

**KS2 - Lisa Sattenspiel (University of Missouri-Columbia - USA)**

***Modeling the Geographic Spread of Infectious Diseases using Population- and Individual-Based Approaches***

**Abstract:**

**Mathematical models are a useful tool to help understand patterns of global spread of infectious diseases and to help prepare for these risks and develop and implement appropriate control strategies. Examples are presented of how two modeling approaches, a population-based ODE model and an individual-based computer model, are used to study the geographic spread of the 1918-19 influenza epidemic in central Canada. The basic structure and major results of each of the models is presented and the insights derived from each approach are compared. Results from both models show that movement between communities serves to introduce epidemic diseases into the communities, but that within-community social factors have a stronger influence on disease severity. However, results of the two models are sometimes significantly different. Discussion of these differences highlights the advantages of using multiple approaches to address similar questions.**