Pseudomonas aeruginosa PAO1, complete genome

NCBI Reference Sequence: NC_002516.2

FASTA Graphics

Go to:

LOCUS NC_002516 2421 bp DNA linear CON 24-JAN-2019
DEFINITION Pseudomonas aeruginosa PAO1, complete genome.
ACCESSION NC_002516 REGION: 4275..6695
VERSION NC_002516.2
DBLINK BioProject: PRJNA57945
Assembly: GCF_000006765.1
KEYWORDS RefSeq.
SOURCE Pseudomonas aeruginosa PAO1
ORGANISM Pseudomonas aeruginosa PAO1
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
REFERENCE 1 (bases 1 to 2421)
AUTHORS Winsor,G.L., Van Rossum,T., Lo,R., Khaira,B., Whiteside,M.D.,
Hancock,R.E. and Brinkman,F.S.
TITLE Pseudomonas Genome Database: facilitating user-friendly,
comprehensive comparisons of microbial genomes
JOURNAL Nucleic acids Res. 37 (DATABASE ISSUE), D483-D488 (2009)
PUBMED 18978025
REFERENCE 2 (bases 1 to 2421)
AUTHORS Cirz,R.T., O'Neill,B.M., Hammond,J.A., Head,S.R. and Romesberg,F.E.
TITLE Defining the Pseudomonas aeruginosa SOS response and its role in
the global response to the antibiotic ciprofloxacin
JOURNAL J. Bacteriol. 188 (20), 7101-7110 (2006)
PUBMED 17015649
REFERENCE 3 (bases 1 to 2421)
AUTHORS Palmer,K.L., Mashburn,L.M., Singh,P.K. and Whiteley,M.
TITLE Cystic fibrosis sputum supports growth and cues key aspects of
Pseudomonas aeruginosa physiology
JOURNAL J. Bacteriol. 187 (15), 5267-5277 (2005)
PUBMED 16030221
REFERENCE 4 (bases 1 to 2421)
AUTHORS Salunkhe,P., Smart,C.H., Morgan,J.A., Panagea,S., Walshaw,M.J.,
Hart,C.A., Geffers,R., Tummler,B. and Winstanley,C.
TITLE A cystic fibrosis epidemic strain of Pseudomonas aeruginosa
displays enhanced virulence and antimicrobial resistance
JOURNAL J. Bacteriol. 187 (14), 4908-4920 (2005)
PUBMED 15995206
REFERENCE 5 (bases 1 to 2421)

AUTHORS Filiatrault,M.J., Wagner,V.E., Bushnell,D., Haidaris,C.G., Iglewski,B.H. and Passador,L.
TITLE Effect of anaerobiosis and nitrate on gene expression in Pseudomonas aeruginosa
JOURNAL Infect. Immun. 73 (6), 3764-3772 (2005)
PUBMED 15908409

REFERENCE 6 (bases 1 to 2421)
AUTHORS Rasmussen,T.B., Bjarnsholt,T., Skindersoe,M.E., Hentzer,M., Kristoffersen,P., Kote,M., Nielsen,J., Eberl,L. and Givskov,M.
TITLE Screening for quorum-sensing inhibitors (QSI) by use of a novel genetic system, the QSI selector
JOURNAL J. Bacteriol. 187 (5), 1799-1814 (2005)
PUBMED 15716452

REFERENCE 7 (bases 1 to 2421)
AUTHORS Winsor,G.L., Lo,R., Sui,S.J., Ung,K.S., Huang,S., Cheng,D., Ching,W.K., Hancock,R.E. and Brinkman,F.S.
TITLE Pseudomonas aeruginosa Genome Database and PseudoCap: facilitating community-based, continually updated, genome annotation
JOURNAL Nucleic acids Res. 33 (DATABASE ISSUE), D338-D343 (2005)
PUBMED 15608211

REFERENCE 8 (bases 1 to 2421)
AUTHORS Wagner,V.E., Bushnell,D., Passador,L., Brooks,A.I. and Iglewski,B.H.
TITLE Microarray analysis of Pseudomonas aeruginosa quorum-sensing regulons: effects of growth phase and environment
JOURNAL J. Bacteriol. 185 (7), 2080-2095 (2003)
PUBMED 12644477

REFERENCE 9 (bases 1 to 2421)
AUTHORS Schuster,M., Lostroh,C.P., Ogi,T. and Greenberg,E.P.
TITLE Identification, timing, and signal specificity of Pseudomonas aeruginosa quorum-controlled genes: a transcriptome analysis
JOURNAL J. Bacteriol. 185 (7), 2066-2079 (2003)
PUBMED 12644476

REFERENCE 10 (bases 1 to 2421)
AUTHORS Stover,C.K., Pham,X.Q., Erwin,A.L., Mizoguchi,S.D., Warrener,P., Hickey,M.J., Brinkman,F.S., Hufnagle,W.O., Kowalik,D.J., Lagrou,M., Garber,R.L., Goltry,L., Tolentino,E., Westbrock-Wadman,S., Yuan,Y., Brody,L.L., Coulter,S.N., Folger,K.R., Kas,A., Larbig,K., Lim,R., Smith,K., Spencer,D., Wong,G.K., Wu,Z., Paulsen,I.T., Reizer,J., Saier,M.H., Hancock,R.E., Lory,S. and Olson,M.V.
TITLE Complete genome sequence of Pseudomonas aeruginosa PA01, an opportunistic pathogen
JOURNAL Nature 406 (6799), 959-964 (2000)
PUBMED 10984043

REFERENCE 11 (bases 1 to 2421)
CONSRTM NCBI Genome Project
TITLE Direct Submission
JOURNAL Submitted (06-OCT-2010) National Center for Biotechnology Information, NIH, Bethesda, MD 20894, USA
REFERENCE 12 (bases 1 to 2421)
AUTHORS Winsor,G.L., Hancock,R.E. and Brinkman,F.S.
CONSRTM Pseudomonas aeruginosa Community Annotation Project (PseudoCap)
TITLE Direct Submission
JOURNAL Submitted (08-SEP-2010) Department of Molecular Biology and Biochemisry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
REMARK protein update by submitter
REFERENCE 13 (bases 1 to 2421)
AUTHORS Winsor,G.L., Hancock,R.E. and Brinkman,F.S.
CONSRTM Pseudomonas aeruginosa Community Annotation Project (PseudoCap)
TITLE Direct Submission
JOURNAL Submitted (02-OCT-2008) Department of Molecular Biology and Biochemisry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
REMARK protein update by submitter
REFERENCE 14 (bases 1 to 2421)
AUTHORS Winsor,G.L., Hancock,R.E. and Brinkman,F.S.
CONSRTM Pseudomonas aeruginosa Community Annotation Project (PseudoCap)
TITLE Direct Submission
JOURNAL Submitted (05-JUL-2006) Department of Molecular Biology and Biochemisry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
REMARK Sequence update by submitter
REFERENCE 15 (bases 1 to 2421)
AUTHORS Ung,K.S., Hancock,R.E. and Brinkman,F.S.
CONSRTM Pseudomonas aeruginosa Community Annotation Project (PseudoCap)
TITLE Direct Submission
JOURNAL Submitted (04-FEB-2003) Department of Molecular Biology and Biochemistry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
REFERENCE 16 (bases 1 to 2421)
AUTHORS Stover,C.K., Pham,X.-Q.T., Erwin,A.L., Mizoguchi,S.D., Warrener,P., Hickey,M.J., Brinkman,F.S.L., Hufnagle,W.O., Kowalik,D.J., Lagrou,M., Garber,R.L., Goltry,L., Tolentino,E., Westbrock-Wadman,S., Yuan,Y., Brody,L.L., Coulter,S.N., Folger,K.R., Kas,A., Larbig,K., Lim,R.M., Smith,K.A., Spencer,D.H., Wong,G.K.-S., Wu,Z., Paulsen,I.T., Reizer,J., Saier,M.H., Hancock,R.E.W., Lory,S. and Olson,M.V.

```
  CONSRTM   Pseudomonas aeruginosa Community Annotation Project (PseudoCap)
  TITLE     Direct Submission
  JOURNAL   Submitted (16-MAY-2000) Department of Medicine and Genetics,
            University of Washington Genome Center, University Of Washington,
            Box 352145, Seattle, WA 98195, USA
COMMENT     REVIEWED REFSEQ: This record has been curated by NCBI staff. The
            reference sequence is identical to AE004091.
            On Jul 24, 2006 this sequence version replaced NC_002516.1.
            RefSeq Category: Reference Genome
                     FGS: First Genome sequenced
                     MOD: Model Organism
                     UPR: UniProt Genome
            ---------------------------------------------------------------
            This represents the Sept 08, 2010 version of the continually
            updated, reviewed, Pseudomonas aeruginosa PAO1 genome annotation
            from PseudoCap (see http://www.pseudomonas.com for the latest
            updates and links to alternate annotations). This update includes
            updated base pair coordinates and new features. PseudoCap is
            coordinated by Fiona S.L. Brinkman (Simon Fraser University,
            Canada) and Robert E.W. Hancock (University of British Columbia,
            Canada) with database development by Geoff Winsor (Simon Fraser
            University). We welcome submission through
            www.pseudomonas.com of any proposed changes.
            'protein name confidence' is used to rate our confidence of the
            accuracy of the protein name.
            class 1: Function experimentally demonstrated in P. aeruginosa.
            class 2: Function of highly similar gene experimentally
            demonstrated in another organism (and gene context consistent in
            terms of pathways its involved in, if known).
            class 3: Function proposed based on presence of conserved amino
            acid motif, structural feature or limited sequence similarity to an
            experimentally studied gene.
            class 4: Homologs of previously reported genes of unknown function,
            or no similarity to any previously reported sequences.

-------------------------------------------------------------------.
            COMPLETENESS: full length.
FEATURES             Location/Qualifiers
     source          1..2421
                     /organism="Pseudomonas aeruginosa PAO1"
                     /mol_type="genomic DNA"
                     /strain="PAO1"
                     /db_xref="taxon:208964"
     gene            <1..4
```

/gene="recF"
/locus_tag="PA0003"
/db_xref="GeneID:879229"
CDS <1..4
/gene="recF"
/locus_tag="PA0003"
/note="Product name confidence: class 2 (High similarity
to functionally studied protein)"
/codon_start=2
/transl_table=11
/product="DNA replication and repair protein RecF"
/protein_id="NP_064723.1"
/db_xref="GeneID:879229"
/translation="MSLTRVSVTAVRNLHPVTLSPSPRINILYGDNGSGKTSVLEAIH
LLGLARSFRSARLQPVIQYEEAACTVFGQVMLANGIASNLGISRERQGEFTIRIDGQN
ARSAAQLAETLPLQLINPDSFRLLEGAPKIRRQFLDWGVFHVEPRFLPVWQRLQKALR
QRNSWLRHGKLDPASQAAWDRELSLASDEIDAYRRSYIQALKPVFEETLAELVSLDDL
TLSYYRGWDKDRDLLEVLASSLLRDQQMGHTQAGPQRADLRIRLAGHNAAEILSRGQQ
KLVVCALRIAQGHLINRAKRGQCVYLVDDLPSELDEQHRMALCRLLEDLGCQVFITCV
DPQLLKDGWRTDTPVSMFHVEHGKVSQTTTIGSEA"
gene 1..2421
/gene="gyrB"
/locus_tag="PA0004"
/db_xref="GeneID:879230"
CDS 1..2421
/gene="gyrB"
/locus_tag="PA0004"
/note="Product name confidence: class 2 (High similarity
to functionally studied protein)"
/codon_start=1
/transl_table=11
/product="DNA gyrase subunit B"
/protein_id="NP_064724.1"
/db_xref="GeneID:879230"
/translation="MSENNTYDSSSIKVLKGLDAVRKRPGMYIGDTDDGTGLHHMVFE
VVDNSIDEALAGYCSEISITIHTDESITVRDNGRGIPVDIHKEEGVSAAEVIMTVLHA
GGKFDDNTYKVSGGLHGVGVSVVNALSHELRLTIRRHNKVWEQVYHHGVPQFPLREVG
ETDGSGTEVHFKPSPETFSNIHFSWDILAKRIRELSFLNSGVGILLRDERTGKEELFK
YEGGLKAFVEYLNTNKTAVNEVFHFNVQREEDGVGVEVALQWNDSFNENLLCFTNNIP
QRDGGTHLAGFRSALTRNLNNYIEAEGLAKKFKIATTGDDAREGLTAIISVKVPDPKF
SSQTKDKLVSSEVKTAVEQEMGKYFADFLLENPNEAKAVVGKMIDAARAREAARKARE
MTRRKGALDIAGLPGKLADCQEKDPALSELYIVEGDSAGGSAKQGRNRRTQAILPLKG
KILNVEKARFDKMLSSQEVGTLITALGCGIGREEYNIDKLRYHNIIIMTDADVDGSHI
RTLLLTFFFRQMPELIERGYIYIAQPPLYKVKRGKQEQYIKDDQAMEEYMTQSALEDA

SLHVNEHAPGLSGAALEKLVNEYRGVIATLKRLSRLYPQELTEHFIYLPTVSVDDLAN
ESAMQGWLEKFQARLTAAEKSGLTYKASLREDRERHLWLPEVELVAHGLSSYVTFNRD
FFASNDYRSVSLLGDQLNSLLEDGAYVQKGERKRPISAFKDGLDWLMAEGTKRHSIQR
YKGLGEMNPEQLWETTMDPNVRRMLKVTIEDAIAADQIFNTLMGDAVEPRRDFIESNA
LAVSNLDV"

ORIGIN

```
       1 atgagcgaga acaacacgta cgactcttcc agcatcaagg tgctgaaggg gctggatgcc
      61 gtacgcaagc gccccggcat gtacatcggc gacaccgacg atggcaccgg tctgcaccac
     121 atggtgttcg aggtggtgga taactccatc gacgaagcgc tggccggtta ctgcagcgaa
     181 atcagcatca ccatccatac ggatgagtcg atcactgtcc gcgacaatgg acgcggtatt
     241 ccggtggata tccacaagga agaaggggtt tctgcggcgg aagtgatcat gaccgtcctc
     301 cacgccggcg gcaagttcga cgacaacacc tacaaggtgt ccggcggctt gcacggtgtg
     361 ggcgtctcgg tggtgaacgc gctgtcccat gaactacgcc tgaccatccg tcgccacaac
     421 aaggtctggg aacaggtcta ccaccacggc gttccgcagt tcccactgcg cgaagtgggc
     481 gagaccgatg gctccggcac cgaagttcac ttcaagccgt ccccggagac cttcagcaac
     541 atccacttca gttgggacat cctggccaag cgcatccgcg agctgtcctt cctcaactcc
     601 ggcgtcggca tcctgctgcg cgacgagcgt accggcaagg aggagctgtt caagtacgaa
     661 ggcggtctga aggccttcgt cgagtacctg aacaccaaca agaccgcggt gaacgaggta
     721 ttccacttca acgtccagcg tgaagaggac ggcgtgggtg tggaagtcgc cttgcagtgg
     781 aacgacagct tcaacgagaa cctgctctgc ttcaccaaca acatcccgca gcgtgacggc
     841 ggcacccacc tggccggttt ccgttcggcg ctgacgcgta acctgaacaa ctacatcgag
     901 gccgaaggcc tggcgaagaa gttcaagatc gccaccaccg gcgacgatgc ccgcgaaggc
     961 ctcaccgcga tcatctcggt gaaggtaccg gacccgaagt tcagctcgca gaccaaggac
    1021 aagctggtct cctccgaggt gaagactgcg gtggaacagg agatgggcaa gtacttcgcc
    1081 gacttcctgc tggagaatcc caacgaagcc aaggccgtgg tcggcaagat gatcgacgcc
    1141 gcccgtgccc gcgaggccgc gcgcaaggcg cgcgagatga cccgccgcaa gggcgcgctg
    1201 gacatcgccg gcctgcccgg caaactggcc gattgccagg aaaaggaccc ggcgctctcc
    1261 gaactgtaca tcgtggaggg tgactccgcg ggcggttccg ccaagcaggg ccgcaatcgc
    1321 cggacccagg cgatcctgcc gctcaagggc aagatcctca acgtcgaaaa ggcgcgcttc
    1381 gacaagatgc tctcctccca ggaggtcggt acgctgatca ccgccctggg ctgtggcatc
    1441 ggccgcgagg aatacaacat cgacaagctg cgctaccaca acatcatcat catgaccgat
    1501 gctgacgtcg acggttcgca catccgcacc ctgctgttga ccttcttctt ccgccagatg
    1561 cccgagctga tcgagcgtgg ctacatctac atcgcccagc ccccgttgta caaggtcaag
    1621 cgcggcaagc aggagcagta catcaaggac gaccaggcca tggaagagta catgacccag
    1681 tcggccctgg aagacgccag cctgcacgtc aacgagcacg ctccgggcct gtccggggcg
    1741 gcgctggaga aactggtcaa cgagtatcgc ggggtgatcg ccaccctcaa gcgcctgtcg
    1801 cgcctgtacc cccaggagct gaccgagcac ttcatctacc tgcctaccgt gtcggtggac
    1861 gacctggcta acgagtcggc catgcagggc tggttggaga agttccaggc gcgcctgacc
    1921 gccgccgaga agtccggcct gacctacaag gccagcctgc gcgaagaccg cgagcgccac
    1981 ctgtggctgc ccgaggtgga actggtggcc cacggcctgt ccagctacgt caccttcaac
    2041 cgtgacttct tcgccagcaa tgactaccgc tcggtgtcgc tgctcggcga ccagctgaac
    2101 agcctgctgg aagacggcgc ctacgtgcag aagggtgagc gcaagcgccc gatcagcgcc
    2161 ttcaaggacg gcctggactg gctgatggcc gaaggtacca agcgccacag catccagcga
    2221 tacaaggggc tgggcgagat gaaccctgag cagctgtggg aaaccaccat ggatccgaac
```

2281 gtccggcgca tgctcaaggt gaccatcgag gatgccatcg ccgccgacca gatcttcaac

2341 accctgatgg gcgatgccgt ggagccgcgc cgcgacttca tcgaaagcaa cgcgctggcg

2401 gtgtcgaacc tggacgtgtg a