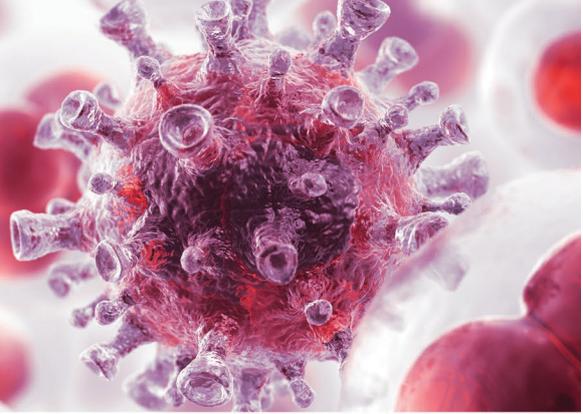


2021 Lecture Series



Professor Andrew T. Smith

Pro Vice Chancellor (Sciences),
Griffith University

will present a seminar entitled

Characterisation and x-ray structure of a new circular bacteriocin from *lactobacillus plantarum* - towards tailored anti microbial proteins

Friday 30 April 2021, 11am

Institute for Glycomics
Lecture Theatre (G26 4.09)

(No food or drink allowed in the lecture theatre)



Abstract

I will describe recent work to characterise a new circular bacteriocin, plantacyclin B21AG, isolated from a novel food grade organism *L. plantarum* B21. These are a group of small compact cationic hydrophobic proteins that are anti bacterial in nature, often forming Na⁺ or proton pores in bacterial membranes.

The sequence was deduced from first principles by reverse genetics, subsequent cloning and genetic characterisation identified an eight gene operon as essential for circularisation and secretion. The X-Ray structure was solved at 1.8Å and facilitated a reclassification of the Type II bacteriocin subfamily. Structure based alignment allowed a new sequence classification which in turn has begun to reveal some of the sequence determinants that dictate specific microbial killing activity.

Homologous expression in a commercial probiotic strain resulted in functional expression and allowed key residues associated with function to be tested by site directed mutagenesis. A number of sites in the highly stable bacteriocin structure were tested for their ability to tolerate insertion of an epitope sequence, as a proof of principle that circularisation of an intact structure that includes a foreign epitope could be achieved.

There is potential to develop a platform technology for a food as medicine approach to the delivery of circularised peptides, including vaccine epitopes using this system.

For further information, contact

P +61 7 555 28051 E glycomics@griffith.edu.au griffith.edu.au/glycomics