Molly K. Gibson

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Education

Ph.D. Computational & Systems Biology 2010-Present
Washington University, St. Louis, Missouri
Advisor: Dr. Gautam Dantas

B.S. Computer Science 2005-2009
Truman State University, Kirksville, Missouri *summa cum laude*

Fellowships

National Science Foundation Graduate Fellowship 2011-2014
National Science Foundation

Mr. & Mrs. Spencer T. Olin Fellowship 2010-Present
Washington University in Saint Louis
(Deferred from 2011-2014)

Undergraduate Research Fellowship 2008-2009
Truman State University

Professional Experience

Center for Genome Sciences and Systems Biology, Washington University in Saint Louis
Graduate Student Researcher 2010-Present

- Studying the effect of antibiotic treatment on the pre-term infant gut microbiota composition and function.
- Engineering enhanced probiotic species that are capable of long-term survival and integration into an established gut microbiota.

The BALSA Group, Saint Louis, Missouri, USA
Project Manager/Consultant 2011-Present

- Provided market analysis & budget review for safety pharmacology assay contract research organization (CRO)
- Assisted Washington University's Office of Management Technology in understanding the level of involvement of female faculty members in innovation and commercialization

The Boeing Company, Saint Louis, Missouri, USA
Software Engineer 2009-2010

- Develop and maintain code that integrates software components into a fully functional software system
- Write test procedures and document test results to ensure software system requirements are met
- Document and maintain requirements, algorithms, interfaces and designs for software systems

Maize Shoot Apical Meristem Project, Truman State University
Undergraduate Researcher 2007-2009

- Designed, developed and populated a relational database to house the expression and functional annotation data of a set of approximately 40,000 *Zea mays* genes.

The SERVE Center, Truman State University

Senior Staff Coordinator 2006-2009

- Managed a staff of 15 employees, including scheduling, payroll, and performance evaluation
- Planned and executed staff meetings delegating tasks to ensure the highest level of productivity
- Designed and developed extensive volunteer relational database system to track individual student volunteer history

Skills

Technical: Python, R, Java, C++, Linux, Git
Bioinformatics: next-generation sequencing, statistical modeling, machine learning, data mining, genomics, metagenomics, gene annotation

Teaching

Software Carpentry 2013-Present
Mozilla Labs (https://www.softwarecarpentry.org)
Instructor/Contributor

- Washington University in Saint Louis (August 11-12, 2014)
- Lawrence Berkeley National Laboratory (April 14-15, 2014)
- Iowa State University (January 8-9, 2014)

Bio5495: Algorithms for Computational Biology Fall 2011
Washington University in Saint Louis
Teaching Assistant

- *Topics covered:* probability theory, hidden Markov models (HMMs), network inference, transcription factor binding motifs, modeling gene regulation dynamics, metabolic modeling, short read alignment
- Taught in Java programming language

Honors & Awards

Outstanding Talk, Genetics & Computational Biology Retreat	2014
1st Place Overall Poster, International Meeting on Microbial Genomics	2014
Outstanding Poster, Genetics & Computational Biology Retreat	2013
Clinton Global Initiative University (CGIU)	2013
Phi Kappa Phi, Truman State University Chapter	2009
Omicron Delta Kappa, National Leadership Honor Society	2007
The Boeing Company - Math & Computer Science Scholar	2008
Dean's List (Truman State Univ.)	2005-2009
National Merit Coorporation Scholar	2005-2009
President's Honorary Scholar	2005-2009
President's Leadership Scholar	2005-2009

Science Outreach

The Young Scientist Program (http://ysp.wustl.edu) 2011-Present
Washington University in Saint Louis
Director (2014-Present)
Director of Information Technology (2012-2014)
College Prep Coordinator (2011-2012)

Professional Service

Professional Affiliation

American Society for Microbiology (ASM)	2013-Present
Association for Women in Science (AWIS)	2012-Present

Publications

1. Lax S, Smith DP, Hampton-Marcell J, Owens SM, Handley KM, Scott NM, Gibbson SM, Larsen P, Shogan BD, Weiss S, Metcalf JL, Ursell LK, Vazquez-Baeza Y, Van Treuren W, Hasan NA, **Gibson MK**, Colwell R, Dantas G, Knight R, Gilbert JA. Longitudinal Analysis of Microbial Interaction Between Humans and the Indoor Environment. *Science.* 2014; 345(6200):1048

2. **Gibson MK**, Forsberg KJ, Dantas G. Improved annotation of antibiotic resistance determinants reveals resistomes cluster by ecology. *The ISME Journal*. 2014; 10.1038/ismej.2014.106.

3. **Gibson MK***, Pesesky MW*, Dantas G. The Yin and Yang of Bacterial Resilience in the Human Gut Microbiota. *J. Mol. Biol.* 2014; DOI: 10.1016/j.jmb.2014.05.029

4. Forsberg KJ*, Patel S*, **Gibson MK**, Lauber CL, Knight R, Fierer N, Dantas G. Bacterial phylogeny structures soil resistomes across habitats. *Nature.* 2014; 509 (7502): 612.

5. Pehrsson EC, Forsberg KJ, **Gibson MK**, Ahmadi S and Dantas G. Novel resistance functions uncovered using functional metagenomic investigations of resistance reservoirs. *Front Microbiol.* 2013; 4:145. doi: 10.3389/fmicb.2013.00145

** These authors contributed equally*