

Erin Bodine, Assistant Professor, Rhodes College, Memphis, TN, USA  
**Jize Zhang**, Rhodes College, Memphis, TN, USA

### **Modeling of Measles Epidemics By Realistic Age-Structured (RAS) Approach and Examining the Effects of Vaccination Through Individual-based Modeling**

The history of measles offers a typical example on the effects of vaccination in controlling epidemics. Instead of using a SEIR model, we adopted the realistic age-structured (RAS) model, which takes into account age of children and seasonality in school years to capture the dynamics of measles. Further, we adapt the RAS model to include family networks. We simulate the result of different vaccination strategies using individual-based modeling, specifically the software Netlogo. This work is an attempt to demonstrate the effectiveness and importance of vaccination, since there are increasing unsubstantiated concerns about the side effects of vaccination and refusal of vaccination, as well as to find the most effective method of vaccination and the vaccination threshold in a community in order to prevent outbreaks.