Interaction of *Cryptosporidium* life cycle stages with aquatic biofilm communities

Aims

To study the interaction of *Cryptosporidium* in model biofilm systems in order to investigate the following questions:

1 What is the frequency of oocyst excystation in water and biofilms and are there any predisposing factors?

2 Is oocyst persistence due only to oocyst accumulation or is environmental persistence augmented by the excystation and subsequent development and multiplication of *Cryptosporidium* in biofilms?

3 Do biofilms support the entry, invasion into the extracellular matrix, survival and development of the extracellular stages of *Cryptosporidium* and if so how does it compare with cell free media?

4 Do certain species of bacteria produce biofilms that better support (or conversely more adversely affect) the entry, invasion into the extracellular matrix, survival and development of *Cryptosporidium* than others?

5 Are there particular predators that limit the survival and propagation of *Cryptosporidium* in biofilms?

6 What are the relative sensitivities of the life cycle stages of *Cryptosporidium* to disinfectants and does interaction with biofilms affect this, and in particular does chlorination improve excystation?

7 What are the conditions that enhance the survival and/or development of *Cryptosporidium* in biofilms?

8 Is there evidence for communication between *Cryptosporidium* and other members of biofilm communities? Does *Cryptosporidium* have any influence on quorum sensing and therefore the biofilm structure?