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Madison, WI 53713
USA

Nicolas J. Wheeler

Genetics & Genomics

Areas of Interest: Neglected Tropical Diseases, Genomics, Vector-Borne Diseases, Teaching, Bioinformatics, Higher Education, Computational Biology, Parasitology

Education

August 2013 - May 2017, Iowa State University, Ames, IA
PhD in Genetics & Genomics

August 2009 - May 2013, William Jewell College, Liberty, MO
BS in Oxbridge Honors Molecular Biology

Research Experience

June 2017 - May 2019 | *Research Associate*
Department of Pathobiological Sciences
University of Wisconsin-Madison

- Studied sensory, receptor, and secretory biology of filarial nematodes
- Advised by Mostafa Zamanian.

June 2017 - May 2019 | *Post-Doctoral Fellow*
Department of Pathobiological Sciences
University of Wisconsin-Madison
Merck KGaA Global Health Institute

- Developed techniques for transgenesis in the schistosome-vector *Biomphalaria glabrata* and its associated cell line, Bge.
- Sequenced the genome of the Bge cell line.
- Advised by Mostafa Zamanian and Tim Yoshino.

August 2013 - May 2017 | *Doctoral Research*
Department of Biomedical Sciences, Iowa State University

- Genetics, bioinformatics, and evolutionary phylogenetics research focused on drug-target identification in parasitic flatworms
- Utilized free-living flatworms as models for parasites.
- Advised by Tim Day and Mostafa Zamanian.

August 2009 - May 2013 | *Undergraduate Research*
Department of Biology, William Jewell College

- Bioinformatics and developmental biology research on free-living flatworms.
- Identified the Notch signaling pathway in *Schistosoma mansoni* and used RNAi to inhibit its functionality in *Schmidtea mediterranea*.
- Advised by Rose Reynolds

August 2011 - May 2012 | *Honors Research*
Department of Microbiology and Immunology
Indiana University School of Medicine, IUPUI

- Protozoan parasitology research. Studied the "acetyl-ome" of *Toxoplasma gondii*.
- Advised by William Sullivan and Victoria Jeffers

May 2010 - July 2010 | *Study Abroad Research*
CPqRR/FIOCRUZ – CeBio, Belo Horizonte, Brazil

- Bioinformatics of *Schistosoma mansoni*.

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Publications

Wheeler, N.J., Heimark, Z.W., Airs, P.M., Mann, A., Bartholomay, L.C., Zamanian, M. 2019. **Genetic and functional diversification of chemosensory pathway receptors in filarial nematode parasites.** bioRxiv. doi: https://doi.org/10.1101/683060.

International Helminth Genomes Consortium. 2018. **Comparative genomics of the major parasitic worms.** Nature Genetics. doi:10.1038/s41588-018-0262-1

> Associated: **Wheeler, N.J.**, Day, T.A., Zamanian, M. 2018. **GPCR identification in parasitic worm genome assemblies.** Nature Protocol Exchange. doi:10:1038/protex.2018.061

Wheeler, N.J., Dinguirard, N., Marquez, J., Gonzalez, A., Zamanian, M., Yoshino, T.P., Castillo, M.G. 2018. **Sequence and structural variation in the genome of the *Biomphalaria glabrata* cell line.** Parasites & Vectors. 11(1):496.

Hahnel, S., **Wheeler, N.J.**, Lu, Z., Wangwiwatsin, A., McVeigh, P., Maule, A., Berriman, M., Day, T., Ribeiro, P., Grevelding, C.G. 2018. **Tissue-specific transcriptome analyses provide new insights into GPCR signaling in adult *Schistosoma mansoni*.** PLoS Pathogens. 14(1):e1006718.

Wheeler, N.J., Agbedanu, P.N., Kimber, M.J., Ribeiro, P., Day, T.A., Zamanian, M. 2015. **Functional analysis of *Girardia tigrina* transcriptome seeds pipeline for anthelmintic target discovery.** Parasites & Vectors. 8(1):34.

Zamanian, M., Agbedanu, P.N., **Wheeler, N.J.**, McVeigh, P., Kimber, M.J., Day, T.A. 2012. **Novel RNAi-mediated approach to G protein-coupled receptor deorphanization: proof of principle and characterization of a planarian 5-HT receptor.** PLoS One. 7(7):e40787.

Presentations

Invited Presentations

Wheeler, N.J., Airs, P.M., Zamanian, M. **Mining the excretory-secretory system of filarial nematodes for new anthelmintic targets.** Bridging the Divide: Parasitic Nematodes Workshop, GSA International *C. elegans* Conference, Los Angeles, CA, USA. 2019

Wheeler, N.J., Airs, P.M., Zamanian, M. **Long-read RNA sequencing in neglected human parasites.** Pacific Biosciences Certified Service Provider Launch, Madison, WI, USA. 2019

Wheeler, N.J., Zamanian, M. **New insights into neglected diseases.** University of Wisconsin-Whitewater Biology Forum, Whitewater, WI, USA. 2019

Wheeler, N.J., Dinguirard, N., Maier, T., Namigai, E.K.O., Tycko, J., Reinhard-Rupp, J., Yoshino, T.P., Zamanian, M. **Progress toward transgenesis in *Biomphalaria glabrata* and implications for snail control.** The Schistosomiasis Action Plan: next generation research on the road towards elimination., New Orleans, LA, USA. 2018

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Oral Presentations

Wheeler, N.J., Airs, P.M., Zamanian, M. **Exploring new therapeutic targets for neglected parasites.** Department of Pathobiological Sciences Research Seminar, Madison, WI. 2019

Wheeler, N.J., Dinguirard, N., Maier, T., Namigai, E.K.O., Tycko, J., Reinhard-Rupp, J., Yoshino, T.P., Zamanian, M. **Toward transgenesis in *Biomphalaria glabrata*.** 15th International Symposium on Schistosomiasis, Rio de Janeiro, Brazil. 2018

Wheeler, N.J., Yoshino, T.P., Zamanian, M. **Adapting tools from free-living nematodes to study chemosensory pathways in filarial nematode parasites.** Chicago Area Worm Meeting, Chicago, IL. 2018

Wheeler, N.J., Zamanian, M. **Computational and molecular pipelines to combat neglected parasites.** Comparative Biomedical Sciences Recruitment Weekend, Madison, WI. 2018

Wheeler, N.J., Zamanian, M., Kimber, M.J., Day, T.A. **Anthelmintic Targets in a Genomic World: a case study in GPCRs.** Anthelmintics: Discovery to Resistance II, San Diego, CA. 2016.

Wheeler, N.J., Zamanian, M., Day, T.A. **A *Girardia tigrina* transcriptome to aid in Neglected Tropical Disease research.** 5th Annual Midwest Neglected Infectious Diseases Meeting, West Bend, IN. 2015

Poster Presentations

Wheeler, N.J., Heimark, Z.W., Airs, P.M., Mann, A., Bartholomay, L.C., Zamanian, M. **Genetic and functional diversification of chemosensory pathway receptors in filarial nematode parasites.** World Association for the Advancement of Veterinary Parasitology, Madison, WI. 2019

Wheeler, N.J., Heimark, Z.W., Airs, P.M., To, T.H., Chen, E.N., Bartholomay, L.C., Zamanian, M. **Conserved and divergent aspects of chemosensory signaling in filarial parasitic nematodes.** Molecular Helminthology, San Antonio, TX. 2019

Wheeler, N.J., Golfinos, A., Gilsdorf, C., Meikle, T., Zamanian, M. **Tissue-specific heterologous expression of *Brugia malayi* GPCRs in *Caenorhabditis elegans*.** Molecular Helminthology, San Antonio, TX. 2019

Wheeler, N.J., Dinguirard, N., Maier, T., Namigai, E.K.O., Tycko, J., Reinhard-Rupp, J., Yoshino, T.P., Zamanian, M. **Toward transgenesis in *Biomphalaria glabrata*.** 15th International Symposium on Schistosomiasis, Rio de Janeiro, Brazil. 2018

Wheeler, N.J., Meikle, T., Fraser, L., Srinivasan, D., To, T., Airs, P., Kimber, M.J., Bartholomay, L., Zamanian, M. **Exploring sensory pathways and behaviors in filarial nematode parasites.** *C. elegans* Neuronal Development, Synaptic Function & Behavior Topic Meeting, Madison, WI. 2018

Wheeler, N.J., Zamanian, M., Kimber, M.J.K, Day, T.A. **The cysloop superfamily of platyhelminths and nematodes.** Molecular Helminthology, Cape Cod, MA. 2017

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Teaching Experience

Spring 2019 | PATHBIO 514 - Veterinary Parasitology, University of Wisconsin-Madison

- Gave four, 50 minutes lectures, a review session, and two 3 hour lab sessions on trematodes and cestodes of veterinary and zoonotic importance.
- Evaluated 4.4/5 by 119 students in "overall evaluation of Dr. Wheeler's teaching ability."

Spring 2017 | V PTH 353 - Introduction to Parasitology, Iowa State University

- Responsible for one week of an undergraduate parasitology course.
- Wrote 8 exam questions for my section.

Spring 2017 | BMS 329 - Anatomy and Physiology of Domestic Animals, Iowa State University

- Responsible for one week of an undergraduate course.
- Gave three, 50 minute lectures.
- Wrote 14 exam questions for my section.
- Provided 3 quiz questions via Blackboard in between each lecture.
- Utilized TopHat for in class participation and assessment.

August 2016 - May 2017 | Preparing Future Faculty, Iowa State University

- An enriching program that seeks to best prepare graduate students for a career in academia by offering teaching, mentoring, and learning opportunities.

March 2016 | HHMI Learning Facilitator, Iowa State University

- Mentored and lead two groups of undergraduates in BIO313L, a lab section that studied synthetic biology in yeast.
- Received HHMI certificate of completion.

Undergraduate Mentoring

Tran To | Undergraduate Researcher | 2017 - Present

- Current trainee in the UWM Pharmacology Toxicology program
- Appeared in one Zamanian Lab poster in 2019, and presented her own poster at the UWM Undergraduate Research Symposium and Pharm-Tox Research Symposium

Eric Chen | Undergraduate Researcher | 2017 - 2019

- Current NIH Postbac IRTA award winner and trainee
- Appeared in one Zamanian Lab poster in 2019, and presented his own poster at the UWM Undergraduate Research Symposium

Alexis Mann | Honorary Research Fellow | 2017

- Current PhD student at Johns Hopkins University
- Appeared in one Zamanian Lab pre-print in 2019

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Grants & Proposals

2017 - 2019 | Merck KGaA Global Health Institute (MGHI). Primary Author and Investigator.
Driving Schistosome-Resistance in *Biomphalaria*.
Funded: 1 year and extended 1 year - $75,000/year.

2015 - 2017 | Iowa State University College of Veterinary Medicine Seed Grant. Primary Author and Co-Investigator.
An Optimized CRISPR/Cas9 Protocol for Genome Editing in *Schistosoma mansoni*. Funded: 1 year and extended 1 year - $20,000/year.

Service

Peer Review
See my Publons profile for a validated list of my contributions to peer review.

Reviewer for:

- BMC Genomics
- PLOS Neglected Tropical Diseases
- Molecular and Biochemical Parasitology
- International Journal for Parasitology
- International Journal for Parasitology: Drugs and Drug Resistance

2013 - 2017 | Coordinator for the Rosebud Exchange Program
I provided leadership and management for the Rosebud Exchange Program at Cornerstone Church of Ames, IA. This program invites school-aged Native Americans from the Rosebud Indian Reservation in South Dakota to live with families in Story County, Iowa, and attend school. We seek to provide a better education to some of the most underserved and underrepresented communities in our country.

2016 - 2017 | Meeker Elementary Mentor
Once a week, I went to Meeker Elementary School in Ames, IA, to eat lunch and spend recess with an at-risk student in the 4th grade. I helped teach him proper public behavior, how to make and keep friends, and how to interact with other adults and children.

Honors & Awards

- February 2016 | Anthelmintics Symposium Travel Grant
- February 2016 | ISU GPSS Professional Advancement Grant
- February 2016 | Interdepartmental Genetics and Genomics Travel Award
- 2015 - 2016 | Brown Research Fellowship, Iowa State University $10,000
- 2013 - 2017 | Graduate College Fellowship, Iowa State University $14,400/year
- 2013 - 2017 | Biotechnology Fellowship, Iowa State University $4320/year
- 2009 - 2013 | Jewell Scholarship, William Jewell College
  Full Tuition, estimated ~$30,000/year

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Formalized Training

- Summer 2018 | FR3 Minicourse | University of Wisconsin-Oshkosh
  Dr. Shelly Michalski and Steve Schaar
- Summer 2018 | Research Mentor Training | WISCIENCE
  Dr. Anne Lynn Gillian-Daniel and Dr. Michelle Keller-Pearson
- 2016 - 2017 | Preparing Future Faculty | Iowa State University
  Dr. Holly Bender and Karen Bovenmyer