PROKARYOTES



Draft Genome Sequence of the Hydrocarbon-Degrading Bacterium Acinetobacter pittii Strain ABC Isolated from Noonmati Refinery, Assam, India

Arvind Kumar Singh,^a Bobby Chettri,^a Arpita Ghosh,^b Surendra K. Chikara,^b Dimir Tripathi^a

Department of Biochemistry, North Eastern Hill University, Shillong, Indiaª; Eurofins Genomics, Doddanakundi Industrial Area 2, Seetharampalya, Hoodi, Bengaluru, Karnataka, India^b

ABSTRACT We report here the 3.84-Mb draft genome sequence of hydrocarbondegrading *Acinetobacter pittii* strain ABC isolated from oil-contaminated soil in Guwahati, India. The genome sequence contains 3,602 coding sequences and a G+Ccontent of 38.83%. This is the first report of the genome sequence of an *Acinetobacter pittii* from an oil-contaminated environment.

Bacteria of the genus *Acinetobacter* are strictly aerobic, nonfermentative, Gramnegative bacilli that are ubiquitously distributed in nature, including in hydrocarboncontaminated environments (1). Previous studies have shown the degradation of different hydrocarbons by *Acinetobacter* (1–4). A single report on the complete genome sequence of *Acinetobacter pittii* is available in the database (Refseq no. NC_016603.1). There is no information on the complete genome sequence of this organism from crude oil-polluted sediments. Here we report the complete genome sequence of *Acinetobacter pittii* strain ABC, an isolate from crude oil-contaminated sediment collected from Noonmati refinery, Assam, India. The isolate exhibited a wide range of substrate specificity for both aliphatic and aromatic hydrocarbons as sole sources of carbon and energy.

The genome sequence of *Acinetobacter pittii* strain ABC was sequenced by use of the Illumina NextSeq 500 (paired-end library 2 × 150 bp) to generate 623 Mb of data. *De novo* assembly was carried out using Velvet v1.2.10 (5) to generate 32 scaffolds contributing to 3.84 Mb of the draft genome. The N_{50} value was 365,839 bp, and an average scaffold length of 120,103 bp depicted the assembly quality. The genome was estimated to have an overall G+C content of 38.83%. Prodigal v2.50 was used to identify 3,602 genes by using the unsupervised machine learning algorithm, with an average length of 313 amino acids (6). Blast2Go was used to annotate the predicted genes.

Acinetobacter pittii strain ABC demonstrates the presence of several hydrocarbondegrading genes and genes related to this process, such as dioxygenases, rubredoxin, esterase, alkane-1-monooxygenase, alkane sulfonate monooxygenase, 4-carboxymuconolactone decarboxylase, 3-carboxy-*cis*, *cis*-muconate cycloisomerase, 3-oxoadipateenol-lactonase, protocatechuate 3, and salicylaldehyde dehydrogenase. Information about the genome sequence of *Acinetobacter pittii* strain ABC will be helpful in understanding the diversity and mechanisms of hydrocarbon degradation in the crude oil-polluted sediments and bioremediation technologies (7–9).

Accession number(s). This whole-genome shotgun project of Acinetobacter pittii strain ABC has been deposited at DDBJ/ENA/GenBank under the accession number MSPO00000000.

Received 9 October 2017 Accepted 10 October 2017 Published 2 November 2017

Citation Singh AK, Chettri B, Ghosh A, Chikara SK, Tripathi T. 2017. Draft genome sequence of the hydrocarbon-degrading bacterium *Acinetobacter pittii* strain ABC isolated from Noonmati Refinery, Assam, India. Genome Announc 5:e01264-17. https://doi.org/10.1128/ genomeA.01264-17.

Copyright © 2017 Singh et al. This is an openaccess article distributed under the terms of the Creative Commons Attribution 4.0 International license.

Address correspondence to Arvind Kumar Singh, aksingh_nehu@yahoo.co.in, or Timir Tripathi, ttripathi@nehu.ac.in.

ACKNOWLEDGMENTS

The study was partly supported by a research grant from the University Grants Commission, grant F no. 6-9/2016(IC), dated 5 January 2016, from the Government of India (to T.T.).

We declare there are no competing interests.

REFERENCES

- 1. Lal B, Khanna S. 1996. Degradation of crude oil by Acinetobacter calcoaceticus and Alcaligenes odorans. J Appl Bacteriol 81:355–362.
- 2. Dahal RH, Chaudhary DK, Kim J. 2017. *Acinetobacter halotolerans* sp. nov., a novel halotolerant, alkalitolerant, and hydrocarbon-degrading bacterium, isolated from soil. Arch Microbiol 199:701–710. https://doi.org/10 .1007/s00203-017-1349-2.
- 3. Atlas RM. 1981. Microbial degradation of petroleum hydrocarbons: an environmental perspective. Microbiol Rev 45:180–209.
- Wu M, Dick WA, Li W, Wang X, Yang Q, Wang T, Xu L, Zhang M, Chen L. 2016. Bioaugmentation and biostimulation of hydrocarbon degradation and the microbial community in a petroleum-contaminated soil. Int Biodeterior Biodegrad 107:158–164. https://doi.org/10.1016/j.ibiod.2015.11.019.
- Zerbino DR, Birney E. 2008. Velvet: algorithms for *de novo* short read assembly using de Bruijn graphs. Genome Res 18:821–829. https://doi .org/10.1101/gr.074492.107.
- Hyatt D, Chen GL, Locascio PF, Land ML, Larimer FW, Hauser LJ. 2010. Prodigal: prokaryotic gene recognition and translation initiation site identification. BMC Bioinformatics 11:119. https://doi.org/10.1186/1471-2105 -11-119.
- Pal S, Das Banerjee T, Roy A, Sar P, Kazy SK. 2015. Genome sequence of hydrocarbon-degrading *Cronobacter* sp. strain DJ34 isolated from crude oil-containing sludge from the Duliajan oil Fields, Assam, India. Genome Announc 3(6):e01321-15. https://doi.org/10.1128/genomeA.01321-15.
- Ho MT, Weselowski B, Yuan ZC. 2017. Complete genome sequence of Acinetobacter calcoaceticus CA16, a bacterium capable of degrading diesel and lignin. Genome Announc 5(24):e00494-17. https://doi.org/10 .1128/genomeA.00494-17.
- Das N, Chandran P. 2011. Microbial degradation of petroleum hydrocarbon contaminants: an overview. Biotechnol Res Int 2011:941810. https:// doi.org/10.4061/2011/941810.