Dengue virus 2, complete genome

NCBI Reference Sequence: NC_001474.2

FASTA Graphics

Go to:

LOCUS NC_001474 10723 bp RNA linear VRL 11-JUL-2019

DEFINITION Dengue virus 2, complete genome.

ACCESSION NC_001474

VERSION NC_001474.2

DBLINK BioProject: PRJNA485481

KEYWORDS RefSeq.

SOURCE dengue virus type 2

ORGANISM dengue virus type 2

Viruses; Riboviria; Orthornavirae; Kitrinoviricota; Flasuviricetes; Amarillovirales; Flaviviridae; Orthoflavivirus; Euflavivirus; Orthoflavivirus denguei.

REFERENCE 1 (bases 1 to 10723)

AUTHORS Kinney,R.M., Butrapet,S., Chang,G.J., Tsuchiya,K.R., Roehrig,J.T., Bhamarapravati,N. and Gubler,D.J.

TITLE Construction of infectious cDNA clones for dengue 2 virus: strain 16681 and its attenuated vaccine derivative, strain PDK-53

JOURNAL Virology 230 (2), 300-308 (1997)

PUBMED 9143286

REFERENCE 2 (bases 1 to 10723)

CONSRTM NCBI Genome Project

TITLE Direct Submission

JOURNAL Submitted (01-NOV-2007) National Center for Biotechnology Information, NIH, Bethesda, MD 20894, USA

REFERENCE 3 (bases 1 to 10723)

AUTHORS Kinney,R.M., Butrapet,S., Chang,G.J., Tsuchiya,K.R., Roehrig,J.T., Bhamarapravati,N. and Gubler,D.J.

TITLE Direct Submission

JOURNAL Submitted (28-JAN-1997) Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Public Health Service, U.S. Department of Health and Human Services, P.O. Box 2087, Fort Collins, CO 80522, USA

COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from U87411.

On Nov 1, 2007 this sequence version replaced NC_001474.1.
The mature peptides were added by the NCBI staff following other annotations for Dengue virus with the kind help of Dr. Vladimir Yamshchikov (Southern Research Institute, Birmingham, AL USA).
COMPLETENESS: full length.

```
FEATURES             Location/Qualifiers
     source          1..10723
                     /organism="dengue virus type 2"
                     /mol_type="genomic RNA"
                     /strain="16681"
                     /db_xref="taxon:11060"
                     /geo_loc_name="Thailand"
                     /collection_date="1964"
     5'UTR           1..96
     stem_loop       2..70
                     /note="stem-loop A (SLA)"
     regulatory      71..80
                     /regulatory_class="other"
                     /note="oligo U track spacer"
     regulatory      81..96
                     /regulatory_class="promoter"
                     /note="5' upstream AUG region (UAR)"
     stem_loop       81..95
                     /note="stem-loop B (SLB)"
     gene            97..10272
                     /gene="POLY"
                     /locus_tag="DENV_gp1"
                     /gene_synonym="polyprotein gene"
                     /db_xref="GeneID:1494449"
     CDS             97..10272
                     /gene="POLY"
                     /locus_tag="DENV_gp1"
                     /gene_synonym="polyprotein gene"
                     /note="contains structural proteins, C-prM/M-E and
                     non-structural proteins, NS1-NS2A/B-NS3-NS4A/B-NS5"
                     /codon_start=1
                     /product="polyprotein"
                     /protein_id="NP_056776.2"
                     /db_xref="GeneID:1494449"
                     /translation="MNNQRKKAKNTPFNMLKRERNRVSTVQQLTKRFSLGMLQGRGPL
                     KLFMALVAFLRFLTIPPTAGILKRWGTIKKSKAINVLRGFRKEIGRMLNILNRRRRSA
                     GMIIMLIPTVMAFHLTTRNGEPHMIVSRQEKGKSLLFKTEDGVNMCTLMAMDLGELCE
                     DTITYKCPLLRQNEPEDIDCWCNSTSTWVTYGTCTTMGEHRREKRSVALVPHVGMGLE
                     TRTETWMSSEGAWKHVQRIETWILRHPGFTMMAAILAYTIGTTHFQRALIFILLTAVT
                     PSMTMRCIGMSNRDFVEGVSGGSWVDIVLEHGSCVTTMAKNKPTLDFELIKTEAKQPA
                     TLRKYCIEAKLTNTTTESRCPTQGEPSLNEEQDKRFVCKHSMVDRGWGNGCGLFGKGG
                     IVTCAMFRCKKNMEGKVVQPENLEYTIVITPHSGEEHAVGNDTGKHGKEIKITPQSSI
                     TEAELTGYGTVTMECSPRTGLDFNEMVLLQMENKAWLVHRQWFLDLPLPWLPGADTQG
                     SNWIQKETLVTFKNPHAKKQDVVVLGSQEGAMHTALTGATEIQMSSGNLLFTGHLKCR
```

LRMDKLQLKGMSYSMCTGKFKVVKEIAETQHGTIVIRVQYEGDGSPCKIPFEIMDLEK
RHVLGRLITVNPIVTEKDSPVNIEAEPPFGDSYIIIGVEPGQLKLNWFKKGSSIGQMF
ETTMRGAKRMAILGDTAWDFGSLGGVFTSIGKALHQVFGAIYGAAFSGVSWTMKILIG
VIITWIGMNSRSTSLSVTLVLVGIVTLYLGVMVQADSGCVVSWKNKELKCGSGIFITD
NVHTWTEQYKFQPESPSKLASAIQKAHEEGICGIRSVTRLENLMWKQITPELNHILSE
NEVKLTIMTGDIKGIMQAGKRSLRPQPTELKYSWKTWGKAKMLSTESHNQTFLIDGPE
TAECPNTNRAWNSLEVEDYGFGVFTTNIWLKLKEKQDVFCDSKLMSAAIKDNRAVHAD
MGYWIESALNDTWKIEKASFIEVKNCHWPKSHTLWSNGVLESEMIIPKNLAGPVSQHN
YRPGYHTQITGPWHLGKLEMDFDFCDGTTVVVTEDCGNRGPSLRTTTASGKLITEWCC
RSCTLPPLRYRGEDGCWYGMEIRPLKEKEENLVNSLVTAGHGQVDNFSLGVLGMALFL
EEMLRTRVGTKHAILLVAVSFVTLITGNMSFRDLGRVMVMVGATMTDDIGMGVTYLAL
LAAFKVRPTFAAGLLLRKLTSKELMMTTIGIVLLSQSTIPETILELTDALALGMMVLK
MVRNMEKYQLAVTIMAILCVPNAVILQNAWKVSCTILAVVSVSPLLLTSSQQKTDWIP
LALTIKGLNPTAIFLTTLSRTSKKRSWPLNEAIMAVGMVSILASSLLKNDIPMTGPLV
AGGLLTVCYVLTGRSADLELERAADVKWEDQAEISGSSPILSITISEDGSMSIKNEEE
EQTLTILIRTGLLVISGLFPVSIPITAAAWYLWEVKKQRAGVLWDVPSPPPMGKAELE
DGAYRIKQKGILGYSQIGAGVYKEGTFHTMWHVTRGAVLMHKGKRIEPSWADVKKDLI
SYGGGWKLEGEWKEGEEVQVLALEPGKNPRAVQTKPGLFKTNAGTIGAVSLDFSPGTS
GSPIIDKKGKVVGLYGNGVVTRSGAYVSAIAQTEKSIEDNPEIEDDIFRKRRLTIMDL
HPGAGKTKRYLPAIVREAIKRGLRTLILAPTRVVAAEMEEALRGLPIRYQTPAIRAEH
TGREIVDLMCHATFTMRLLSPVRVPNYNLIIMDEAHFTDPASIAARGYISTRVEMGEA
AGIFMTATPPGSRDPFPQSNAPIIDEEREIPERSWNSGHEWVTDFKGKTVWFVPSIKA
GNDIAACLRKNGKKVIQLSRKTFDSEYVKTRTNDWDFVVTTDISEMGANFKAERVIDP
RRCMKPVILTDGEERVILAGPMPVTHSSAAQRRGRIGRNPKNENDQYIYMGEPLENDE
DCAHWKEAKMLLDNINTPEGIIPSMFEPEREKVDAIDGEYRLRGEARKTFVDLMRRGD
LPVWLAYRVAAEGINYADRRWCFDGVKNNQILEENVEVEIWTKEGERKKLKPRWLDAR
IYSDPLALKEFKEFAAGRKSLTLNLITEMGRLPTFMTQKARDALDNLAVLHTAEAGGR
AYNHALSELPETLETLLLLTLLATVTGGIFLFLMSGRGIGKMTLGMCCIITASILLWY
AQIQPHWIAASIILEFFLIVLLIPEPEKQRTPQDNQLTYVVIAILTVVAATMANEMGF
LEKTKKDLGLGSIATQQPESNILDIDLRPASAWTLYAVATTFVTPMLRHSIENSSVNV
SLTAIANQATVLMGLGKGWPLSKMDIGVPLLAIGCYSQVNPITLTAALFLLVAHYAII
GPGLQAKATREAQKRAAAGIMKNPTVDGITVIDLDPIPYDPKFEKQLGQVMLLVLCVT
QVLMMRTTWALCEALTLATGPISTLWEGNPGRFWNTTIAVSMANIFRGSYLAGAGLLF
SIMKNTTNTRRGTGNIGETLGEKWKSRLNALGKSEFQIYKKSGIQEVDRTLAKEGIKR
GETDHHAVSRGSAKLRWFVERNMVTPEGKVVDLGCGRGGWSYYCGGLKNVREVKGLTK
GGPGHEEPIPMSTYGWNLVRLQSGVDVFFIPPEKCDTLLCDIGESSPNPTVEAGRTLR
VLNLVENWLNNNTQFCIKVLNPYMPSVIEKMEALQRKYGGALVRNPLSRNSTHEMYWV
SNASGNIVSSVNMISRMLINRFTMRYKKATYEPDVDLGSGTRNIGIESEIPNLDIIGK
RIEKIKQEHETSWHYDQDHPYKTWAYHGSYETKQTGSASSMVNGVVRLLTKPWDVVPM
VTQMAMTDTTPFGQQRVFKEKVDTRTQEPKEGTKKLMKITAEWLWKELGKKKTPRMCT
REEFTRKVRSNAALGAIFTDENKWKSAREAVEDSRFWELVDKERNLHLEGKCETCVYN
MMGKREKKLGEFGKAKGSRAIWYMWLGARFLEFEALGFLNEDHWFSRENSLSGVEGEG
LHKLGYILRDVSKKEGGAMYADDTAGWDTRITLEDLKNEEMVTNHMEGEHKKLAEAIF
KLTYQNKVVRVQRPTPRGTVMDIISRRDQRGSGQVGTYGLNTFTNMEAQLIRQMEGEG

VFKSIQHLTITEEIAVQNWLARVGRERLSRMAISGDDCVVKPLDDRFASALTALNDMG
KIRKDIQQWEPSRGWNDWTQVPFCSHHFHELIMKDGRVLVVPCRNQDELIGRARISQG
AGWSLRETACLGKSYAQMWSLMYFHRRDLRLAANAICSAVPSHWVPTSRTTWSIHAKH
EWMTTEDMLTVWNRVWIQENPWMEDKTPVESWEEIPYLGKREDQWCGSLIGLTSRATW
AKNIQAAINQVRSLIGNEEYTDYMPSMKRFRREEEEAGVLW"

mat_peptide 97..438
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="anchored capsid protein ancC"
/protein_id="NP_739581.2"
/db_xref="VBRC:35917"

mat_peptide 97..396
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="capsid protein C"
/protein_id="NP_739591.2"
/db_xref="VBRC:35918"

mat_peptide 439..936
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="membrane glycoprotein precursor prM"
/protein_id="NP_739582.2"
/db_xref="VBRC:35919"

mat_peptide 439..711
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="protein pr"
/note="peptide pr"
/protein_id="YP_009164954.1"

mat_peptide 712..936
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="membrane glycoprotein M"
/protein_id="NP_739592.2"
/db_xref="VBRC:35920"

mat_peptide 937..2421
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"

/product="envelope protein E"
/protein_id="NP_739583.2"
/db_xref="VBRC:35921"
mat_peptide 2422..3477
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS1"
/protein_id="NP_739584.2"
/db_xref="VBRC:35922"
mat_peptide 3478..4131
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS2A"
/protein_id="NP_739585.2"
/db_xref="VBRC:35923"
mat_peptide 4132..4521
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS2B"
/protein_id="NP_739586.2"
/db_xref="VBRC:35924"
mat_peptide 4522..6375
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS3"
/note="RNA-helicase; protease; ATPase; component of
capping enzyme (RNA thriphosphatase)"
/protein_id="NP_739587.2"
/db_xref="VBRC:35925"
mat_peptide 6376..6756
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS4A"
/protein_id="NP_739588.2"
/db_xref="VBRC:35926"
mat_peptide 6757..6825
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"

/product="protein 2K"
/protein_id="NP_739593.2"
/db_xref="VBRC:35927"
mat_peptide 6826..7569
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="nonstructural protein NS4B"
/protein_id="NP_739589.2"
/db_xref="VBRC:35928"
mat_peptide 7570..10269
/gene="POLY"
/locus_tag="DENV_gp1"
/gene_synonym="polyprotein gene"
/product="RNA-dependent RNA polymerase NS5"
/note="methyltransferase component of capping enzyme;
nonstructural protein NS5"
/protein_id="NP_739590.2"
/db_xref="VBRC:35929"
stem_loop 116..132
/note="capsid region hairpin (cHP)"
regulatory 134..144
/regulatory_class="other"
/note="5' conserved sequence (CS); also called cyclization
sequence"
3'UTR 10273..10723
ncRNA 10299..10723
/ncRNA_class="lncRNA"
/product="sfRNA1"
/note="subgenomic flavivirus RNA"
stem_loop 10303..10368
/note="flaviviral nuclease-resistant RNA 1 (fNR1); also
called stem-loop 1 or xrRNA1"
ncRNA 10372..10723
/ncRNA_class="lncRNA"
/product="sfRNA2"
/note="subgenomic flavivirus RNA"
stem_loop 10376..10441
/note="flaviviral nuclease-resistant RNA 2 (fNR2); also
called stem-loop 2 or xrRNA2"
ncRNA 10449..10723
/ncRNA_class="lncRNA"
/product="sfRNA3"
/note="subgenomic flavivirus RNA"

```
     stem_loop       10453..10534
                     /note="dumbbell 1 (DBI); also called xrRNA3"
     ncRNA           10536..10723
                     /ncRNA_class="lncRNA"
                     /product="sfRNA4"
                     /note="subgenomic flavivirus RNA"
     stem_loop       10540..10621
                     /note="dumbbell 2 (DBII); also called xrRNA4"
     regulatory      10618..10628
                     /regulatory_class="other"
                     /note="3' conserved sequence (CS); also called cyclization
                     sequence"
     stem_loop       10631..10644
                     /note="short hairpin (sHP)"
     regulatory      10642..10658
                     /regulatory_class="promoter"
                     /note="3' upstream AUG region (UAR)"
     stem_loop       10645..10723
                     /note="3' stem-loop (3'SL)"
ORIGIN
        1 agttgttagt ctacgtggac cgacaaagac agattctttg agggagctaa gctcaacgta
       61 gttctaacag ttttttaatt agagagcaga tctctgatga ataaccaacg gaaaaaggcg
      121 aaaaacacgc ctttcaatat gctgaaacgc gagagaaacc gcgtgtcgac tgtgcaacag
      181 ctgacaaaga gattctcact tggaatgctg cagggacgag gaccattaaa actgttcatg
      241 gccctggtgg cgttccttcg tttcctaaca atcccaccaa cagcagggat attgaagaga
      301 tggggaacaa ttaaaaaatc aaaagctatt aatgttttga gagggttcag gaaagagatt
      361 ggaaggatgc tgaacatctt gaataggaga cgcagatctg caggcatgat cattatgctg
      421 attccaacag tgatggcgtt ccatttaacc acacgtaacg gagaaccaca catgatcgtc
      481 agcagacaag agaaagggaa aagtcttctg tttaaaacag aggatggcgt gaacatgtgt
      541 accctcatgg ccatggacct tggtgaattg tgtgaagaca caatcacgta caagtgtccc
      601 cttctcaggc agaatgagcc agaagacata gactgttggt gcaactctac gtccacgtgg
      661 gtaacttatg ggacgtgtac caccatggga gaacatagaa gagaaaaaag atcagtggca
      721 ctcgttccac atgtgggaat gggactggag acacgaactg aaacatggat gtcatcagaa
      781 ggggcctgga aacatgtcca gagaattgaa acttggatct tgagacatcc aggcttcacc
      841 atgatggcag caatcctggc atacaccata ggaacgacac atttccaaag agccctgatt
      901 ttcatcttac tgacagctgt cactccttca atgacaatgc gttgcatagg aatgtcaaat
      961 agagactttg tggaaggggt ttcaggagga agctgggttg acatagtctt agaacatgga
     1021 agctgtgtga cgacgatggc aaaaaacaaa ccaacattgg attttgaact gataaaaaca
     1081 gaagccaaac agcctgccac cctaaggaag tactgtatag aggcaaagct aaccaacaca
     1141 acaacagaat ctcgctgccc aacacaaggg gaacccagcc taaatgaaga gcaggacaaa
     1201 aggttcgtct gcaaacactc catggtagac agaggatggg gaaatggatg tggactattt
     1261 ggaaagggag gcattgtgac ctgtgctatg ttcagatgca aaaagaacat ggaaggaaaa
     1321 gttgtgcaac cagaaaactt ggaatacacc attgtgataa cacctcactc aggggaagag
     1381 catgcagtcg gaaatgacac aggaaaacat ggcaaggaaa tcaaaataac accacagagt
```

1441 tccatcacag aagcagaatt gacaggttat ggcactgtca caatggagtg ctctccaaga
1501 acgggcctcg acttcaatga gatggtgttg ctgcagatgg aaaataaagc ttggctggtg
1561 cacaggcaat ggttcctaga cctgccgtta ccatggttgc ccggagcgga cacacaaggg
1621 tcaaattgga tacagaaaga gacattggtc actttcaaaa atccccatgc gaagaaacag
1681 gatgttgttg ttttaggatc ccaagaaggg gccatgcaca cagcacttac aggggccaca
1741 gaaatccaaa tgtcatcagg aaacttactc ttcacaggac atctcaagtg caggctgaga
1801 atggacaagc tacagctcaa aggaatgtca tactctatgt gcacaggaaa gtttaaagtt
1861 gtgaaggaaa tagcagaaac acaacatgga acaatagtta tcagagtgca atatgaaggg
1921 gacggctctc catgcaagat ccctttgag ataatggatt tggaaaaaag acatgtctta
1981 ggtcgcctga ttacagtcaa cccaattgtg acagaaaaag atagcccagt caacatagaa
2041 gcagaacctc cattcggaga cagctacatc atcataggag tagagccggg acaactgaag
2101 ctcaactggt ttaagaaagg aagttctatc ggccaaatgt ttgagacaac aatgaggggg
2161 gcgaagagaa tggccatttt aggtgacaca gcctgggatt ttggatcctt gggaggagtg
2221 tttacatcta taggaaaggc tctccaccaa gtctttggag caatctatgg agctgccttc
2281 agtggggttt catggactat gaaaatcctc ataggagtca ttatcacatg gataggaatg
2341 aattcacgca gcacctcact gtctgtgaca ctagtattgg tgggaattgt gacactgtat
2401 ttgggagtca tggtgcaggc cgatagtggt tgcgttgtga gctggaaaaa caaagaactg
2461 aaatgtggca gtgggatttt catcacagac aacgtgcaca catggacaga acaatacaag
2521 ttccaaccag aatccccttc aaaactagct tcagctatcc agaaagccca tgaagagggc
2581 atttgtggaa tccgctcagt aacaagactg gagaatctga tgtggaaaca aataacacca
2641 gaattgaatc acattctatc agaaaatgag gtgaagttaa ctattatgac aggagacatc
2701 aaaggaatca tgcaggcagg aaaacgatct ctgcggcctc agcccactga gctgaagtat
2761 tcatggaaaa catggggcaa agcaaaaatg ctctctacag agtctcataa ccagaccttt
2821 ctcattgatg gccccgaaac agcagaatgc cccaacacaa atagagcttg gaattcgttg
2881 gaagttgaag actatggctt tggagtattc accaccaata tatggctaaa attgaaagaa
2941 aaacaggatg tattctgcga ctcaaaactc atgtcagcgg ccataaaaga caacagagcc
3001 gtccatgccg atatgggtta ttggatagaa agtgcactca atgacacatg gaagatagag
3061 aaagcctctt tcattgaagt taaaaactgc cactggccaa aatcacacac cctctggagc
3121 aatggagtgc tagaaagtga gatgataatt ccaaagaatc tcgctggacc agtgtctcaa
3181 cacaactata gaccaggcta ccatacacaa ataacaggac catggcatct aggtaagctt
3241 gagatggact ttgatttctg tgatggaaca acagtggtag tgactgagga ctgcggaaat
3301 agaggaccct ctttgagaac aaccactgcc tctggaaaac tcataacaga atggtgctgc
3361 cgatcttgca cattaccacc gctaagatac agaggtgagg atgggtgctg gtacgggatg
3421 gaaatcagac cattgaagga gaaagaagag aatttggtca actccttggt cacagctgga
3481 catgggcagg tcgacaactt ttcactagga gtcttgggaa tggcattgtt cctggaggaa
3541 atgcttagga cccgagtagg aacgaaacat gcaatactac tagttgcagt ttcttttgtg
3601 acattgatca cagggaacat gtcctttaga gacctgggaa gagtgatggt tatggtaggc
3661 gccactatga cggatgacat aggtatgggc gtgacttatc ttgccctact agcagccttc
3721 aaagtcagac caacttttgc agctggacta ctcttgagaa agctgacctc caaggaattg
3781 atgatgacta ctataggaat tgtactcctc tcccagagca ccataccaga gaccattctt
3841 gagttgactg atgcgttagc cttaggcatg atggtcctca aaatggtgag aaatatggaa
3901 aagtatcaat tggcagtgac tatcatggct atcttgtgcg tcccaaacgc agtgatatta
3961 caaaacgcat ggaaagtgag ttgcacaata ttggcagtgg tgtccgtttc cccactgctc
4021 ttaacatcct cacagcaaaa aacagattgg ataccattag cattgacgat caaaggtctc

4081 aatccaacag ctatttttct aacaaccctc tcaagaacca gcaagaaaag gagctggcca
4141 ttaaatgagg ctatcatggc agtcgggatg gtgagcattt tagccagttc tctcctaaaa
4201 aatgatattc ccatgacagg accattagtg gctggagggc tcctcactgt gtgctacgtg
4261 ctcactggac gatcggccga tttggaactg gagagagcag ccgatgtcaa atgggaagac
4321 caggcagaga tatcaggaag cagtccaatc ctgtcaataa caatatcaga agatggtagc
4381 atgtcgataa aaaatgaaga ggaagaacaa acactgacca tactcattag aacaggattg
4441 ctggtgatct caggactttt tcctgtatca ataccaatca cggcagcagc atggtacctg
4501 tgggaagtga agaaacaacg ggccggagta ttgtgggatg ttccttcacc cccacccatg
4561 ggaaaggctg aactggaaga tggagcctat agaattaagc aaaaagggat tcttggatat
4621 tcccagatcg gagccggagt ttacaaagaa ggaacattcc atacaatgtg gcatgtcaca
4681 cgtggcgctg ttctaatgca taaaggaaag aggattgaac catcatgggc ggacgtcaag
4741 aaagacctaa tatcatatgg aggaggctgg aagttagaag gagaatggaa ggaaggagaa
4801 gaagtccagg tattggcact ggagcctgga aaaaatccaa gagccgtcca aacgaaacct
4861 ggtcttttca aaaccaacgc cggaacaata ggtgctgtat ctctggactt ttctcctgga
4921 acgtcaggat ctccaattat cgacaaaaaa ggaaaagttg tgggtcttta tggtaatggt
4981 gttgttacaa ggagtggagc atatgtgagt gctatagccc agactgaaaa aagcattgaa
5041 gacaacccag agatcgaaga tgacattttc cgaaagagaa gactgaccat catggacctc
5101 cacccaggag cgggaaagac gaagagatac cttccggcca tagtcagaga agctataaaa
5161 cggggtttga gaacattaat cttggccccc actagagttg tggcagctga aatggaggaa
5221 gcccttagag gacttccaat aagataccag accccagcca tcagagctga gcacaccggg
5281 cgggagattg tggacctaat gtgtcatgcc acatttacca tgaggctgct atcaccagtt
5341 agagtgccaa actacaacct gattatcatg gacgaagccc atttcacaga cccagcaagt
5401 atagcagcta gaggatacat ctcaactcga gtggagatgg gtgaggcagc tgggattttt
5461 atgacagcca ctccccccggg aagcagagac ccatttcctc agagcaatgc accaatcata
5521 gatgaagaaa gagaaatccc tgaacgttcg tggaattccg gacatgaatg ggtcacggat
5581 tttaaaggga agactgtttg gttcgttcca agtataaaag caggaaatga tatagcagct
5641 tgcctgagga aaaatggaaa gaaagtgata caactcagta ggaagacctt tgattctgag
5701 tatgtcaaga ctagaaccaa tgattgggac ttcgtggtta caactgacat ttcagaaatg
5761 ggtgccaatt tcaaggctga gagggttata gaccccagac gctgcatgaa accagtcata
5821 ctaacagatg gtgaagagcg ggtgattctg gcaggaccta tgccagtgac ccactctagt
5881 gcagcacaaa gaagagggag aataggaaga aatccaaaaa atgagaatga ccagtacata
5941 tacatggggg aacctctgga aaatgatgaa gactgtgcac actggaaaga agctaaaatg
6001 ctcctagata acatcaacac gccagaagga atcattccta gcatgttcga accagagcgt
6061 gaaaaggtgg atgccattga tggcgaatac cgcttgagag gagaagcaag gaaaaccttt
6121 gtagacttaa tgagaagagg agacctacca gtctggttgg cctacagagt ggcagctgaa
6181 ggcatcaact acgcagacag aaggtggtgt tttgatggag tcaagaacaa ccaaatccta
6241 gaagaaaacg tggaagttga aatctggaca aaagaagggg aaaggaagaa attgaaaccc
6301 agatggttgg atgctaggat ctattctgac ccactggcgc taaaagaatt taaggaattt
6361 gcagccggaa gaaagtctct gaccctgaac ctaatcacag aaatgggtag gctcccaacc
6421 ttcatgactc agaaggcaag agacgcactg gacaacttag cagtgctgca cacggctgag
6481 gcaggtggaa gggcgtacaa ccatgctctc agtgaactgc cggagaccct ggagacattg
6541 cttttactga cacttctggc tacagtcacg ggagggatct ttttattctt gatgagcgga
6601 aggggcatag ggaagatgac cctgggaatg tgctgcataa tcacggctag catcctccta
6661 tggtacgcac aaatacagcc acactggata gcagcttcaa taatactgga gtttttttctc

6721 atagttttgc ttattccaga acctgaaaaa cagagaacac cccaagacaa ccaactgacc
6781 tacgttgtca tagccatcct cacagtggtg gccgcaacca tggcaaacga gatgggtttc
6841 ctagaaaaaa cgaagaaaga tctcggattg ggaagcattg caacccagca acccgagagc
6901 aacatcctgg acatagatct acgtcctgca tcagcatgga cgctgtatgc cgtggccaca
6961 acatttgtta caccaatgtt gagacatagc attgaaaatt cctcagtgaa tgtgtcccta
7021 acagctatag ccaaccaagc cacagtgtta atgggtctcg ggaaaggatg gccattgtca
7081 aagatggaca tcggagttcc ccttctcgcc attggatgct actcacaagt caaccccata
7141 actctcacag cagctctttt cttattggta gcacattatg ccatcatagg gccaggactc
7201 caagcaaaag caaccagaga agctcagaaa agagcagcgg cgggcatcat gaaaaaccca
7261 actgtcgatg gaataacagt gattgaccta gatccaatac cttatgatcc aaagtttgaa
7321 aagcagttgg gacaagtaat gctcctagtc ctctgcgtga ctcaagtatt gatgatgagg
7381 actacatggg ctctgtgtga ggctttaacc ttagctaccg ggcccatctc cacattgtgg
7441 gaaggaaatc cagggaggtt ttggaacact accattgcgg tgtcaatggc taacattttt
7501 agagggagtt acttggccgg agctggactt ctcttttcta ttatgaagaa cacaaccaac
7561 acaagaaggg gaactggcaa cataggagag acgcttggag agaaatggaa aagccgattg
7621 aacgcattgg gaaaaagtga attccagatc tacaagaaaa gtggaatcca ggaagtggat
7681 agaaccttag caaaagaagg cattaaaaga ggagaaacgg accatcacgc tgtgtcgcga
7741 ggctcagcaa aactgagatg gttcgttgag agaaacatgg tcacaccaga agggaaagta
7801 gtggacctcg gttgtggcag aggaggctgg tcatactatt gtggaggact aaagaatgta
7861 agagaagtca aaggcctaac aaaaggagga ccaggacacg aagaacccat ccccatgtca
7921 acatatgggt ggaatctagt gcgtcttcaa agtggagttg acgttttctt catcccgcca
7981 gaaaagtgtg acacattatt gtgtgacata ggggagtcat caccaaatcc cacagtggaa
8041 gcaggacgaa cactcagagt ccttaactta gtagaaaatt ggttgaacaa caacactcaa
8101 ttttgcataa aggttctcaa cccatatatg ccctcagtca tagaaaaaat ggaagcacta
8161 caaaggaaat atggaggagc cttagtgagg aatccactct cacgaaactc cacacatgag
8221 atgtactggg tatccaatgc ttccgggaac atagtgtcat cagtgaacat gatttcaagg
8281 atgttgatca acagatttac aatgagatac aagaaagcca cttacgagcc ggatgttgac
8341 ctcggaagcg gaacccgtaa catcgggatt gaaagtgaga taccaaacct agatataatt
8401 gggaaaagaa tagaaaaaat aaagcaagag catgaaacat catggcacta tgaccaagac
8461 cacccataca aaacgtgggc ataccatggt agctatgaaa caaaacagac tggatcagca
8521 tcatccatgg tcaacggagt ggtcaggctg ctgacaaaac cttgggacgt cgtccccatg
8581 gtgacacaga tggcaatgac agacacgact ccatttggac aacagcgcgt ttttaaagag
8641 aaagtggaca cgagaaccca agaaccgaaa gaaggcacga agaaactaat gaaaataaca
8701 gcagagtggc tttggaaaga attagggaag aaaaagacac ccaggatgtg caccagagaa
8761 gaattcacaa gaaaggtgag aagcaatgca gccttggggg ccatattcac tgatgagaac
8821 aagtggaagt cggcacgtga ggctgttgaa gatagtaggt tttgggagct ggttgacaag
8881 gaaaggaatc tccatcttga aggaaagtgt gaaacatgtg tgtacaacat gatgggaaaa
8941 agagagaaga agctagggga attcggcaag gcaaaaggca gcagagccat atggtacatg
9001 tggcttggag cacgcttctt agagtttgaa gccctaggat tcttaaatga agatcactgg
9061 ttctccagag agaactccct gagtggagtg gaaggagaag ggctgcacaa gctaggttac
9121 attctaagag acgtgagcaa gaaagaggga ggagcaatgt atgccgatga caccgcagga
9181 tgggatacaa gaatcacact agaagaccta aaaaatgaag aaatggtaac aaaccacatg
9241 gaaggagaac acaagaaact agccgaggcc attttcaaac taacgtacca aaacaaggtg
9301 gtgcgtgtgc aaagaccaac accaagaggc acagtaatgg acatcatatc gagaagagac

9361 caaagaggta gtggacaagt tggcacctat ggactcaata ctttcaccaa tatggaagcc
9421 caactaatca gacagatgga gggagaagga gtctttaaaa gcattcagca cctaacaatc
9481 acagaagaaa tcgctgtgca aaactggtta gcaagagtgg ggcgcgaaag gttatcaaga
9541 atggccatca gtggagatga ttgtgttgtg aaacctttag atgacaggtt cgcaagcgct
9601 ttaacagctc taaatgacat gggaaagatt aggaaagaca tacaacaatg ggaaccttca
9661 agaggatgga atgattggac acaagtgccc ttctgttcac accatttcca tgagttaatc
9721 atgaaagacg gtcgcgtact cgttgttcca tgtagaaacc aagatgaact gattggcaga
9781 gcccgaatct cccaaggagc agggtggtct ttgcgggaga cggcctgttt ggggaagtct
9841 tacgcccaaa tgtggagctt gatgtacttc cacagacgcg acctcaggct ggcggcaaat
9901 gctatttgct cggcagtacc atcacattgg gttccaacaa gtcgaacaac ctggtccata
9961 catgctaaac atgaatggat gacaacggaa gacatgctga cagtctggaa cagggtgtgg
10021 attcaagaaa acccatggat ggaagacaaa actccagtgg aatcatggga ggaaatccca
10081 tacttgggga aaagagaaga ccaatggtgc ggctcattga ttgggttaac aagcagggcc
10141 acctgggcaa agaacatcca agcagcaata aatcaagtta gatcccttat aggcaatgaa
10201 gaatacacag attacatgcc atccatgaaa agattcagaa gagaagagga agaagcagga
10261 gttctgtggt agaaagcaaa actaacatga aacaaggcta gaagtcaggt cggattaagc
10321 catagtacgg aaaaaactat gctacctgtg agccccgtcc aaggacgtta aaagaagtca
10381 ggccatcata aatgccatag cttgagtaaa ctatgcagcc tgtagctcca cctgagaagg
10441 tgtaaaaaat ccgggaggcc acaaaccatg gaagctgtac gcatggcgta gtggactagc
10501 ggttagagga gacccctccc ttacaaatcg cagcaacaat gggggcccaa ggcgagatga
10561 agctgtagtc tcgctggaag gactagaggt tagaggagac ccccccgaaa caaaaaacag
10621 catattgacg ctgggaaaga ccagagatcc tgctgtctcc tcagcatcat tccaggcaca
10681 gaacgccaga aaatggaatg gtgctgttga atcaacaggt tct