

## Preface

# Regulation and Control of Efflux Pumps that Mediate Multi-drug Resistance of Pathogenic Bacteria

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Multi-drug resistance (MDR) of pathogenic bacteria is now known to be mediated by the over-expression of efflux pumps that extrude the noxious agent (antibiotic or antimicrobial agent) to the environment prior to reaching its intended target. Therefore, it is the consensus that compounds that affect the activity of a given MDR bacterial infection that is problematic for therapy may be useful as adjuvants inasmuch as the infecting organism is then rendered susceptible to antibiotics to which it was initially resistant.

In this special issue of the "Microbiology Open Journal" the Regulation and Control of efflux pumps that mediate multi-drug resistance of pathogenic bacteria are reviewed by foremost experts. Important aspects of efflux pumps and the role that they play in MDR bacterial infections are presented and it is expected that the collation of these reviews under single cover will facilitate understanding of what has been

deemed to be clinically important for therapy of problematic infections. The reviews discuss the genetics and regulation of efflux pumps bacterial Gram negative and Gram positive bacterial pathogens; the role that efflux pumps play in the accumulation of irreversible mutations that once initiated promote the return of efflux pump activity to wild type levels; agents which are now known to reduce the activity of MDR efflux pumps; and, simple but accurate methods that are useful for the identification of efflux mediated MDR phenotypes of bacteria and evaluation of agents for activity against given efflux pumps systems. It is hoped that these reviews, all of them succinct in their approach, will contribute to the required understanding of MDR efflux pumps and that sufficient interest in these clinically important plasma membrane based transporters will be realized affording the potential for future studies.

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