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## Microbial resistance to chlorhexidine

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Resistance of pathogenic microorganisms to antiseptics and antibiotics is becoming a serious threat to human and animal health. We have characterised a novel membrane protein, called Acinetobacter chlorhexidine efflux protein (AceI), responsible for the efflux of chlorhexidine from cells of Acinetobacter species, so conferring resistance to a widely-used antiseptic. Genome analyses showed there are similar proteins in many proteobacteria, including pathogens, giving rise to a novel family of drug efflux proteins, designated the proteobacterial antimicrobial compound efflux (PACE) family. Genes encoding AceI homologues from 23 species of bacteria were transferred to the pTTQ18 plasmid vector, and transformed into Escherichia coli BL21(DE3) host cells, where the expression of each cloned gene in membrane fractions was identified in Coomassie stained SDS-PAGE gels and in Western blots detecting the His6-terminus of each protein. Out of all those investigated, seven genes were expressed at levels sufficient for production of proteins at a 30 litre fermentation scale. Each of these was then purified in mg quantities by immobilized metal affinity chromatography (IMAC). Circular dichroism and by red. We will discuss evidence showing which common metabolites in bacteria are the natural substrates of PACE proteins.

### Recent Publications

1. Hassan et al. (2015) Homologues of the Acinetobacter baumannii AceI transporter represent a new family of bacterial multidrug efflux systems. mBio 6(1):e01982-14.

### Biography

Peter J F Henderson obtained his PhD in Biochemistry from the University of Bristol. He has held academic appointments at the Universities of Leicester and Cambridge. Currently he is working as Professor of Biochemistry and Molecular Biology at the University of Leeds. He has published over 200 papers, mostly on bioenergetics, membrane transport and antibiotic resistance in bacteria, and many with research collaborators in USA, Canada, Japan, Australia and several European countries. He has been serving as an Editorial Board Member of repute.

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