

MGSE Workshop

Evolutionary Arms Races: Predation and Resistance

Dates: 27th -28th May, 2025

Venue: IEB social room (Hüfferstraße 1, 48149 Münster)

This workshop will explore the relentless co-evolutionary battles between predators and prey across the biological spectrum. From the molecular defenses of microbes against viral or protist predation to the sophisticated anti-predator/anti-parasite strategies of multicellular organisms, we will examine the diverse resistance mechanisms that have evolved and perhaps identify some common themes or mechanisms. We will consider how these interactions lead to complex ecological cascades and evolutionary trajectories.

27.05.2025	Speaker	Start	End	Duration (min)
Session 1: Introduction to Evolutionary Arms Races	Gerald Koudelka	13:00	14:00	60
Session 2: Microbial Interactions and Molecular Warfare	Michael Berger	14:00	14:30	30
Coffee break		14:30	15:00	30
Session 2: Microbial Interactions and Molecular Warfare	Landon Getz (Zoom)	15:00	15:30	30
	Discussion	15:30	16:00	30
Session 3: Parasites & Pathogens: Predator-Prey Dynamics	Jay Bangs (Zoom)	16:00	16:30	30
28.05.2025	Speaker	Start	End	Duration (min)
Session 3: Parasites & Pathogens: Predator-Prey Dynamics	Gerald Koudelka	13:00	13:30	30
Session 4: Parasites & Pathogens: Host Defenses	Krishnendu Mukherjee	13:30	14:00	30
Session 4: Parasites & Pathogens: Host Defenses	Ulrich Dobrindt	14:00	14:30	30
Coffee break		14:30	15:00	30
Session 5: Beyond Dyads – Ecological and Evolutionary Cascades	Jaime Anaya-Rojas	15:00	15:30	30
Session 6: Panel and Synthesis Discussion	Gerald Koudelka	15:30	16:30	60

Workshop Presentation Topics and Schedule

- **Session 1: Introduction to Evolutionary Arms Races**
 - Introduction
 - Key Concepts: Co-evolution, Red Queen dynamics, escalation vs. co-adaptation
 - Discussion: What constitutes an arms race?
- **Session 2: Microbial Interactions and Molecular Warfare**
 - Phage ϕ O104 of E. coli O104:H4: just a parasite, or a powerful weapon in antimicrobial warfare? (**Michael Berger-Münster**)
 - From Individual Shields to Collective Armor: Integrins as Platforms for the Bacterial Pan-Immune System (**Landon Getz-Toronto**)
- **Session 3: Parasites & Pathogens: Predator-Prey Dynamics (*pt 1.*)**
 - Sphingolipids and Host Adaptation in Kinetoplastid Protozoa (**Jay Bangs-Buffalo**)

- **Session 3: Parasites & Pathogens: *(cont'd.)***

- Unexpected role of LPS as an antipredator defense **(Koudelka-Buffalo)**

- **Session 4: Parasites & Pathogens: Host Defenses**

- Epigenetic regulation of innate immune memory in insects **(Krishnendu Mukherjee Münster)**
 - TBD **(Ulrich Dobrindt Münster)**

- **Session 5: Beyond Dyads: Ecological and Evolutionary Cascades**

- Rapid immune response: Evolution in action **(Jaime M. Anaya-Rojas-Münster)**

- **Session 6: Panel and Synthesis Discussion**