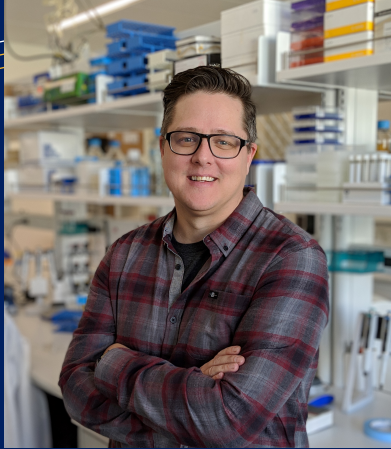




QUANTITATIVE AND SYSTEMS BIOLOGY COLLOQUIUM: Phage Therapy in Action: A Case Study of Bacterial Resistance and Immune Response



Dwayne Roach
San Diego State University

About the Speaker:

Dr. Dwayne Roach is an Associate Professor and the Conrad Prebys Chair of Virology at San Diego State University (SDSU), specializing in biomedical microbiology with a focus on bacteriophages. He earned his Ph.D. from Brock University (Canada), where his dissertation explored phage resistance mechanisms and their implications for disease management. With over 20 years of phage research experience, Dr. Roach has significantly advanced the understanding of phage-bacteria interactions and the potential of phages in combating infectious diseases. He has authored 29 articles, including publications in leading journals like *Cell Host & Microbe* and *Nature Protocols*, and holds 3 patents. Dr. Roach is a pioneer in phage-human immune interactions, with his seminal article, "Synergy between the Host Immune System and Bacteriophage Is Essential for Successful Phage Therapy against an Acute Respiratory Pathogen," shaping the field. His current research explores the role of phages in activating host innate immunity and developing technologies to better understand phage pharmacokinetics in therapy.

Abstract:

Join Dr. Dwayne Roach for a deep dive into clinical phage therapy through a compelling case study of a critically ill patient battling a *Pseudomonas aeruginosa* pulmonary infection in cystic fibrosis. Discover how phage therapy led to significant improvements in infection control and lung function, offering a glimpse into the future of treating multidrug-resistant infections. However, the story doesn't end there—this talk will examine the challenges of phage resistance and immune modulation during treatment that ultimately led to its decline. Dr. Roach will explore the dynamic interactions between phages and the immune system, focusing on macrophage activation and key receptors involved in recognizing phages. Additionally, the talk will utilize mathematical models to explore phage pharmacodynamics, its impact on cocktail formulations, and optimal dosing strategies. These findings offer key insights into how phage therapy can be effectively implemented in clinical practice.

Date:

2/20/2025

Time:

10:30 AM - 11:45 AM

Location:

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