Technology Overview

As bacteria continue to become resistant to current antibiotics, there is an unmet need to develop new antibiotics against novel targets. Dr. Smith’s group discovered a set of small molecules that overcome this issue. Through a series of compound screens, the team identified small molecule inhibitors targeting AddAB and RecBCD. These enzymes are helicase-nucleases and are found only in bacteria. They are critical for DNA damage repair and can contribute to the generation of drug resistance. The screen identified five classes of AddAB and RecBCD inhibitors. The RecBCD inhibitor reduced the frequency of hydrogen peroxide-induced mutations in *E. coli*. In a mouse model, the AddAB inhibitors reduced *H. pylori* colonization of the stomach without weight loss or noticeable side effects. These results suggest that these inhibitors be explored further as antibacterial drugs.

Applications
- Treatment of microbial and bacterial infections
- Prevents bacterial drug resistance

Advantages
- Novel target site compared to conventional anti-bacterial drugs
- AddAB and RecBCD enzymes are found in about 90% of bacteria
- Reduces evolution of bacteria resistant to the inhibitor

Market Overview

Antibiotic and antimicrobial resistance is on the rise and presents a huge threat to global health and development. In the US, every year over 2 million individuals have a serious infection with antibiotic-resistant bacteria and over 23,000 deaths will result from these resistant infections. If solutions are not found to combat acquired resistance, the World Health Organization estimates that by 2050, 10 million lives globally will be at risk each year resulting in 100 trillion USD of economic output.