Department of Molecular and Cellular Biology

Graduate Seminar MCB*7500

Friday, October 4th, 2024 @ 12:00 p.m.

presented by:

Azat Bikmullin

(Advisor: Dr. Cezar Khursigara)

"Investigating Phage-Based Strategies to Treat *Streptococcus suis* Infections in Swine"

Streptococcus suis (S. suis) is the leading streptococcal pathogen in pigs, affecting global pork production. The disease, most prevalent in piglets between 5 and 10 weeks old, can result in complications like septicemia, meningitis, and endocarditis. *S. suis* is also an emerging zoonotic threat. It can be transmitted from animals to humans through direct contact or consumption of undercooked meat products. As a result, both pigs and humans are at risk of severe illness or even death. Rising antibiotic resistance makes such infections more difficult to treat. Therefore, novel treatments are urgently needed.

Bacteriophages are viruses that infect and kill bacteria. They have the unique ability to selectively infect certain bacterial species. During the late stages of infection, phages produce enzymes called endolysins. Endolysins break down the peptidoglycan layer of bacterial cell walls, leading to osmotic lysis and cell death. This makes bacteriophage-based strategies a strong alternative to conventional antibiotics. My research focuses on developing such treatments to combat *S. suis* infections in pigs.