

Antimicrobials, Multiple Drug Resistance & Antibiotics Resistance

4th International Conference on **Antibiotics R&D, B2B** April 20-21, 2018
Las Vegas, Nevada, USA

Mobility of antibiotic resistance in *Salmonella Typhimurium* under natural and simulated farm environments

Mengfei Peng, Serajus Salaheen, Robert Buchanan, and Debabrata Biswas
University of Maryland, USA

Microbial horizontal gene transfer is a continuous process and it shapes especially bacterial genomes. However, the niches of microbial ecology as well as synthetic antibiotics or natural antimicrobials in the influence on the evolution of this biological networks are not fully understood yet. So far, very little attention has been paid on how dosages of antibiotics utilized in farm animal production contributes to the overall problem of antibiotic resistance? In this study, we investigated the mechanisms of sub-therapeutic and therapeutic dosages of synthetic antibiotics that foster the exchange of genetic materials in the microbial community in various components of farm animal production system using marked conventional and organic farm isolated *Salmonella enterica* serovar Typhimurium strains. The relatedness among the *S. Typhimurium* isolates from this study was investigated based on genome-wide SNP comparisons and the draft genome contigs have been submitted to NCBI. The antibiotic resistant *S. Typhimurium* isolates from conventional farm cultured in both conventional and organic soils failed to lose their tetracycline resistance, whereas highly sensitive *S. Typhimurium* strains isolated from organic farm gradually acquired higher tetracycline MICs over time under both types of soils. None of the isolated *S. Typhimurium* strains developed or lost sulfamethoxazole/trimethoprim resistance in soil environment. The qRT-PCR analysis indicated that differential expression of genes involved in antibiotic resistance in *S. Typhimurium* isolates was artificially inoculated under antibiotic pressure. The findings suggest some basic patterns in mechanism of *S. Typhimurium* antibiotic-resistance development in farm-related microbial ecosystems.

Biography

Mengfei Peng is pursuing his PhD in the University of Maryland, and he will finish his PhD in May 2018. His research area is focusing on applying modern techniques of Microbiology in improving human gut microbiome as well as preventing foodborne enteric diseases. So far, he has published three book chapters and 10 papers in reputed journals, and he has presented three oral talks and more than 10 posters in top-level conferences.

mengfeip@hotmail.com

Notes: