Antimicrobial resistance (AMR) is a worldwide threat to public health as well as a concern to many nation’s economic well-being [1]. Many pathogenic bacteria are resistant to multiple antibiotics including: *Neisseria gonorrhoeae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella*, *Escherichia coli*, *Acinetobacter*, *Proteus*, *Klebsiella*, *Serratia*, *Streptococcus pneumoniae*, *Mycobacterium tuberculosis*, *Vibrio cholerae*, and *Helicobacter pylori* [2].

In several nefarious cases, bacteria have become resistant to the majority of clinically-relevant antibiotics, and thus are on the verge of becoming medically untreatable [2]. New and effective antibiotics are clearly needed; however, the development of new antibiotic classes has flat-lined over the last 25 years while the threat of AMR continues to advance [3,4]. The failure of traditional antibiotic discovery processes to provide long-term effective therapeutic options has encouraged the development of alternative strategies to mitigate AMR, such as vaccines [1]. Vaccines are an attractive alternative to antibiotics given that they work prophylactically to prevent the start of infections, while antibiotics work therapeutically on an existing/ongoing infection in which bacteria proliferate and mutate, allowing the selection for resistant variants [5].

The idea of vaccination to prevent nosocomial or community-acquired infections has been pursued by several groups and pharmaceutical companies [6,7]. Several promising vaccine approaches have emerged over recent years, providing options for the pre-emptive control of *S. aureus* [8], *M. tuberculosis* [9] and various *Enterobacteriaceae* [10].

This seminar will discuss the causes and current crisis of antimicrobial resistance and will focus on the use of vaccines as an effective long-term alternative for the prevention of infectious diseases by discussing promising vaccine candidates against priority pathogens.

**References**