

## PI Seminar

**Speaker:** Dr Chris Stewart, Marie Slodowska-Curie ITN Fellow

**Venue:** Dental Lecture Theatre F

**Date:** Wednesday 17<sup>th</sup> October

**Time:** 13:00 – 14:00

**Dr Chris Stewart will present:**

**“Microbiome-host interaction in early life”**

### Abstract

Following birth, the preterm infant gut is rapidly colonized by a range of microbes that play fundamental roles in health and disease. Unlike infants born at term (>37 weeks gestation), extremely preterm infants (<32 weeks gestation) have immature intestinal architecture and an underdeveloped immune system. Because the preterm gut can become leaky, translocation of microbes into the bloodstream and/or intestinal cell death represent major problems in this vulnerable population. However, early evidence also suggests certain types of bacteria may promote gut and immune maturation.

My research utilises systems biology, combining microbiology, molecular biology, and biochemistry to comprehensively profile biobanked clinical samples, including maternal breast milk and infant respiratory and gut samples. Building on from these association-based analyses, we are developing a state of the art co-culture technology, allowing human intestinal stem cell derived enteroids (“mini guts”) to be tested under physiologically relevant oxygen conditions. Using this *ex vivo* model will allow for targeted experimentation, exploring how specific microbes and milk components modulate intestinal barrier integrity and function.

Understanding how bacteria and gut epithelial cells interact holds exciting possibilities to better predict, diagnose, and treat preterm infants at risk of disease.

**Chair: Prof. Sophie Hambleton**