

# Protein discovery targets antibiotic-resistant bacteria

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A new type of protein discovered by Queen's University researchers may be useful in developing treatments for antibiotic-resistant bacteria, such as those that cause food poisoning and typhoid.

By solving the structure and activity of the protein – called YihE or RdoA – a team of professors and students from the departments of Biochemistry and Microbiology & Immunology has opened up possibilities for new drug development.

“Our group is the first to solve the structure and to begin to understand the function of this particular protein,” says Dr. Nancy Martin (Microbiology & Immunology), who coordinated the study with Dr. Zongchao Jia (Biochemistry). “It turns out to be a potentially good target in a wide range of bacteria that cause infectious diseases.” Because of the increasing number of antibiotic-resistant strains of many different types of bacteria, such as salmonella, she notes, new approaches to antibiotic therapy are needed.

The Queen's findings are published in the on-line edition of the journal *Molecular Microbiology*.

Also on the team, from Biochemistry, are PhD student Jimin Zheng and post-doctoral fellow Vinay Singh; and Microbiology & Immunology Master's student Chunhua He.

The group is studying sensory pathways used by bacteria that enter our bodies and move from the stomach into the gastro-intestinal tract. “If we

can block the sensory pathway, then the bacteria can't adapt to that change in their environment, and won't be able to infect," says Dr. Martin.

In North America, the people treated for food poisoning with drugs tend to be elderly or "immune compromised" where there is a need for antibiotics to clear the infection. Since the organism that causes salmonellosis is related to that responsible for typhoid fever – a huge problem in less developed countries – the model being developed at Queen's could potentially be a target for treating typhoid as well. The underlying goal is to control, if not clear, the infection.

"It's basic science that we are doing, but we're using that as a foundation for trying to develop approaches that will have positive impacts on human health," says Dr. Martin.

Source: Queen's University

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