



# Molecular <sup>2023</sup> Helminthology

From fundamental biology to practical applications



Madison, WI  
26 - 29 June 2023

## Organizers

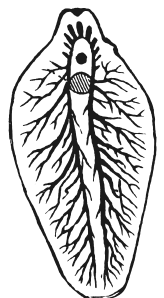
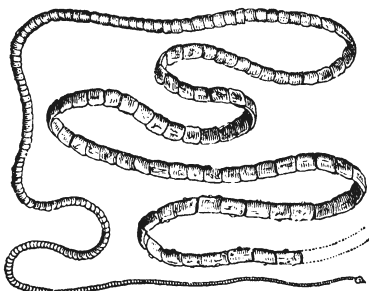
Makedonka Mitreva, *Washington University School of Medicine*

Phil Newmark, *HHMI; Morgridge Institute for Research; University of Wisconsin-Madison*

Mostafa Zamanian, *University of Wisconsin-Madison*

## Table of Contents

Full Program .....	2
Posters .....	6
Meeting sponsors .....	8
Venue map .....	9



MOLECULAR HELMINTHOLOGY MEETING  
Morgridge Institute for Research, Madison, WI  
• JUNE 26–29 2023 •

Monday, June 26

Invited Speakers

3:30 - 6:00 pm Meeting Registration  
Open Court Central

6:00 - 6:15 pm Opening Remarks & Student / Postdoc Awards  
H.F. DeLuca Forum

6:15 - 7:00 pm **Session 1: Keynote Lecture**  
H.F. DeLuca Forum **Tim Anderson** (Texas Biomedical Research Institute)  
Schistosome hybridization! Many questions and some answers.

7:00 pm Welcome Reception  
Open Court Main

Tuesday, June 27

8:00 - 9:00 am Breakfast and Poster Setup  
Open Court Central/East

9:00 - 10:20 am **Session 2: Immunoparasitology and Diagnostics**  
H.F. DeLuca Forum  
9:00 am: **Naina Arora**, Cannabinoid receptor signaling through CBR1 regulates macrophage and eosinophil responses in lung helminth infection  
9:20 am: **Christopher Wray**, *Fasciola hepatica* microRNAs in infected sheep sera: a route to improved diagnostic tests?  
9:40 am: **Natalie Steinel**, The diphyllbothriidean cestode, *Schistocephalus solidus*, modulates host innate and adaptive immunity  
10:00 am: **Carolina Verissimo**, Heterogeneous glycosylation of proteins from *Fasciola hepatica* invasive stage reveals higher complexity in parasite-host interactions

10:20 - 10:50 am Morning Coffee Break  
Open Court Main

10:50 am - 12:30 pm **Session 3: Basic and Developmental Biology**  
H.F. DeLuca Forum  
10:50 am: **Tania Rozario**, Exploring stem cell and germ cell niches in the tapeworm, *Hymenolepis diminuta*  
11:10 am: **Oliver Puckelwaldt**, Uncovering the cellular diversity of *Fasciola hepatica* utilizing single-cell transcriptomics  
11:30 am: **Rémy Bétous**, Filarial DAF-12 sense  $\Delta 4$ -dafachronic acid in host serum to resume iL3 development during infection  
11:50 am: **Aiste Vitkauskaitė**, Co-culture with HepG2 spheroids spurs in vitro growth and development of the infective stages of the helminth pathogen *Fasciola hepatica*  
12:10 pm: **Bruce Rosa**, The first genome of African *Paragonimus*

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Tuesday, June 27 continued

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12:30 - 2:00 pm Lunch Workshop  
Open Court Central/East

2:00 - 4:00 pm **Poster Session 1 (Odd Presenters)**  
Open Court Main

4:00 - 5:20 pm **Session 4: Therapeutics and Drug Resistance**  
H.F. DeLuca Forum 4:00 pm: **James Collins**, Thiabendazole responses are modified by natural mutations in a cytochrome P450 gene  
4:20 pm: **Jonathan Marchant**, TRPMPZQ as a target for new anthelmintics  
4:40 pm: **Nathan Ryan**, Adjuvanted fusion protein vaccine induces a durable immune response to *Onchocerca volvulus* in mice and non-human primates  
5:00 pm: **Jacqueline Hellinga**, An evolutionary study of intrinsic environmental driving factors for ivermectin resistance in the parasitic model *Caenorhabditis elegans*

5:20 - 5:50 pm Afternoon Coffee Break  
Open Court Main

5:50 - 7:30 pm **Session 5: Host-Parasite Interactions**  
H.F. DeLuca Forum 5:50 pm: **Michael Povelones**, Do heartworms subvert the immune response of their mosquito hosts?  
6:10 pm: **Tom Pennance**, Comparative whole-genome analysis of African snail vector, *Biomphalaria sudanica*, reveals genomic regions associated with resistance to infection by schistosomes  
6:30 pm: **Manuela Verastegui**, Study of the pathogenesis of neurocysticercosis using an animal model  
6:50 pm: **Gustavo Salinas**, A minimal kynurenine pathway was preserved for rhodoquinone but not for de novo NAD<sup>+</sup> biosynthesis in parasitic worms: the essential role of NAD<sup>+</sup> rescue pathways  
7:10 pm: **Navonil Banerjee**, Role of carbon dioxide in mediating parasite-host interactions in the skin-penetrating nematode *Strongyloides stercoralis*

7:30 pm Dinner - Brats & Beer at the Memorial Union Terrace  
Memorial Union Terrace

Wednesday, June 28

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8:00 - 9:00 am Breakfast  
Open Court Central/East

9:00 - 10:20 am **Session 6: Basic and Developmental Biology**  
H.F. DeLuca Forum 9:00 am: **Paul McCusker**, Probing growth and development in *Fasciola hepatica*

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Wednesday, June 28 continued

9:20 am: **Kevin Hackbarth**, Dosage compensation and meiotic silencing on the neo-X chromosomes of filarial nematodes

9:40 am: **Jose Tort**, Intra-snail stages transcriptomics reveals stage specific gene amplifications in *Fasciola hepatica*

10:00 am: **Lu Zhao**, Explore regenerative responses in parasitic flatworm *Schistosoma mansoni* following injury

10:20 - 10:50 am Morning Coffee Break  
Open Court Main

10:50 am - 12:10 pm **Session 7: Immunoparasitology and Diagnostics**

H.F. DeLuca Forum 10:50 am: **Adler Dillman**, Insect-parasitic nematodes as a model system for functional characterization of nematode ESPs

11:10 am: **Amit Prasad**, *Taenia solium* exosomes interfere with PI3K-AKT-mTOR pathway and induces apoptosis in macrophages

11:30 am: **Tilak Chandra Nath**, Molecular proof of hookworms and *Strongyloides* species in humans and dogs in Bangladesh

11:50 am: **Lucia Sanchez Di Maggio**, *Paragonimus kellicotti* extracellular vesicles released in vitro or present in lung cysts contain a cysteine protease that is recognized by IgG4 antibodies of infected humans

12:10 - 2:00 pm Lunch  
Open Court Central/East

2:00 - 4:00 pm **Poster Session 2 (Even Presenters)**

4:00 - 5:20 pm **Session 8: Host-Parasite Interactions**

H.F. DeLuca Forum 4:00 pm: **Jesse Weber**, Cestode tegument width is a plastic trait connected to genetic differences in host

4:20 pm: **Patrick Skelly**, How schistosomes control their purinergic halo

4:40 pm: **Hyeim Jung**, Identification and characterization of mucus degrading enzymes during early whipworm infection using in vitro colonoid model

5:00 pm: **Eve O'Kelly**, *Fasciola hepatica* Enolase, a moonlighting glycolytic enzyme on the parasite tegument that interacts with the host fibrinolytic system

5:20 - 5:50 pm Afternoon Coffee Break  
Open Court Main

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Wednesday, June 28 continued

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5:50 - 7:30 pm **Session 9: Therapeutics and Drug Resistance**

H.F. DeLuca Forum 5:50 pm: **Sabine Specht**, New anthelmintic chemical entities: considerations for development and access

6:10 pm: **Sasisekhar Bennuru**, Wb 5, a novel biomarker for monitoring efficacy and success of mass drug administration programs for *Wuchereria bancrofti* elimination

6:30 pm: **Sara Lustigman**, Prophylactic drugs that target early stages of filarial worms can support the elimination goals for onchocerciasis

6:50 pm: **Murilo Amaral**, Long non-coding RNAs involved with reduced sensitivity to praziquantel in *Schistosoma mansoni*

7:10 pm Banquet Dinner & Entertainment  
Open Court - All

Thursday, June 29

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8:00 - 9:00 am Breakfast  
Open Court Central/East

9:00 - 10:40 am **Session 10: Emerging Technologies and Approaches**

H.F. DeLuca Forum 9:00 am: **Cinzia Cantacessi**, Antimicrobial peptides in helminth secretions – a gold mine for antibiotic discovery?

9:20 am: **Kathrin Jutzeler**, Investigating genomic diversity in laboratory schistosome populations

9:40 am: **Leah Owens**, CRISPR-Cas9 host signal reduction and 18S metabarcoding for parasite assemblage characterization

10:00 am: **Oluwaremilekun Ajakaye**, Proof-of-concept multilocus sequence typing scheme to investigate hybridization in *Schistosoma haematobium*

10:20 am: **Svenja Gramberg**, Spatial transcriptomics of parasites A molecular map of the liver fluke *Fasciola hepatica*

10:40 - 10:50 am Closing Remarks  
Open Court Main

POSTERS

#	Presenter	Title
1	Rebecca Armstrong, Queens University Belfast	Dysregulating the balance between cell survival and programmed cell death – a novel strategy for fasciolosis control?
2	Ashutosh Arun, Washington University in Saint Louis	Innovative strategy for the identification of new therapeutics for onchocerciasis
3	Suman Bharti, Washington University	Different approaches to create transgenic hookworms
4	Marc Borchert, Freie Universität Berlin	Benzimidazole inhibiting <i>Haemonchus contortus</i> tubulin dynamics by structural intradimer changes observed by in silico modeling
5	Andrés Tibabuzo Permodo, Morgridge Institute for Research	Uncovering the mechanism of action of Schistosoma Paralysis Factor
6	Evgeny Chulkov, Medical College of Wisconsin	Identification of an endogenous current evoked by praziquantel in schistosome neurons
7	Bethany Crooks, Queens University Belfast	Exploring the nature of RNA secretion by <i>Strongyloides ratti</i>
8	Carolina De Marco Verissimo, University of Galway	Complement regulation in Fascioliasis: Insights from Serpin Inhibition of MBL-associated serine proteases (MASPs)
9	Elisha Enabulele, Texas Biomedical Research Institute	An array of PCR-RFLP markers for differentiating between <i>Schistosoma haematobium</i> and <i>S. bovis</i> in field settings
10	Santiago Fontenla, Universidad de la República	Conservation of the small RNA pathways in chromosome level genomes of platyhelminthes
11	Kendra Gallo, University of Wisconsin-Madison	Molecular surveillance detects high prevalence of the neglected parasite <i>Mansonella ozzardi</i> in the Colombian Amazon
12	Siobhan Gaughan, University of Galway	Advancing parasitology research and sustainability: a case study of the molecular parasitology Lab in Galway, Ireland
13	Sandra Gava, Fiocruz Minas	Transcriptional profiles and functional insights into the Aspartyl Proteases Cathepsin D-like of <i>Schistosoma mansoni</i>
14	Cierra Gladfelter, University of Georgia	The role of nanos in germ cell regulation and regeneration in <i>Hymenolepis diminuta</i>
15	Trevor Haskins, University of Georgia	Wnt signaling and A-P axis patterning in the tapeworm, <i>Hymenolepis diminuta</i>
16	Megan Henriquez, University of Calgary	Morphological and molecular identification of gastrointestinal parasites reveals species diversity in wild capuchin monkeys ( <i>Cebus imitator</i> )
17	Christopher Holt, University of Maryland, Baltimore	Lack of host sex and infection mode effect on <i>Brugia pahangi</i> gene expression
18	Judith Humphries, Lawrence University	Development of the nervous system in embryonic <i>Biomphalaria glabrata</i> , an intermediate host of <i>Schistosoma mansoni</i>

POSTERS

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19	Alba Cortés, Universitat de València	Study of the metabolic capacity of the host gut microbiome reveals a likely dual role for intestinal bacteria in the pathophysiology of hepato-intestinal schistosomiasis
20	Hailey Johnson, NIH	Identification of <i>Brugia malayi</i> miRNAs involved in <i>Wolbachia</i> -Host symbiosis
21	Pawan Kumar, Washington University in Saint Louis	Analysis of intrapopulation genetic diversity and sibship reconstruction in <i>Onchocerca volvulus</i> using single microfilariae whole-genome sequencing
22	Winka Le Clech, Texas Biomedical Research Institute	Impact of schistosome infection on tissue microbiomes of <i>Biomphalaria</i> snails
23	Ian Donovan, Morgridge Institute for Research	Developing a molecular toolkit to study synthesis of Schistosome Paralysis Factor by the rotifer <i>Rotaria sp.</i>
24	Ciaran McCoy, Queens University Belfast	An optimised <i>Ascaris suum</i> biofluid peptidomics pipeline to aid understanding of extrasynaptic transmission in nematodes
25	George Wendt, University of Texas Southwestern Medical Center	The role of p53 homologs in the parasitic flatworm <i>Schistosoma mansoni</i>
26	Elena Rehborg, University of Wisconsin-Madison	Mapping resistance-associated anthelmintic interactions in the model nematode <i>Caenorhabditis elegans</i>
27	Diana Gabriela Rios Valencia, Universidad Nacional Autónoma de México	The study of germinal cells in <i>Taenia crassiceps</i>
28	Claudia Rohr, Medical College of Wisconsin	Drug development for pseudophyllidean cestodes
29	Kaetlyn Ryan, University of Wisconsin-Madison	Exploring microbial natural products as sources of novel anthelmintics using advanced phenotypic screens
30	Amanda Shaver, Northwestern University	Genetic differences underlie variation in anthelmintic responses in <i>C. elegans</i> wild strains
31	Leonidas Spathis, University of Glasgow	Transcriptomic analysis identifies potential novel targets for filarial control
32	Daniel Sprague, Medical College of Wisconsin	Development of a novel TRPMPZQ activator to target liver fluke
33	Dylon Stephens, UT Southwestern	Leveraging the human druggable genome to uncover therapeutic targets in the parasite <i>Schistosoma mansoni</i>
34	Duncan Wells, Queens University Belfast	Parasite-derived Extracellular RNAs as Novel Biomarkers for <i>Strongyloides</i> Diagnosis
35	Devyn Yates, Washington University School of Medicine	Identification of filarial parasite biomarker candidates in extracellular vesicles isolated from culture media and plasma

SPONSORS



ACKNOWLEDGMENTS

We would like to acknowledge individuals for their help with meeting logistics and the meeting program: Chip Martin (WUSTL), Melanie Issigonis (Morgridge Institute for Research), and Katie Ryan (UW-Madison).



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MAP OF DISCOVERY BUILDING

