“Emergence of extensively drug-resistant typhoid in Pakistan: investigating the potential for resistance gene transfer in the environment”

In 2016, an extensively drug resistant (XDR) strain of *Salmonella Typhi* emerged in Pakistan. Genomic studies suggest that a non-XDR typhoid strain acquired a gene from *E. coli* through horizontal gene transfer, rendering *S. Typhi* resistant to a key antibiotic previously used to treat typhoid fever in Pakistan. Horizontal transfer of antimicrobial resistance (AMR) genes between bacteria can occur in the environment, but mainstream methods of whole-sample genomic analysis have limited ability to tie AMR genes to specific bacterial hosts. In this talk I will discuss our findings from an environmental study of *S. Typhi* in Pakistan in which we explored the potential for antimicrobial resistance gene transfer in water and biofilm matrices using a specialized metagenomic approach that facilitated identification of AMR genes associated with specific bacterial hosts and instances of shared resistance genes between multiple bacterial species.