Single-channel characteristics of OprE/Occk8 from *Pseudomonas Aeruginosa*

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Outer membrane proteins (OMPs) of Gram-negative organisms enable the bacteria to achieve the uptake of water-soluble nutrients and hydrophilic molecules, and therefore survive. In P. *Aeruginosa, a* versatile human pathogen that causes many diseases in plants, animals and humans, due to the lack of highly conductive non-specific proteins, the uptake is considerably poor (1). Instead P. *Aeruginosa* utilizes substrate-specific OM carboxylate channel (Occ) proteins, which show a high-binding affinity for specific molecules such as OprP with high transport selectivity for phosphate (2). These substrate-specific channels are generally classified into two groups; OccD and OccK sub-families (3). Here in this study, we examined the single channel characteristics of OccK8 (also known as OprE) using high-resolution electrophysiology technique.

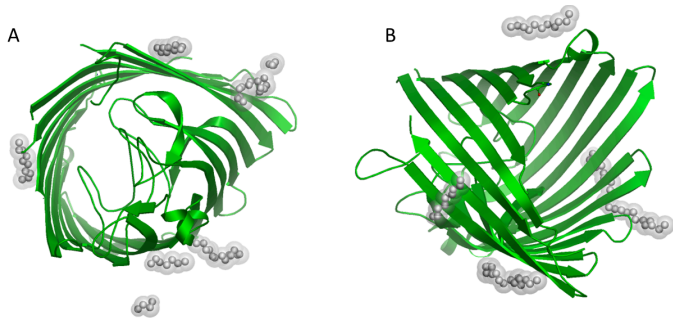

Figure 1 Crystal structure of the wild-type OprE protein, taken from PDB (http://www.ebi.ac.uk).

Our results reveal that the protein shows similar single-channel electrical signals to that of other Occ proteins. However we also recorded several distinctive different behaviours of the protein when inserted into the bilayer. In addition substrate studies with different aminoacids and antibiotics have also been carried out and it seems that the protein interacts relatively more with negatively charged aminoacids.

References

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