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OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY  
沖縄科学技術大学院大学

THEORETICAL SCIENCES VISITING PROGRAM

# TSVVP TALK

## Ecology and Evolution of Antibiotic Resistance in Bacterial Pathogens

2023

WED.

**Dec 13**

**14:00–15:00**

**HYBRID** L4E48, ZOOM



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Antibiotic resistance has emerged as a serious threat to public health by increasing the health and economic burden associated with bacterial infections. It is well established that antibiotic use is associated with the emergence of resistance. However, the within-host drivers of resistance remain poorly understood, making it difficult to predict the emergence of resistance at the scale of individual patients. This is an important problem to address, as resistant infections are associated with worse outcomes for patients. How can we use comparative genomics to understand evolution during infections? How important is pathogen strain diversity for the emergence of resistance? What are some barriers that might limit resistance emergence and spread in pathogen populations? In this lecture I will present some of our recent research on these questions, and on how we can combine computational, experimental, and patient-based approaches to better understand the ecology and evolution of antibiotic resistance in bacterial pathogens.

University of Oxford

## Rachel Wheatley

Rachel is an evolutionary microbiologist interested in antimicrobial resistance evolution, interactions in the microbiome, pathogen evolution during infections, and bacterial defence systems such as CRISPR-Cas. Rachel is a Fellow in Biology at the University of Oxford (Magdalen College), and taking up a tenure-track position at Queen's University Belfast in 2024. She is particularly interested in the interface between antibiotic resistance evolution and success in the microbiome. Prior to her current position, she spent time at the Wissenschaftskolleg zu Berlin (Institute for Advanced Study) and as a postdoc in the lab of Professor Craig MacLean. Outside of science, she enjoys judo, boxing, and running!



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