P. 46 Understanding the self-assembly and structure of interfacial films formed from the bacterial hydrophobin BslA

R J Morris[1], K M Bromley[1], G Brandani[1], M McCluskey[1], D Marrenduzzo[1], U Zachariae[2], L Hobley[3], N R Stanley-Wall[3] and C E MacPhee[1]

[1]SUPA, School of Physics, University of Edinburgh, UK, [2]Division of Computational Biology, University of Dundee, UK, [3]Division of Molecular Microbiology, University of Dundee, UK

The protein BslA is physiochemically similar to the well-known surface active fungal proteins, hydrophobins, and may be regarded as a new class of bacterial hydrophobin. *In vivo*, BslA confers surface hydrophobicity to *B. subtilis* biofilms which may contribute to the protective qualities of the biofilm. Purified BslA spontaneously self-assembles at interfaces *in vitro*, forming an elastic film. We use pendant drop tensiometry, electron and confocal microscopy, and circular dichroism spectroscopy coupled to molecular dynamics simulations to understand both the structure and assembly of these interfacial films. We find that wild type BslA assembles into highly ordered 2D rectangular lattices which, upon self-assembly, contain long-range beta-sheet structure. Molecular dynamics simulations shed further light on the molecular mechanisms of BslA interfacial assembly.

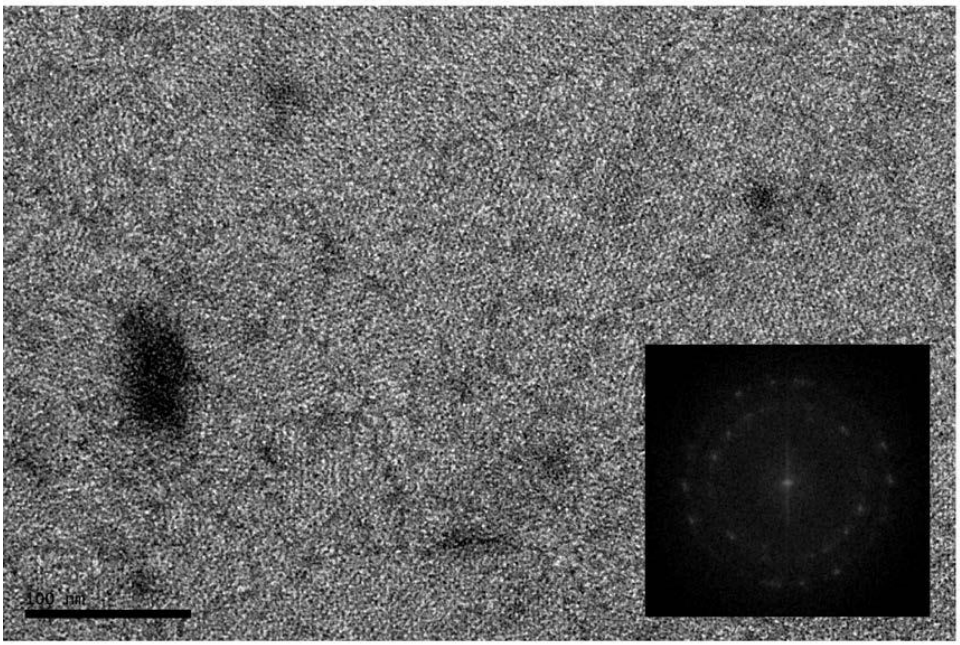

Fig. Wild-type BslA film imaged via TEM. Inset shows FFT of entire TEM image. Scale bar is 100 nm.