

ACRONYM: ST 131_transmission

Title: Escherichia coli ST131: a model for high-risk transmission dynamics of antimicrobial resistance

Keywords: E. coli, ST131, transmission, mobile genetic elements

Consortium composition:

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Abstract:

This project will connect a large number of transnational academic resources to investigate the transmission success of *Escherichia coli* ST131 clone. *E. coli* is the most common cause of urinary tract and bloodstream infections worldwide. A recent WHO report states that resistance to one of the most widely used antibiotics (fluoroquinolones [FQs]) is very widespread. In many parts of the world, FQs are now ineffective in more than half of patients. **A single *E. coli* clone, ST131, is predominantly responsible for this global FQ-R and cephalosporin-R pandemic causing millions of antibiotic-resistant infections annually.** It remains unclear which features of ST131 had resulted in the **biggest antimicrobial resistance succes of the 2000s. We propose a combined European-Canadian consortium that will investigate the transmission dynamics of ST131.** This study will explore the vertical and horizontal transmission of resistance and virulence genes and how they contributed to the transmission success of ST131 among humans, animals and different environments. The broad goal is to improve human health by better understanding managing infections due to multidrug resistant *E. coli*. **The study will explore explanations for the high transmission rates and success of ST131.** A famous quote from Stephen Hawking; "Intelligence is the ability to adapt to change". ST131 adapted rapidly to environmental changes; we need to know why and how. **This project will serve as a model to predict what can possibly happen in the future with the continuing emergence of multidrug resistant clones among bacteria.**