

# Draft Genome Sequence of *Ralstonia pickettii* AU12-08, Isolated from an Intravascular Catheter in Australia

Li Zhang,<sup>a</sup> Mark Morrison,<sup>b</sup> Claire M. Rickard<sup>a</sup>

Centre for Health Practice Innovation, Griffith Health Institute, Griffith University, Brisbane, Australia<sup>a</sup>; Diamantina Institute, the University of Queensland, Brisbane, Australia<sup>b</sup>

***Ralstonia pickettii* is a nonfermenting Gram-negative bacillus that creates a significant problem in clinical settings, as it is a widespread cause of nosocomial infections. Here, we report the draft genome sequence of *R. pickettii* AU12-08, isolated from an intravascular catheter tip.**

Received 9 January 2014 Accepted 15 January 2014 Published 6 February 2014

Citation Zhang L, Morrison M, Rickard CM. 2014. Draft genome sequence of *Ralstonia pickettii* AU12-08, isolated from an intravascular catheter in Australia. *Genome Announc.* 2(1):e00027-14. doi:10.1128/genomeA.00027-14.

Copyright © 2014 Zhang et al. This is an open-access article distributed under the terms of the [Creative Commons Attribution 3.0 Unported license](https://creativecommons.org/licenses/by/3.0/).

Address correspondence to Li Zhang, li.zhang@griffith.edu.au.

*Ralstonia pickettii* was previously known as *Pseudomonas pickettii* and *Burkholderia pickettii* (1). *R. pickettii* is an aerobic Gram-negative, oxidase-positive, nonfermenting rod that has been isolated from a wide variety of clinical specimens, including blood, urine, and cerebrospinal fluid (2). *R. pickettii* is not considered to be a major pathogen, and its virulence level is thought to be low (3). However, a wide range of *R. pickettii* infections have been reported recently (4). This demonstrates that this organism might be a more widespread pathogen than was thought. In addition, the types of infections are more invasive and severe than was thought (4).

*R. pickettii* AU12-08 was isolated from an intravascular catheter tip by rolling the tip back and forth on the surface of a Columbia agar plate supplemented with 5% sheep blood, essentially as described by Maki et al. (5). DNA was prepared and the genome sequence of *R. pickettii* AU12-08 was determined on a 454 GS FLX system using Titanium chemistry (Roche) (6). The sequence data consist of 135,359,388 bp of DNA sequence at 22× coverage. A total of 78 contigs (>500 bp) were *de novo* assembled using the Roche GS *de novo* assembler (version 2.3). The contig N<sub>50</sub> is 178,545 bp, and the largest contig assembled is 592,110 bp. The contigs were then ordered and oriented into 14 scaffolds using paired-end information. The average length of the scaffolds is 446,804 bp.

The draft genome of *R. pickettii* AU12-08 consists of a circular 6,229,152-bp chromosome, with a G+C content of 63.6%. The genome was automatically annotated using the RAST server (7). The genome contains 50 tRNA genes coding for all amino acids and 5,733 predicted protein-coding genes, consistent with other sequenced *Ralstonia* spp. (8, 9). We identified numerous putative virulence factors, including those involved in quorum sensing and biofilm formation, as well as the production of bacteriocins and invasins. The *R. pickettii* AU12-08 genome contains 22 putative resistance-modulation-cell division multidrug resistance efflux pumps, and 13 genes code for multidrug resistance. Four genes code for resistance to fluoroquinolones and 10 genes code for

β-lactam antibiotics. In addition, 170 genes code for resistance to toxic compounds, including cobalt-zinc-cadmium resistance, copper homeostasis, mercury resistance, and arsenic and bile hydrolysis.

The sequence of the *R. pickettii* AU12-08 genome will greatly improve our understanding of the drug resistance and pathogenicity of this organism.

**Nucleotide sequence accession number.** The genome sequence of *R. pickettii* AU12-08 has been deposited in NCBI GenBank under the accession no. [ASZV000000000](https://www.ncbi.nlm.nih.gov/nuclink/ASZV000000000).

## ACKNOWLEDGMENT

L.Z. is supported by an NHMRC training clinical research fellowship (Australian Government grant no. 597491).

## REFERENCES

- Gardner S, Shulman ST. 1984. A nosocomial common source outbreak caused by *Pseudomonas pickettii*. *Pediatr. Infect. Dis.* 3:420–422. [http://dx.doi.org/10.1097/00006454-198409000-00006](https://doi.org/10.1097/00006454-198409000-00006).
- Riley PS, Weaver RE. 1975. Recognition of *Pseudomonas pickettii* in the clinical laboratory: biochemical characterization of 62 strains. *J. Clin. Microbiol.* 1:61–64.
- Boutros N, Gonullu N, Casetta A, Guibert M, Ingrand D, Lebrun L. 2002. *Ralstonia pickettii* traced in blood culture bottles. *J. Clin. Microbiol.* 40:2666–2667. [http://dx.doi.org/10.1128/JCM.40.7.2666-2667.2002](https://doi.org/10.1128/JCM.40.7.2666-2667.2002).
- Ryan MP, Pembroke JT, Adley CC. 2006. *Ralstonia pickettii*: a persistent Gram-negative nosocomial infectious organism. *J. Hosp. Infect.* 62: 278–284. [http://dx.doi.org/10.1016/j.jhin.2005.08.015](https://doi.org/10.1016/j.jhin.2005.08.015).
- Maki DG, Weise CE, Sarafin HW. 1977. A semiquantitative culture method for identifying intravenous-catheter-related infection. *N. Engl. J. Med.* 296:1305–1309. [http://dx.doi.org/10.1056/NEJM197706092962301](https://doi.org/10.1056/NEJM197706092962301).
- Margulies M, Egholm M, Altman WE, Attiya S, Bader JS, Bemben LA, Berka J, Braverman MS, Chen YJ, Chen Z, Dewell SB, Du L, Fierro JM, Gomes XV, Godwin BC, He W, Helgesen S, Ho CH, Irzyk GP, Jando SC, Alenquer ML, Jarvie TP, Jirage KB, Kim JB, Knight JR, Lanza JR, Leamon JH, Lefkowitz SM, Lei M, Li J, Lohman KL, Lu H, Makhijani VB, McDade KE, McKenna MP, Myers EW, Nickerson E, Nobile JR, Plant R, Puc BP, Ronan MT, Roth GT, Sarkis GJ, Simons JF, Simpson JW, Srinivasan M, Tartaro KR, Tomasz A, Vogt KA, Volkmer GA, Wang

- SH, Wang Y, Weiner MP, Yu P, Begley RF, Rothberg JM. 2005. Genome sequencing in microfabricated high-density picolitre reactors. *Nature* 437: 376–380. <http://dx.doi.org/10.1038/nature03959>.
7. Kang IG, Jeong WJ, Park CS, Ryu HS, Lee MJ, Park SS, Kim HJ. 2011. Hydrothorax due to extravasation of intravenous contrast after power injection through right subclavian catheter. *Hong Kong J. Emerg. Med.* 18: 50–53. <http://www.hkjem.com/sites/default/files/p50-53.pdf>.
8. Zhu B, Liu H, Tian WX, Fan XY, Li B, Zhou XP, Jin GL, Xie GL. 2012. Genome sequence of *Stenotrophomonas maltophilia* RR-10, isolated as an endophyte from rice root. *J. Bacteriol.* 194:1280–1281. <http://dx.doi.org/10.1128/JB.06702-11>.
9. Colvin KM, Gordon VD, Murakami K, Borlee BR, Wozniak DJ, Wong GCL, Parsek MR. 2011. The Pel polysaccharide Can serve a structural and protective role in the biofilm matrix of *Pseudomonas aeruginosa*. *PLoS Pathog.* 7:e1001264. <http://dx.doi.org/10.1371/journal.ppat.1001264>.