

## Draft Genome Sequence of *Pedobacter agri* PB92<sup>T</sup>, Which Belongs to the Family *Sphingobacteriaceae*

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Strain PB92<sup>T</sup> of *Pedobacter agri*, which belongs to the family *Sphingobacteriaceae*, was isolated from soil in the Republic of Korea. The draft genome of strain PB92<sup>T</sup> contains 5,141,552 bp, with a G+C content of 38.0%. This is the third genome sequencing project of the type strains among the *Pedobacter* species.

The genus *Pedobacter*, proposed by Steyn et al. (11), belongs to the family *Sphingobacteriaceae* in the phylum *Bacteroidetes*. Members of the genus *Pedobacter* are characterized as aerobic, Gram-negative, and rod-shaped bacteria having menaquinone 7 (MK-7) as a major isoprenoid quinone (12). The *Pedobacter* species were isolated from various environments, such as water (2), soil (3), glacier (10), and compost (6). The strain *Pedobacter agri* PB92<sup>T</sup>, isolated from soil in the Republic of Korea by Roh et al. (9), has 97.6% and 97.5% 16S rRNA gene sequence similarity with *Pedobacter borealis* G-1<sup>T</sup> and *Pedobacter alluvionis* NWER-II11<sup>T</sup>, respectively. The genus *Pedobacter* currently consists of 35 validly published species, and the genome sequences of only two type strains in the *Pedobacter* species were analyzed previously (4, 7).

Genomic DNA of *Pedobacter agri* PB92<sup>T</sup> was extracted using a G-spin genomic DNA extraction kit (iNtRON Biotechnology, Republic of Korea). The draft genome sequence of *P. agri* PB92<sup>T</sup> was analyzed using Roche 454 GS (FLX Titanium) pyrosequencing. A total of 383,656 reads spanning 98 Mb were generated and assembled using 454 Newbler assembler (454 Life Science) according to the manufacturer's instructions. The 379 contigs were generated to give 19.1-fold coverage. The draft genome of PB92<sup>T</sup> contains 5,141,552 bp, with a G+C content of 38.0%. Gene annotation and prediction were analyzed using RNAmmer 1.2 (5), tRNAscan-SE 1.23 (8) software, and the RAST (Rapid Annotation using Subsystem Technology) pipeline (1). A total of 1 5S rRNA gene, 1 16S rRNA gene, 1 23S rRNA gene, and 49 tRNA genes were identified. Based on the RAST results, 5,006 coding sequences (CDSs) and 346 subsystems are predicted. More detailed genomic analyses and comparative studies with other Pedobacter genomes will give further information and insight into the metabolism of Pedobacter species.

Nucleotide sequence accession numbers. This Whole Genome Shotgun project has been deposited at DDBJ/EMBL/GenBank under the accession number AJLG00000000. The version described in this paper is the first version, AJLG01000000.

## ACKNOWLEDGMENTS

This work was supported by a KBSI grant (T32607) to D. Kim and by Korea Ocean Research and Development Institute (KORDI), Development of Marine Ecosystem Health Index (MEHI) in the special management areas of the south sea (grant PE98745).

We thank the JDC (Jeju Free International City Development Center) for assisting in the administration of the Jeju Center of Korea Basic Science Institute.

## REFERENCES

- Aziz RK, et al. 2008. The RAST Server: rapid annotations using subsystems technology. BMC Genomics 9:75. doi:10.1186/1471-2164-9-75.
- Baik KS, et al. 2007. Pedobacter koreensis sp. nov., isolated from fresh water. Int. J. Syst. Evol. Microbiol. 57:2079–2083.
- Gordon NS, et al. 2009. Pedobacter nyackensis sp. nov., Pedobacter alluvionis sp. nov., and Pedobacter borealis sp. nov., isolated from Montana flood-plain sediment and forest soil. Int. J. Syst. Evol. Microbiol. 59:1720– 1726.
- 4. Han C, et al. 2009. Complete genome sequence of *Pedobacter heparinus* type strain (HIM 762-3). Stand. Genomic Sci. 1:54–62.
- Lagesen K, et al. 2007. RNAmmer: consistent and rapid annotation of ribosomal RNA genes. Nucleic Acids Res. 35:3100–3108.
- Lee HG, Kim SG, Im WT, Oh HM, Lee ST. 2009. Pedobacter composti sp. nov., isolated from compost. Int. J. Syst. Evol. Microbiol. 59:345–349.
- Liolios K, et al. 2011. Complete genome sequence of the gliding, heparinolytic *Pedobacter saltans* type strain (113<sup>T</sup>). Stand. Genomic Sci. 5:30-40.
- Lowe TM, Eddy SR. 1997. tRNAscan-SE: a program for improved detection of transfer RNA genes in genomic sequence. Nucleic Acids Res. 25: 955–964.
- 9. Roh SW, et al. 2008. *Pedobacter agri* sp. nov., from soil. Int. J. Syst. Evol. Microbiol. 58:1640–1643.
- Shivaji S, Chaturvedi P, Reddy GS, Suresh K. 2005. *Pedobacter himalayensis* sp. nov., from the Hamta glacier located in the Himalayan mountain ranges of India. Int. J. Syst. Evol. Microbiol. 55:1083–1088.
- 11. Steyn PL, et al. 1998. Classification of heparinolytic bacteria into a new genus, *Pedobacter*, comprising four species: *Pedobacter heparinus* comb. nov., *Pedobacter piscium* comb. nov., *Pedobacter africanus* sp. nov. and *Pedobacter saltans* sp. nov. Proposal of the family *Sphingobacteriaceae* fam. nov. Int. J. Syst. Bacteriol. **48**:165–177.
- 12. Urios L, Intertaglia L, Magot M. *Pedobacter tournemirensis* sp. nov., isolated from a fault water sample of a deep Toarcian argillite layer. Int. J. Syst. Evol. Microbiol., in press.

Received 13 April 2012 Accepted 30 April 2012

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