



## Curriculum Vitae

Nicolas J. Wheeler, Ph.D.

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### CURRENT POSITION

2022 - **Assistant Professor**  
Department of Biology  
University of Wisconsin–Eau Claire, WI USA

### EDUCATION AND TRAINING

2020 - 2022 NIAID NRSA (F32) Postdoctoral Fellow  
University of Wisconsin-Madison, Madison, WI USA

2017 - 2020 Postdoctoral Fellow  
Merck KGaA, Madison, WI USA

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

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

### TEACHING

#### *UWEC teaching*

**BIOL 306** - Infectious Disease Biology  
Role: course coordinator and sole instructor  
Fall 2023 (3 credits, lecture)

**BIOL 305** - Molecular and Cell Biology  
Role: course coordinator and sole instructor  
Spring 2023 (4 credits, lecture)

**BIOL 221L** - Foundations of Biology I Lab  
Role: co-instructor  
Spring 2023 (2 sections)

**BIOL 345** - Invertebrate Zoology  
Role: course coordinator and sole instructor  
Fall 2022 (4 credits, lecture + lab)

**BIOL 221L** - Foundations of Biology I Lab  
Role: co-instructor  
Fall 2022 (2 sections)

#### *Previous teaching*

**PBS 514** (Veterinary Parasitology), UW–Madison School of Veterinary Medicine  
2019-2022: Course instructor (4 lectures, 2 labs)

V PTH 353 (Introduction to Parasitology), Iowa State University  
2017: Course instructor (1 lecture)

BMS 329 (Anatomy and Physiology of Domestic Animals), Iowa State University  
2017: Course instructor (3 lectures)

## PUBLICATIONS

‡ Corresponding author(s) † Co-senior authors § Equal contribution UWEC undergraduate  
Citations: 506, h-index: 9 | [Google Scholar](#) | [MyNCBI Bibliography](#)

### UWEC Affiliation

5. LR Nunn, TD Juang, DJ Beebe, **NJ Wheeler**<sup>‡†</sup>, M Zamanian<sup>†</sup>. *A high-throughput sensory assay for parasitic and free-living nematodes*. **Integrative Biology** 2023.
4. EG Rehborg<sup>§</sup>, **NJ Wheeler**<sup>§</sup>, M Zamanian<sup>†</sup>. *Mapping resistance-associated anthelmintic interactions in the model nematode *Caenorhabditis elegans**. **bioRxiv** (In revisions at PLOS NTD) 2023.
3. **NJ Wheeler**, KT Ryan, KJ Gallo, CR Henthorn, SS Erickson, JD Chan, M Zamanian<sup>†</sup>. *Multivariate chemogenomic screening prioritizes new macrofilaricidal leads*. **Communications Biology** 2023.
2. KT Ryan, **NJ Wheeler**, IK Kamara, H Johnson, JE Humphries, M Zamanian, JD Chan<sup>†</sup>. *Phenotypic profiling of macrocyclic lactones on parasitic *Schistosoma* flatworms*. **Antimicrobial Agents and Chemotherapy** 2023.
1. IK Kamara, JT Thao, K Kaur, **NJ Wheeler**, JD Chan<sup>†</sup>. *Annotation of g-protein coupled receptors in the genomes of parasitic blood flukes*. **microPublication Biology** 2023.

### Previous Affiliations

14. KJ Gallo, **NJ Wheeler**, AM Elmi, PA Airs, M Zamanian<sup>†</sup>. *Pharmacological profiling of a *Brugia malayi* muscarinic acetylcholine receptor as a putative antiparasitic target*. **Antimicrobial Agents and Chemotherapy** 2023.
13. **NJ Wheeler**, EA Hallem, M Zamanian<sup>†</sup>. *Making sense of sensory behaviors in vector-borne helminths*. **Trends in Parasitology** 2022.
12. HJ Loghry, H Kwon, RC Smith, NA Sondjaja, S Minkler, S Young, **NJ Wheeler**, M Zamanian, L Bartholomay, MJ Kimber<sup>†</sup>. *Extracellular vesicles secreted by *Brugia malayi* microfilariae modulate the melanization pathway in the mosquito host*. **bioRxiv** 2022.
11. **NJ Wheeler**, EJ Garncarz, KJ Gallo, KT Ryan, JD Chan, M Zamanian<sup>†</sup>. *wrmXpress: A modular package for high-throughput image analysis of parasitic and free-living worms*. **PLOS NTD** 2022.
10. PM Airs, K Vaccaro, KJ Gallo, N Dinguirard, ZW Heimark, **NJ Wheeler**, J He, K Weiss, NE Schroeder, J Huisken, M Zamanian<sup>†</sup>. *Spatial transcriptomics reveals antiparasitic targets associated with essential behaviors in the human parasite *Brugia malayi**. **PLOS Pathogens** 2022. 18(4): e1010399.
9. **NJ Wheeler**, PM Airs, M Zamanian<sup>†</sup>. *Long-read RNA sequencing of human and animal filarial parasites improves gene models and discovers operons*. **PLOS NTD** 2020. 14(11):e0008869.

8. **Wheeler NJ**, Heimark ZW, Airs PM, Mann A, Bartholomay LC, Zamanian M<sup>‡</sup>. *Genetic and functional diversification of chemosensory pathway receptors in mosquito-borne filarial nematodes*. **PLOS Biology** 2020. 18(6):e3000723.
7. HJ Loghry, W Yuan, M Zamanian, **NJ Wheeler**, TA Day, MJ Kimber<sup>‡</sup>. *Ivermectin inhibits extracellular vesicle secretion from parasitic nematodes*. **Journal of Extracellular Vesicles** 2020. 10(2):e12036.
6. T Maier, **NJ Wheeler**, EKO Namigai, J Tycko, RE Grewelle, Y Woldeamanuel, K Klohe, J Perez-Saez, SH Sokolow, GA De Leo, TP Yoshino, M Zamanian<sup>‡</sup>, J Reinhard-Rupp<sup>‡</sup>. *Gene drives for schistosomiasis transmission control*. **PLOS NTD** 2019. 13(12):e0007833.
5. **International Helminth Genomes Consortium**. 2018. *Comparative genomics of the major parasitic worms*. **Nature Genetics** 2019. doi:10.1038/s41588-018-0262-1
4. **NJ Wheeler**, N Dinguirard, J Marquez, A Gonzalez, M Zamanian, TP Yoshino, MG Castillo<sup>‡</sup>. *Sequence and structural variation in the genome of the *Biomphalaria glabrata* cell line*. **Parasites & Vectors** 2018. 11(1):496.
3. S Hahnel, **NJ Wheeler**, Z Lu, A Wangwiwatsin, P McVeigh, A Maule, M Berriman, TA Day, P Ribeiro, CG Grevelding<sup>‡</sup>. *Tissue-specific transcriptome analyses provide new insights into GPCR signaling in adult *Schistosoma mansoni**. **PLOS Pathogens** 2018. 14(1):e1006718.
2. **NJ Wheeler**, PN Agbedanu, MJ Kimber, P Ribeiro, TA Day, M Zamanian<sup>‡</sup>. 2015. *Functional analysis of *Girardia tigrina* transcriptome seeds pipeline for anthelmintic target discovery*. **Parasites & Vectors** 2015. 8(1):34.
1. M Zamanian, PN Agbedanu, **NJ Wheeler**, P McVeigh, MJ Kimber, TA Day<sup>‡</sup>. *Novel RNAi-mediated approach to G protein-coupled receptor deorphanization: proof of principle and characterization of a planarian 5-HT receptor*. **PLOS One** 2012. 7(7):e40787.

## PRESENTATIONS

Invited Talks: 10, Selected Talks: 7, Posters: 9

### UWEC undergraduate

26. Bagatta M, Coughlin I, Horejsi R, Wettstein M, Malin I, Smith JE, **Wheeler NJ** *Intestinal helminths of the California ground squirrel (*Otospermophilus beecheyi*)*. Meeting of the American Society of Parasitologists, Kansas City, MO. July 2023. **(Poster)**
25. Coffin A, Biser S, Bagatta M, Brenna M, Dovornay C, Ehrike N, McMichael E, Peterson L, Richard A, Smith C, Veeneman C, **Wheeler NJ**. *A survey of aquatic snails and trematodes in Eau Claire County*. National Conference on Undergraduate Research, Eau Claire, WI. April 2023. **(Poster)**
24. **Wheeler NJ** *Making sense of sensory behaviors in vector-borne helminths*. Meeting of the American Society of Parasitologists, College Station, TX. July 2022. **(Selected Talk)**
23. **Wheeler NJ** *Making sense of helminth sensory behaviors*. University of Wisconsin-Eau Claire, Eau Claire, WI. December 2021. **(Invited Talk)**
22. **Wheeler NJ** *Making sense of helminth sensory behaviors*. University of Wisconsin-Oshkosh, Oshkosh, WI. December 2021. **(Invited Talk)**
21. **Wheeler NJ** *Making sense of helminth sensory behaviors*. Uniformed Services University of the Health Sciences, Bethesda, MD. April 2021. **(Invited Talk)**
20. **Wheeler NJ**. *Uncovering the cellular and molecular program of schistosome migrations*. University of Calgary, Faculty of Veterinary Medicine, Calgary, AB. January 2021. **(Invited Talk)**
19. **Wheeler NJ**, Airs PM, Zamanian M. *Characterization of the chemosensory pathway of filarial worms*. ASTMH, Virtual. November 2020. **(Selected Talk, Young Investigator Award Winner)**

18. **Wheeler NJ**, Dinguirard NM, Reinhard-Rupp J, Rollinson D, Yoshino TP, Zamanian M. *Development of community efforts towards schistosomiasis vector genetic tools and control strategies*. ASTMH, Virtual. November 2020. **(Poster)**
17. **Wheeler NJ** *Making sense of helminth sensory behaviors*. Texas Tech University, School of Veterinary Medicine, Amarillo, TX. July 2020. **(Invited Talk)**
16. **Wheeler NJ**, Zamanian M. *Long-read RNA sequencing in neglected human parasites*. Pacific Biosciences North America User Group Meeting, Newark, DE. September 2019. **(Invited Talk)**
15. **Wheeler NJ**, Heimark ZW, Airs PM, Mann A, Bartholomay LC, Zamanian M. *Genetic and functional diversification of chemosensory pathway receptors in filarial nematode parasites*. World Association for the Advancement of Veterinary Parasitology, Madison, WI. July 2019. **(Poster)**
14. **Wheeler NJ**, Airs PM, 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. June 2019. **(Invited Talk)**
13. **Wheeler NJ**, Airs PM, Zamanian M. *Long-read RNA sequencing in neglected human parasites*. Pacific Biosciences Certified Service Provider Launch, Madison, WI, USA. May 2019. **(Invited Talk)**
12. **Wheeler NJ**, Gallo K, Golfinos A, Gilsdorf C, Meikle T, Zamanian M. *Tissue-specific heterologous expression of Brugia malayi GPCRs in Caenorhabditis elegans*. Molecular Helminthology: An Integrated Approach. San Antonio, TX USA. Apr 2019. **(Poster)**
11. **Wheeler NJ**, Heimark Z, To T, Chen E, Airs PM, Zamanian M. *Conserved and divergent aspects of chemosensory signaling in filarial parasitic nematodes*. Molecular Helminthology: An Integrated Approach. San Antonio, TX USA. Apr 2019. **(Poster)**
10. **Wheeler NJ**, Zamanian M. *New insights into neglected diseases*. University of Wisconsin-Whitewater Biology Forum, Whitewater, WI, USA. March 2019. **(Invited Talk)**
9. **Wheeler NJ**, Airs PM, Zamanian M. *Exploring new therapeutic targets for neglected parasites*. Department of Pathobiological Sciences Research Seminar, Madison, WI. March 2019 **(Selected Talk)**
8. **Wheeler NJ**, Dinguirard N, Reinhard-Rupp J, Yoshino TP, Zamanian M. *Progress towards transgenesis in Biomphalaria glabrata and implications for snail control*. Global Schistosomiasis Alliance Meeting. New Orleans, LA USA. Oct 2018. **(Selected Talk)**
7. **Wheeler NJ**, Dinguirard N, Disselhoff G, Maier T, Namigai EK, Tycko J, Reinhard-Rupp J, Yoshino TP, Zamanian M. *Towards transgenesis in Biomphalaria glabrata*. 15th International Symposium on Schistosomiasis. Rio de Janeiro, Brazil. July 2018. **(Invited Talk and Poster)**
6. **Wheeler NJ**, Meikle T, Fraser L, Srinivasan D, To T, Airs P, Kimber MJ, Bartholomay L, Zamanian M. *Exploring sensory pathways and behaviors in filarial nematode parasites*. *C. elegans* Neuronal Development, Synaptic Function & Behavior Topic Meeting, Madison, WI. June 2018. **(Poster)**
5. **Wheeler NJ**, Meikle T, Bartholomay LC, Zamanian M. *Adapting tools from free-living nematodes to study chemosensory pathways in filarial nematode parasites*. Chicago Area Worm Meeting (CHAWM). Chicago, IL. May 2018. **(Selected Talk)**
4. **Wheeler NJ**, Zamanian M. *Computational and molecular pipelines to combat neglected parasites*. Comparative Biomedical Sciences Recruitment Weekend, Madison, WI. February 2018. **(Selected Talk)**
3. **Wheeler NJ**, Zamanian M, Kimber MJ, Day TA. *The cysloop superfamily of platyhelminths and nematodes*. Molecular Helminthology: An Integrated Approach, Cape Cod, MA. March 2017. **(Poster)**
2. **Wheeler NJ**, Zamanian M, Kimber MJ, Day TA. *Anthelmintic Targets in a Genomic World: a case study in GPCRs*. Anthelmintics: Discovery to Resistance II, San Diego, CA. March 2016. **(Selected Talk)**
1. **Wheeler NJ**, Zamanian M, Day TA. *A Girardia tigrina transcriptome to aid in Neglected Tropical Disease research*. 5th Annual Midwest Neglected Infectious Diseases Meeting, West Bend, IN. July 2015. **(Selected Talk)**

## GRANTS & PROPOSALS

### *Submitted proposals*

**Molecular determinants and behavioral fingerprints of schistosome miracidia host-seeking**

NIH R15

Role: Principal Investigator | 2024-2027 | Total Direct Costs: \$284,422

### *Current funding*

**Using molecular diagnostics for wildlife parasitology**

UWEC ORSP Student/Faculty Research Collaboration | Fall 2023

**Quantitative ethology of human schistosomes**

UWEC ORSP Student/Faculty Research Collaboration | Fall 2023

### *Previous funding*

**Disentangling host-parasite interactions in a model snail-trematode system**

UWEC ORSP Summer Research Experience for Undergraduates | Summer 2023

**A survey of intestinal parasites in the California ground squirrel *Otospermophilus beecheyi*, a unique mammalian model system for longitudinal behavioral studies**

UWEC ORSP Student/Faculty Research Collaboration | Winter 2022 - Spring 2023

**Establishing molecular diagnostics for wildlife parasitology**

UWEC ORSP Student/Faculty Research Collaboration | Spring 2023

**Determining the molecular basis of chemosensory behaviors in mosquito-borne filarial nematode parasites**

NIH Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship

Role: Principal Investigator | 2020-2022 | Total Direct Costs: \$137,124

**Driving schistosome-resistance in *Biomphalaria***

Merck KGaA Global Health Institute (MGHI) Postdoctoral Fellowship

Role: Principal Investigator. | 2017-2021 | Total Direct Costs: \$200,000

**An optimized CRISPR/Cas9 protocol for genome editing in *Schistosoma mansoni***

Iowa State University College of Veterinary Medicine Seed Grant

Role: Primary Author and Co-Investigator. | 2015-2017 | Total Direct Costs: \$40,000

## UNDERGRADUATE MENTORSHIP

### *UWEC research mentorship*

**Chase Nelson** (2023 - )

**Carly Weber** (2023 - )

Biological Research Scholar Program

**Rachel Horejsi** (2022 - )

Biological Research Scholar Program

**Megan Wettstein** (2022 - )

**Ireland Coughlin** (2022 - )

**Maggie Bagatta** (2022 - )

**Blake Mathisen** (2022 - )

**Zach Caterer** (2022 - )

### *UWEC other mentorship*

**Tiffany Pronschinske** (2023) - Service-learning project

**Alex Richard** (2023) - Service-learning project

**Claire Veeneman** (2023) - Service-learning project

**Isaac Ackerman** (2023) - BIOL 305 Honors contract

**Jessica Neu** (2023) - Biology education program - faculty recommender

**Charlie Dovornay** (2022) - Service-learning project

**Max Brenna** (2022) - Service-learning project

*Previous mentorship*

**Elena Garncarz** (2019 - 2022 | PhD student at UW-Madison MDTP)

**Lenny Nunn** (2020 - 2022 | Research intern at UW-Madison)

**Michelle Cho** (2021 - 2022 | Neuroscience student at UW-Madison)

**Tran To** (2017 - 2020 | Master student University of Pennsylvania biotech program)

**Eric Chen** (2017 - 2019 | MPH student at Emory University)

**Alexis Mann** (2017 | PhD student at Johns Hopkins University )

## AFFILIATIONS AND PROFESSIONAL DEVELOPMENT

- 2022 - **American Society of Parasitologists**
  - Member
- 2020 - **American Society of Tropical Medicine and Hygiene**
  - Member
- 2019 - **Global Schistosomiasis Alliance**  
[eliminateschisto.org](http://eliminateschisto.org)
  - Member of the Research Working Group
  - Emeritus leader of the snail/vector control work stream

*UWEC Tier 2 EDI Workshops:*

**2022:** Recognizing and Responding to Microaggressions in the Classroom

**2022:** Transparent Design Framework Workshop

**2022:** My Personal Journey and Bias

*Other training:*

**2018:** FR3 Minicourse, University of Wisconsin-Oshkosh, Dr. Shelly Michalski and Steve Schaar

**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

## SERVICE

**Departmental service:**

Member of Biology EDI Committee

**Service to journals:**

Reviewing Editor for *Frontiers in Parasitology*

See my [Publons profile](#) for a validated list of my contributions as an ad-hoc reviewer.

Journals include: *Microbiology Spectrum*, *Experimental Parasitology*, *BMC Genomics*, *Gene*, *PLOS Neglected Tropical Diseases*, *Molecular and Biochemical Parasitology*, *International Journal for Parasitology: Drugs and Drug Resistance*, *International Journal for Parasitology*

**Other service:**

**2023:** Chair for the two sessions at the National Conference for undergraduate research

**2022:** Chair for the two sessions at the annual meeting of the American Society of Parasitologists

**2020:** Co-chair for the ACMCIP: Parasite Biology, Genomics and Genome Editing session at ASTMH

## HONORS & AWARDS

- 2023:** UWEC ORSP Celebration of Scholarship nominee
- 2020:** ASTMH Young Investigator Award First Tier Mention (\$600)
- 2016:** Anthelmintics Conference Travel Grant
- 2016:** ISU GPSS Professional Advancement Grant
- 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 (\$4,320/year)
- 2013:** B.S awarded with honors, William Jewell College
- 2009-2013:** Jewell Scholarship, William Jewell College (\$30,000/year)