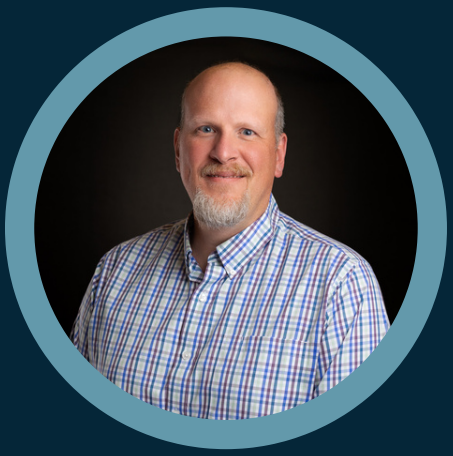


Steven Foley, PhD

Cracking the Bacterial Code

Arkansas Researcher Advances Food Safety and Public Health

Dr. Steven Foley, a leading expert in biological research and Director of the Division of Microbiology at the FDA's National Center for Toxicological Research, is spearheading groundbreaking research with profound implications for public health and food safety. In his mission to combat the rising threat of antimicrobial-resistant bacteria, such as *Salmonella*, Dr. Foley is uncovering the hidden mechanisms that make these microbes dangerous and impact our food safety and overall health.

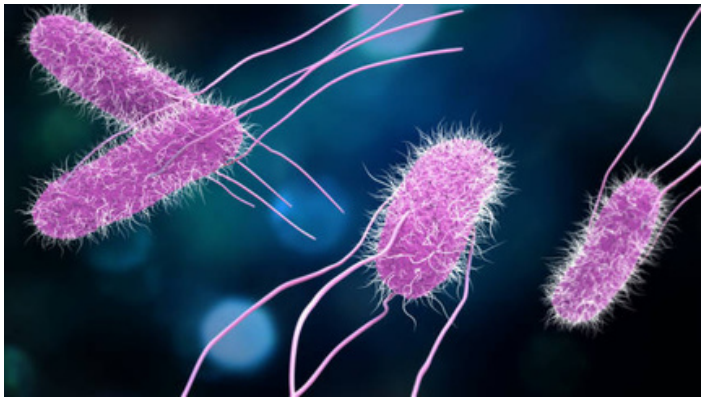
Dr. Foley studies plasmids—small genetic structures that enable bacteria to enhance their resilience and virulence. Plasmids are complex, adapt quickly, and are crucial in understanding the mechanisms and evolution of these dangerous microbes.

The Challenge

Antimicrobial-resistant bacteria are becoming increasingly harmful in causing foodborne infections. They make commonly used antibiotics ineffective, leading to more severe and difficult-to-treat infections. This not only threatens individual health, with increased mortality and longer hospital stays, but also strains healthcare systems, increases healthcare costs, and poses a global public health challenge. The spread of antimicrobial resistance jeopardizes our ability to combat a wide range of bacterial infections, so it is critical to develop new strategies and treatments to address this growing threat and ensure the safety of our food supply.

The Solution

Dr. Foley and his team are decoding the genetic workings of bacteria to limit their disease-causing potential. His team is developing cutting-edge tools to identify the functions of previously unknown genes. Moreover, they are devising strategies to remove plasmids from bacteria and deactivate the genes they harbor. This approach helps us understand how these genetic tools function and how they impact bacterial behavior, helping to achieve safer food and better health outcomes.



Dr. Foley's team is constructing a comprehensive database of genes that make Salmonella more pathogenic. This resource is available to food safety scientists in the federal government and academia and helps them quickly identify genes that may contribute to disease, leading to a better understanding of Salmonella's disease-causing abilities and more precise control of foodborne pathogens. Additionally, his research investigates how plasmids migrate between bacteria and how certain medications can enable this process, illuminating the potential risks for both bacteria and the individuals they infect.

Arkansas Research Alliance

Next Steps

Dr. Foley's research opens doors for valuable partnerships, offering opportunities for organizations to collaborate in the fight against antimicrobial-resistant bacteria. His lab also seeks to recruit talented individuals, including postdoctoral fellows, to join the ranks and contribute to this vital work.

Dr. Foley's pioneering research seeks to uncover the secrets of bacterial genetics and harness this knowledge to safeguard public health and food safety. His work not only promises to alter our understanding of harmful bacteria but also presents an opportunity for organizations to engage in a critical mission while offering a platform for aspiring researchers to make a meaningful impact.

Contact

Steven.Foley@fda.hhs.gov