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Interaction of Antimicrobial peptides and cell membrane

Antimicrobial peptides (AMPs) have been widely investigated because of their potential solution to the encroaching 'antibiotic crisis but information about mechanism of action of the peptides is still scarce [1]. Bacterial cell membranes will always be the initial point of contact for AMPs due to electrostatic interactions between the anionic molecules on the bacterial cell surface and the cationic residues within the AMPs [2]. The interaction can be investigated using model system such as liposomes. Liposomes are made from glycerophospholipids, with a similar ratio to that found in real membranes, through sonication or extrusion. Both techniques can produce liposomes but at different sizes.
Small angle X-Ray and Neutron scattering techniques (SAXS and SANS) can be used to investigate the effect of AMPs on the thickness, curvature of the membrane and also identifying the location of the peptide between the membranes [3,4]. However, the weakness of the model system is the high ratio of peptide to vesicles that is required to rupture the membrane, which may not represent the actual system [5]. In the future, a comparison between model and real system will be made in scattering measurement to assess this problem.

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Topic

Primary author(s) : MOHD DARBI, Nur Maizura (School of Chemical Sciences, the University of Auckland); SAROJINI, Viji; Mr MCGILLIVRAY, Duncan (School of Chemical Sciences, The University of Auckland, Auckland 1010, New Zealand)

Presenter(s) : MOHD DARBI, Nur Maizura (School of Chemical Sciences, the University of Auckland)

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