta  tcatccctag
3721  gaaaggagg  tacagggttc  agaagtaacc  actttgctta  tgaactgga  gacaaggcct
3781  gcaaaatgca  gtactgcaag  cattggggag  tcagactccc  atcaggtgtc  tggttcgaga
3841  tggctgatca  ggatctctt  gctgcagcca  gattcctga  atgcccagaa  gggctcaagta
3901  tctctgctcc  atctcagacc  tcagtggatg  taagtctcat  tcaggacgtt  gagaggatct
3961  tggattatc  cctctgccc  gaaacctgga  gcaaaatcgg  ggcaggtctt  cccatctctc
4021  cagtggatct  cagctatctt  gctcctaaaa  acccagggaac  cggcctgcc  ttactataa
4081  tcaatggtag  cctaaaatac  ttgagacca  gatacatcag  ggttgatatt  gctgctcaa
4141  tcctctcaag  aatggtcgga  atgatcagtg  gaactaccac  agaaaaggaa  ctgtgggatg
4201  actgggcacc  atagtaagac  gtggaattg  gacccaatgg  agttctgagg  accagttcag
4261  gatataagtt  tcctttatat  atgattggac  atggtatggt  ggactccgat  cttcatctta
4321  gctcaaggc  tcagggttct  gaacatcctc  acattcagga  tgcctgctc  cagcttctg
4381  atgatgagac  ttttttttt  ggtgacactg  gattatccaa  aaatccaatc  gagctttag
4441  aaggttggtt  cagttggtt  aagagctcta  ttgcctcttt  tttctttatc  atagggttaa
4501  tcattggact  attcttgggt  ctccgagttg  gtatttatct  ttgcattaaa  ttaaagcaca
4561  ccaagaaaag  acagatttat  acagatatag  agatgaatcg  acttgaaaag  taatccaat
4621  cctgcacaac  agattcttca  tgtttgaacc  gaatcaactt  gtgatatcat  gctcaagag
4681  gccttaatta  tatttaata  ttttaagttt  tatgaaaaaa  actaacagca  atcatggaag
4741  tccatgatt  tgagaccgac  gaattcaatg  atttcaacga  agatgactat  gccacaagag
4801  aattcctgaa  tcctgatgag  gcgatgact  acttgaatca  tgcgtattac  aacttgaatt
```

4861 ctctctaat tagtgatgat attgacaatt tgattaggaa attcaattct cttccaattc
4921 cctcgatgtg gtagatgaag aactgggatg gagttcttga gatgttaacg tcatgtcaag
4981 ccaatcccac cccaacatct cggatgcata aatggatggg aaattgggta atgtctgaca
5041 atcatgatgc cagtcgaagga tatagttttt tacatgaagt ggacaaagag gcagaaataa
5101 catttgacgt ggtagagacc ttcatccgcg gctggggcaa caaccaatt gaatacatca
5161 aaaagggaaa atggactgac tcttcaaga ttctcgctta tttgtgtcaa aagtttttgg
5221 acttacacaa gttgacatta atcttaaatg ctgtctctga ggtggaattg ctcaacttgg
5281 cgaggacttt caaaggcaaa gttagaagaa gttctcatgg aacgaacata tgcaggcttc
5341 ggggtccag cttggcttct acttttattt cagaaggatg gcttacttc aagaaacttg
5401 atattcta atgaccgaaac tttctgttaa tggcaaaaga tgtgattata gggaggatgc
5461 aaacgggtgt atccatggta ggtagaatag acaacctgtt ctcaagcaa gacatctttt
5521 cccttcaaaa tatctacaga attggagata aaattgtgga gaggctggga aatttttctt
5581 atgacttgat taaaatggta gaaccgatat gcaacctgaa gctgatgaaa ttagcaagag
5641 aatcaaggcc tttagtccca caattcccct attttgaaaa tcatatcaag acttctgttg
5701 atgaaggagc aaaaattgac cgaggtataa acttctcca tgatcagata atgagtgtga
5761 aaacagtggg tctcacactg gtgatttatg gatcattcag acattggggg catcctttta
5821 tagattatta cgctgggctg gaaaaattac attccaagt aacctgaag aaagatattg
5881 atgtgtcata tgcacaagga cttgcaagtg atttagctcg gattgttcta tatcaacagt
5941 tcaatgatca taaaaagtg tctgtgaatg gagacttctt ccctcatgat catcccttta
6001 aaagtcatgt taaagaaaaa acatggccca cagctgcca agttcaagat tttggagata
6061 aatggcatga acttccactg attaaatggt ttgaaatacc agacttacta gaccatcga
6121 taatatactc tgcacaaaagt cattcaatga ataggtcaga ggtgttgaag catgtccgaa
6181 tgaatccgaa cactcctatc cctagtaaaa aggtgttgcga gactatgttg gacacaaaag
6241 ctaccaattg gaaagaattt ctcaaaagaa ttgatgagaa gggcttagat gatgatgacc
6301 taattattgg tcttaaggga aaggagaggg aactgaagtt ggaggtaga ttttctccc
6361 taatgtcttg gaaattgca gaatactttg taattaccga atatttgata aagactcatt
6421 tctgtccctat gtttcaaggc ttgacaatgg cggcagatct aactcagctc attaaaaaga
6481 tgttagattc ctcatccggc caaggattga agtcatatga ggcaatttgc atagccaatc
6541 acattgatta tgaaaaatgg aataaccacc aaaggaagtt atcaaacggc ccagatttcc
6601 gagttatggg cagttcttca ggttatccat ccttaatcga gagaactcat gaatttttg
6661 agaaaagtct tatatactac aatggaagac cagacttgat cgtgttcaa aataaacac
6721 tgatcaattc aacctcccaa cgagtgtgtt ggcaaggaca agagggtgga ctggaaggtc
6781 tacggcaaaa aggatggagt atcctcaatc tactggttat tcaagagag gctaaaaatca
6841 gaaacactgc tgcacaaagt ttggcacaag gtgataatca agttatttgc acacagtata
6901 aaacgaagaa atcagaaaac gttgtagaat tacagggtgc tctcaatcaa atggttctta
6961 ataagtagaa aattatgact gcaatcaaa tagggacagg gaggttagga cttttgtaa
7021 atgacgatga gactatgcaa tctgcagatt acttgaatta tggaaaaata ccgattttcc
7081 gtggagtgat tagaggttta gagaccaaga gatggtcagc agtgacttgt gtcaccaatg
7141 accaaatacc cacctgtgct aataataatga gctcggtttc cacaaatgct ctcaccgtag
7201 ctatatttgc tgagaaccca atcaatgcca tgatacagta caattatttt gggacatttg
7261 ctgactctct gttgatgatg catgatcctg ctcttcgta atcattgtat gaagtccaag
7321 ataagatacc gggcttgcac agttctactt tcaaatcgcg catgttgat tggaccctt
7381 ccattggagg tgtgtcaggc atgtctttgt ccaggtttt gattagagcc ttcccagatc
7441 ccgtgacaga aagtctctca ttctggagat tcatccattt acatgctcga agtgagcatc
7501 tgaaggagat gagtgcagta tttggaacc ccgagatagc caagtttca ataactcaca
7561 tagacaagct agtagaagat ccaacctctc tgaacatcgc tatggggatg agtccagcga
7621 atttgttaaa gactgaggtt aaaaatgct taatcgaatc aagacaaacc atcaggaatc
7681 aggtgattaa ggatgcaacc atataattgt atcatgaaga ggatcggctc agaagtttct
7741 tatggtcaat aaatcctctg ttccctagat ttttaagtga attcaatca ggcacttttt
7801 tgggagtctc agacgggctc atcagtctat ttcaaaaattc tctactatt cggaactcct
7861 ttaagaaaaa gtatcatagg gaattggatg atttgattgt gaggagttag gatcttctt
7921 tgacacattt agggaaactt catctgcgaa ggggtcatg taaaatgtgg acatgttcag
7981 ctactcatgc tgatacatta agatacaaat cctggggcgg tacagttatt gggacaactg
8041 taccctatcc attggaatg ttgggtccac aacatcgaaa ggagactcct tgtgccatc
8101 gtaacacatc cgggttcaat tatgtttctg tgcattgtcc agacgggac catgacgtct
8161 ttagtccagc gggaccattg cctgcttctc tagggtctaa aacatccgaa tctacatcca
8221 ttttgagcc ttgggaaga gaaagcaag tccactgat taaaagagct acacgtctta
8281 gagatgctat ctcttggttt gttgagccc actctaaact agcaatgact atactttcta
8341 acatccactc ttaacaggc gaggaatgga ccaaaaggca gcatgggttc aaaaagaacg
8401 ggtctgccct tcatagttt tgcacatctc gtagagcca tggcgggttc gcatctcaga
8461 gcaactgcagc attgaccagg ttgatggcaa ctacagacac tatgagggat ctgggagatc
8521 agaatttca cttctgttcc caggcaactg tgcctatgc tcaaatacc accactgtt
8581 caagagacgg atggaccacc agttgtacag atcattatca tattgctgt aagtctctgt
8641 tgaagccat gaagagatc accctggact caagtatgga ctacacacc ccagatgtat
8701 cccatgtgct gaagacatgg aggaatgggg aaggtctgtg gggacaagag ataaaaaga
8761 tctatccttt agaaggaat tggaaagaat tagcactctg tgagcaatc tatcaagtcg
8821 gcagatgat aggttttcta tatggagact tggcttatag gaaatctact catgccgagg
8881 acagttctct atttcctcta tctatacaaa gtcgtattag aggtcagggt tctttaaag
8941 ggttgctaga cggattaatg agagcaagt gctgccaagt aatacaccga agaagtctgg
9001 ctcaattgaa gaggccggcc aacgcagtgt acggagggtt gatttacttg attgataaac
9061 tgagtgtatc acctcaattc ttttccctga ctatagcagg acctattaga gacgaattag
9121 aaacgattcc ccacaagatc ccgacatcct atccgacaag caacctgtat atgggggtga
9181 ttgtcagaaa ttacttcaaa taccatgccc gtctaattga aaagggaaaa tacagatcac
9241 attattcaca attatgggta ttctcagatg tttgtccat agatttctc ggcaccttct
9301 ctatttccac tacccttttg caaatcctat acaagccatc ttatctggg aaagataaga
9361 atgagttgag agacttgca aatcttctt cattgctaag atcaggagag ggggtgggag
9421 acatacatgt gaaattcttt accaaggaca tactattgtg tccagaggaa atcagacatg
9481 ctgcaagtt cgggattgct aaggataata ataaagacat gggctatccc ccttggggaa
9541 gggaaatccag agggacaatt caacaatccc ctgtttatta tacgaccacc ccttaccaaa
9601 agatgctaga gatgcctcca agaattcaaa atcccctgct gtcgggaatt aggttaggcc
9661 agttaccaac tggcgcctcat tataaaattc ggagtatatt acatggaatg ggaatccatt
9721 acagggactt cttaagttgt ggagacggtt ccggagggat gactgctgca ttactacgag
9781 aaaaatgaca tagcagagga atattcaata gtctgttaga atgtcagggt tcagtcatgc
9841 gaggtgcttc tctgagccc cccagtgtc tagaaacttt agggaggatg aaatcgagat
9901 gtgtaaatgg tgaacatgt tgggaacatc catctgactt atgtgacca aggacttggg
9961 actattttct cggactcaaa gcagcttgg ggcttcaaat tgatttaatt gtgatggata
10021 tggaaagttc actagcttct actagcctga aaattgagac gaatgtcaga aattatgtc
10081 accggatttt ggatgagcaa ggagttttaa tctacaagac ttatggaaca tatatttgtg
10141 agagcggaaa gaatgcagta caaatcctg gtcctatggt caagacggtc gacttagttc

10201 aaacagaatt tagtagttct caaacgtctg aagtatatat ggtatgtaaa ggtttgaaga
10261 aattaatcga tgaaccaaat cccgattggt cttccatcaa tgaatcttgg aaaaacctgt
10321 acgatttcca gtcatcagaa caggaatttg ccagagcaag gaaggtagt acatacttta
10381 ccttgacagg tattccctcc caattcattc ctgatccttt tgtaaaccct gagactatgc
10441 tacaatatatt cggagtacc acgggtgtgt ctcatgctggc tgccttaaaa tcatctgata
10501 gacctgcaga tttattgacc attagccttt tttatatggc gatcatatca tattataaca
10561 tcaatcatat cagagtagga ccgatgcctc cgaaccccc atcagatgga attgcacaaa
10621 atgtggggat cgctataact ggtataagct tttggctgag tttaatggag aaagacattc
10681 cactatatca acagtgttta gcagttatcc agcaatcatt tccgattagg tgggaggctg
10741 tttcagtaaa aggaggatac aaacagaagt ggagtactag aggtgatggg ctccaaaag
10801 ataccgaat ttcagactcc ttggcccaa tcgggaactg gatcagatct ctggaattgg
10861 tccgaaacca agttcgtcta aatccattca atgagatctt gttcaatcag ctatgtcgta
10921 cagtggataa tcatttgaat tggtaaaat tgcgaaaca cacaggaatg attgcatgga
10981 tcaatagaca aatctcaaaa gaagaccggt ctatactgat gttgaagagc gacctacatg
11041 aggaaaactc ttggagagat taaaaaatca tgaggagact ccaacttta agtatgaaa
11101 aaactttgat ccttaagacc ctcttgtggt ttttatgttt tatctggttt tgggtcttc
11161 gt

//

