

Project Title:	The impact of bacteriophages on pneumococcal metabolism and virulence		
Application Deadline:	Applications accepted all year round		
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Contact email:	hy3@le.ac.uk	Funding:	Self-funded

Summary

Bacteriophages, or phages are the most abundant biological entities in the biosphere and they have major impacts on microbial ecology, physiology and virulence. Our hypothesis is that bacteriophages have many undescribed impacts on microbial metabolism and virulence. This hypothesis will be tested in important human pathogen *Streptococcus pneumoniae*, which causes pneumoniae, meningitis, septicemia and otitis media, and these infections are reported to kill an estimated 1 million people every year. Phage carriage is common in this genus and phages have been associated with virulent phenotypes. There are over 100 different serotypes of *S. pneumoniae*, and the serotypes differ in their capacity to cause disease. However, many of the underlying factors that explain such differences are unknown and could be attributed to phages. In this study, we will use both bioinformatics and established model systems in our laboratories, to test the contribution of phages make to pathogenicity of different strains of *S. pneumoniae*. You will be trained to evaluate the how phages impact pneumococcal transcriptome, metabolism, and virulence factor production by using different strains of *S. pneumoniae*. This study will reveal useful data that will pave the way to develop phages as novel therapeutic agents against *S. pneumoniae* in future.

References:

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- 2: Al-Bayati FA, Kahya HF, Damianou A, Shafeeq S, Kuipers OP, Andrew PW, Yesilkaya H. Pneumococcal galactose catabolism is controlled by multiple regulators acting on pyruvate formate lyase. Sci Rep. 2017 Feb 27;7:43587.
- 3: Clokie MRJ, Millard AD, Letarov AV, Heaphy S. Phages in nature. Bacteriophage. 2011 Jan-Feb; 1(1): 31–45.