



Nicolas J. Wheeler

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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 - Present | Post-Doctoral Research

**Department of Pathobiological Sciences, University of Wisconsin-Madison
Merck KGaA**

- Developed techniques for transgenesis in the schistosome-vector *Biomphalaria glabrata* and its associated cell line, Bge.
- Sequenced the genome of the Bge cell line.
- Bioinformatics and genomics of parasitic nematodes such as *Brugia malayi* and *Dirofilaria immitis*.
- Research of the receptor biology of filarial parasitic nematodes.
- 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 and utilizing 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



- 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*.
- Advised by [Guilherme Oliveira](#).

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Publications

International Helminth Genomes Consortium. 2018. **Comparative genomics of the major parasitic worms**. Nature Genetics. *In press: Accepted September 24, 2018.*

Wheeler, N.J., Dinguirard, N., Marquez, J., Gonzalez, A., Zamanian, M., Yoshino, T.P., Castillo, M.G. 2018. **Sequences 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., Dinguirard, N., Disselhoff, G., 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

Oral Presentations

Wheeler, N.J., Dinguirard, N., Disselhoff, G., 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

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Poster Presentations

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

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

Teaching Experience

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

- Was 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.

Grants & Proposals

2017 - 2019 | Merck KGaA. Primary Author and Investigator.

Driving Schistosome-Resistance in *Biomphalaria*.

Funded: 1 year and extended 1 year - \$75,000/year.



2015 - 2017 | 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.

2015 | NIH R01. Pathogenic Eukaryotes Study Section. Co-Author and Contributor.

Novel Schistosome GPCRs: A Neglected Target for a Neglected Disease. Unfunded. Impact Score: 36. Percentile: 28.

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Service

Peer Review

See my [Publons profile](#) for a validated list of my contributions to peer review.

Reviewer for:

- BMC Genomics. Requesting editor: Erik Andersen
- PLoS Neglected Tropical Diseases. Requesting editor: Connor Caffrey
- Molecular and Biochemical Parasitology. Requesting editor: Philip T. Loverde
- International Journal for Parasitology. Requesting editor: Alex Loukas
- International Journal for Parasitology: Drugs and Drug Resistance. Requesting editor: Andrew Kotze

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

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

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References

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Mostafa Zamanian, PhD

Assistant Professor; Post-Doctoral Advisor
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Tim Yoshino, PhD

Professor; Post-Doctoral Advisor
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Jutta Reinhard-Rupp, PhD

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