Contribution ID: **41** Type: **Oral Presentations**

Towards Structural Characterization of Novel Bacteriophage Proteins

Tuesday, 17 November 2015 12:00 (20 minutes)

Towards Structural Characterization of Novel Mycobacteriophage Proteins

Interest in bacteriophages- viruses that infect bacterial hosts- has been increasing as the potential for bacteriophages to serve as alternatives to antibiotics is being investigated once more. Isolation and genomic annotation of mycobacteriophages that infect Mycobacterium smegmatis, a closely related strain of the clinically relevant Mycobacterium tuberculosis, has revealed novel phage genes not found in any other phages or organisms. These novel genes, termed “orphams”, and the proteins they encode are the focus of this study. In particular, the M. smegmatis. phage Butters has a very compact genome compared to other phages in its class, yet still possess several orphams. How these novel proteins function in an infection cycle that results in bacterial destruction is unknown. Here, we present biochemical and biophysical data on several of the proposed orphams from Butters including a putative membrane protein, and steps towards structural characterization.

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Session Classification: Scientific Talks

Track Classification: Main