

Visualising the native capsule of *Neisseria meningitidis* by CEMOVIS and localisation of polyphosphatase.

K. MacLellan¹, Q. Zhang², R. Bigwood¹, C. Tang², Ian Fevers¹, and R. A. Fleck¹

1. Department National Institute for Biological Standards and Controls, Blanche Lane, South Mimms, Potters Bar, Hertfordshire, EN6 3QG, UK.
2. Centre for Molecular Microbiology and Infection, Imperial College London, South Kensington Campus, London SW7 2AZ, UK.

Kirsty.MacLellan@nibsc.hpa.org.uk

Keywords: Tokuyasu, exopolyphosphatase (PPX), *N. meningitidis*, CEMOVIS, capsule.

The composition of the capsule of *Neisseria meningitidis* is currently unknown, though the capsule of a closely related bacteria *Neisseria gonorrhoeae* is partly composed of polyphosphate (polyP). This capsule is thought to be vitally important for the pathogenicity of *N. meningitidis*. PolyP comprises a chain of tens or hundreds of inorganic phosphate (P_i) residues linked by high energy phosphoanhydride bonds. The long chains are created by polyphosphate kinase (PPK) from P_i, the P_i is released in a reaction catalysed by polyphosphate phosphatase (PPX). These long chains are also known to exist within the cell as metachromatic particles, which rapidly dissipate under the electron beam. Previous experiments have identified multiple roles for polyP in bacteria, including acting as an energy source, buffering against alkali conditions, and DNA entry during transformation. The location of polyP within the cell is not fully understood, and high resolution studies have been hampered by its frangible nature. In this study we aim to identify intracellular and extracellular locations of active polyP metabolism by immunolabelling of Tokuyasu sections of *N. meningitidis* with -PPX polyclonal antibodies (PABS). Further characterisation of the capsule will be carried out by CEMOVIS.

