1096-92-814 **Anna Mummert*** (mummerta@marshall.edu), **Roger Estep**, **Robert Hughes** and **Jessica Shiltz**. *Agent-based Modeling of Pandemic Influenza.* Preliminary report.

A striking characteristic of influenza pandemics is the multiple peaks of infection. For example, the United States has experienced two peaks of infection in each of the past four influenza pandemics, one peak during the summer months and a second peak during the typical flu season. In contrast, the number of infected individuals peaks only once during a seasonal flu. The mechanisms that cause the multiple peaks of infection during pandemic influenza seasons are not well understood. The goal of this project is to use agent-based modeling to investigate mechanisms that can generate two peaks of infection. In this project, we describe the susceptible-exposed-infectious recovered (SEIR) agent-based model developed in Netlogo for simulating the 2009 H1N1 influenza pandemic. The incubation and infectiousness periods are drawn from gamma distributions. The model is calibrated by matching known average daily contacts and key epidemiological quantities, such as the basic reproduction number, the number of new infections generated from one infectious person at the beginning of the outbreak. Also, we explore the results of model simulations that include waning immunity, which is one potential mechanism for generating multiple peaks of infection. (Received September 10, 2013)