### University of Nebraska - Lincoln DigitalCommons@University of Nebraska - Lincoln

Publications from USDA-ARS / UNL Faculty

U.S. Department of Agriculture: Agricultural Research Service, Lincoln, Nebraska

2014

## Draft Genome Sequence of a Mycobacterium avium Complex Isolate from a Broadbill Bird

John Bannantine USDA ARS National Animal Disease Center, john.bannantine@ars.usda.gov

Darrell O. Bayles USDA-ARS National Animal Disease Center, darrell.bayles@usda.gov

Suelee Robbe-Austerman USDA-ARS, sreev001@umn.edu

Angela M. Burrell Life Technologies, Austin

Judith R. Stabel USDA-ARS, National Animal Disease Center, jstabel@nadc.ars.usda.gov

Follow this and additional works at: https://digitalcommons.unl.edu/usdaarsfacpub

Part of the Agriculture Commons

Bannantine, John; Bayles, Darrell O.; Robbe-Austerman, Suelee; Burrell, Angela M.; and Stabel, Judith R., "Draft Genome Sequence of a Mycobacterium avium Complex Isolate from a Broadbill Bird" (2014). *Publications from USDA-ARS / UNL Faculty*. 2411. https://digitalcommons.unl.edu/usdaarsfacpub/2411

This Article is brought to you for free and open access by the U.S. Department of Agriculture: Agricultural Research Service, Lincoln, Nebraska at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Publications from USDA-ARS / UNL Faculty by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



# Draft Genome Sequence of a *Mycobacterium avium* Complex Isolate from a Broadbill Bird

#### John P. Bannantine,<sup>a</sup> Darrell O. Bayles,<sup>a</sup> Suelee Robbe-Austerman,<sup>b</sup> Angela M. Burrell,<sup>c</sup> Judith R. Stabel<sup>a</sup>

National Animal Disease Center-USDA-ARS, Ames, Iowa, USA<sup>a</sup>; National Veterinary Services Laboratory-USDA-APHIS, Ames, Iowa, USA<sup>b</sup>; Life Technologies, Austin, Texas, USA<sup>c</sup>

We report the draft genome sequence of a *Mycobacterium avium* complex isolate. This isolate has an estimated genome size of 5.1 Mb with an average GC content of 68.9% and is predicted to carry 4,497 protein-encoding genes and 317 pseudogenes.

Received 27 December 2013 Accepted 6 January 2014 Published 30 January 2014

Citation Bannantine JP, Bayles DO, Robbe-Austerman S, Burrell AM, Stabel JR. 2014. Draft genome sequence of a *Mycobacterium avium* complex isolate from a broadbill bird. Genome Announc. 2(1):e01268-13. doi:10.1128/genomeA.01268-13.

Copyright © 2014 Bannantine et al. This is an open-access article distributed under the terms of the Creative Commons Attribution 3.0 Unported license.

Address correspondence to John P. Bannantine, john.bannantine@ars.usda.gov.

*Pycobacterium avium* complex (MAC) organisms cause opportunistic infections in humans, yet their epidemiology remains poorly understood. They are slowly growing environmental and animal-associated mycobacteria that have little notoriety except for the strains that cause disseminated infections in HIV-infected humans (1). Most MAC organisms are classified taxonomically as a single species, *M. avium*, which is divided into at least four subspecies, *M. avium* subsp. *avium*, *M. avium* subsp. *hominissuis*, *M. avium* subsp. *paratuberculosis*, and *M. avium* subsp. *silvaticum* (2). The only other species in this group is *M. intracellulare*. Genotyping of this diverse bacterial group has been achieved using intergenic spacers (3) and *rpoB* sequence analysis (4, 5).

The genome sequences of *M. avium* subsp. *hominissuis* strain 104 and *M. avium* subsp. *avium* ATCC 25291 have been made publically available, but neither has yet been formally published. Strain 104 was isolated from an immunocompromised human and ATCC 25291 was obtained from a bird. Here we present the draft genome sequence of another *M. avium* subspecies. This isolate was obtained from a broadbill bird (family Eurylaimidae; species not specified) from a Texas zoo in 2005. Analysis of the *rpoB* gene sequence using the method of Ben Salah et al. (4) shows that this isolate clusters with *M. avium* subsp. *hominissuis*.

Purified genomic DNA obtained from this isolate was subjected to whole-genome shotgun sequencing using the Ion PGM sequencing system (Ion Torrent) with 200-bp read chemistry (Life Technologies). Sequence coverage was  $81.0 \times$ . A *de novo* assembly of the ~5.15-Mbp sequence using MIRA assembly software version 3.2.0 yielded 190 contigs. The sequence was annotated with the NCBI Prokaryotic Genomes Automatic Annotation Pipeline (http://www.ncbi.nlm.nih.gov/genome/annotation\_prok/). A total of 5 rRNA operons and 46 tRNA genes were identified.

**Nucleotide sequence accession numbers.** This whole-genome shotgun project was deposited at DDBJ/EMBL/GenBank under the accession number AYLW00000000. The version described in this paper is AYLW01000000.

#### ACKNOWLEDGMENTS

This study was supported in part by two USDA agencies, APHIS and ARS.

#### REFERENCES

- 1. Inderlied CB, Kemper CA, Bermudez LE. 1993. The *Mycobacterium avium* complex. Clin. Microbiol. Rev. 6(3):266-310.
- Alexander DC, Turenne CY, Behr MA. 2009. Insertion and deletion events that define the pathogen *Mycobacterium avium* subsp. *paratuberculosis*. J. Bacteriol. 191:1018–1025. http://dx.doi.org/10.1128/JB.01340-08.
- Cayrou C, Turenne C, Behr MA, Drancourt M. 2010. Genotyping of Mycobacterium avium complex organisms using multispacer sequence typ- ing. Microbiology 156(Pt 3):687–694. http://dx.doi.org/10.1099/mic.0.033 522-0.
- Ben Salah I, Adékambi T, Raoult D, Drancourt M. 2008. *rpoB* sequencebased identification of *Mycobacterium avium* complex species. Microbiology 154(Pt 2):3715–3723. http://dx.doi.org/10.1099/mic.0.2008/020164-0.
- Higgins J, Camp P, Farrell D, Bravo D, Pate M, Robbe-Austerman S. 2011. Identification of *Mycobacterium* spp. of veterinary importance using rpoB gene sequencing. BMC Vet. Res. 7:77. http://dx.doi.org/10.1186/174 6-6148-7-77.