

John Christian Gaby

Research Microbiologist



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Gainesville, Florida, USA



chrisgaby.github.io



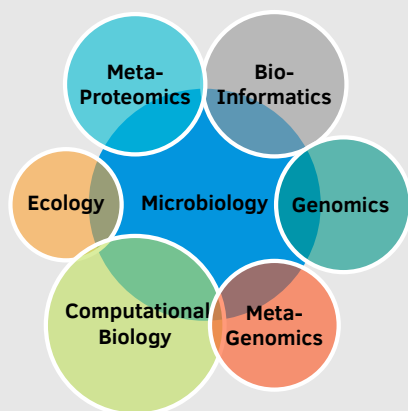
[/in/john-gaby-56525410b/](#)



[chrisgaby](#)

Knowledge

Domains



About Me

John Christian Gaby is a Research Microbiologist with the Genomics and Bioinformatics Research Unit (GBRU) of the United States Department of Agriculture (USDA) Agricultural Research Service (ARS). His research interests include microbial ecology, biological nitrogen fixation, the nitrogen cycle, biogas production, genomics, metagenomics, metaproteomics, bioinformatics, and computational biology. He currently works on the development of machine learning models to predict prokaryotic phenotype from genome sequence data.

Education

Ph.D., Microbiology

Minors: Genomics and Ecology
[Cornell University](#)
2013 Ithaca, NY

B.S., Biology

[The University of Tennessee](#)
2002 Knoxville, TN

Skills

Programming

Python & Jupyter
Conda
R & RMarkdown
SQL
UNIX Shell
Docker
NextFlow
LaTeX
Markdown
Git & GitHub

Bioinformatics

HPC and Cloud
Slurm, GCP
Homology Search
BLAST, Diamond, HMMer
Read Mapping
BowTie, BWA
Assembly
SPAdes, MegaHIT
Genome Binning
MaxBin, metaBAT
metaGenomics
CheckM, GTDB-Tk

Gene Finding

Prodigal, GeneMark
Gene Annotation
InterProScan, dbCAN, Pfam
Databases
NCBI Assembly, Genbank, SRA, *nifH*, Silva rRNA
Similarity Search
MASH & fastANI
metaProteomics
MaxQuant, Perseus

Methodologies

Machine Learning
Ecological Stats.
DNA Extraction
Amplicon Seq.
Nanopore Seq.
Sanger Seq.
PCR & qPCR
Acetylene Reduc.
Enrichment
Isolation
Nitrogen Analyses
Soil Analyses
Field Studies

Experience

- 2020 - Present **Research Microbiologist Research Associate** [USDA ARS GBRU](#)
Machine Learning Prediction using Genomic Data
- 2016 - 2020 **Postdoctoral Researcher** [The Norwegian University of Life Sciences \(NMBU\)](#)
Functional Multi-omics of Biogas Reactors and Gut Microbiomes
- 2013 - 2016 **Postdoctoral Researcher** [The Georgia Institute of Technology](#)
Nitrogen Fixation in Terrestrial and Marine Ecosystems
- 2011 - 2012 **Fulbright United States Student Fellow** [Corporacion Corpogen](#)
Nitrogen Cycling in the Colombian Paramo
- 2005 - 2011 **Graduate Researcher** [Cornell University](#)
The Diversity and Ecology of Nitrogen-fixing Bacteria
- 2003 - 2005 **Volunteer** [United States Peace Corps](#), Niger, West Africa
Sahelian Agriculture and Natural Resources Management
- 2002 **Research Assistant** [The University of Tennessee](#)
Mycobacterium ulcerans
- 2001 **HHMI Summer Research Fellow** [University of Pittsburgh](#)
Genetics of Alternative Cobamide Utilization in *Salmonella*
- 2000 **DOE Energy Research Undergraduate Laboratory Fellow** [ORNL](#)
Fluorescence-based Biosensor Development

Publications, 5 Selected of 17 Total

941 citations according to [my Google Scholar page](#) as of August 28, 2021
Peer reviewed articles: 6 first author, 9 co-author, 1 corresponding author

- [1] L. Michalak, J. C. **Gaby**, L. Lagos, S. L. La Rosa, T. R. Hvidsten, C. Tétard-Jones, W. G. Willats, N. Terrapon, V. Lombard, B. Henrissat, J. Dröge, M. Ø. Arntzen, L. H. Hagen, M. Øverland, P. B. Pope, and B. Westereng. Microbiota-directed fibre activates both targeted and secondary metabolic shifts in the distal gut. *Nature Communications*, 11(1), 2020.
- [2] J. C. **Gaby**, M. Zamanzadeh, and S. J. Horn. The effect of temperature and retention time on methane production and microbial community composition in staged anaerobic digesters fed with food waste. *Biotechnology for Biofuels*, 10(1):302, 2017.
- [3] J. C. **Gaby** and D. H. Buckley. A comprehensive aligned *nifH* gene database: A multipurpose tool for studies of nitrogen-fixing bacteria. *Database: The Journal of Biological Databases and Curation*, 2014:bau001, 2014.
- [4] J. C. **Gaby** and D. H. Buckley. A comprehensive evaluation of PCR primers to amplify the *nifH* gene of nitrogenase. *PLoS ONE*, 7(7):e42149, 2012.
- [5] J. C. **Gaby** and D. H. Buckley. A global census of nitrogenase diversity. *Environmental Microbiology*, 13(7):1790–1799, 2011.