

Recent research uncovers surprises about antibiotic resistance

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It's thought that antibiotic resistance is associated with a fitness cost, meaning that bacteria that develop antibiotic resistance must sacrifice something in order to do so. Because of this, proper use of antibiotics should result in susceptible strains eventually replacing resistant ones.

According to recent research, though, it appears that this paradigm might not be as solid as previously thought. In fact, <u>antibiotic-resistant strains</u> might also be fitter and more virulent, which may have profound impacts on the control and treatment of bacterial infections.

"Recent findings revealed a complicated love story between antibiotic resistance and <u>bacterial virulence</u>. There was an ancient paradigm about the 'fitness cost of antibiotic resistance,' but the emergence of the new technologies of high-throughput sequencing has changed the field, allowing researchers to study <u>bacterial pathogenesis</u> at the genome scale," said Dr. David Skurnik, senior author of a new *Bioessays* article. "This new, unbiased approached has revealed that unfortunately the worst case scenario of antibiotic resistant bacteria being more fit and virulent was not uncommon, particularly during infection."

The situation complicates our fight against antibiotic resistance. "We need now, more than ever before, new antibacterial therapeutics to by-pass the infernal circle linked to antibiotic resistance that starts when an antibiotic is prescribed," Dr. Skurnik stressed.

More information: Thomas Guillard et al, Antibiotic resistance and



virulence: Understanding the link and its consequences for prophylaxis and therapy, *BioEssays* (2016). DOI: 10.1002/bies.201500180

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