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**Adrienna Bingham\*** (anbingham@email.wm.edu), **Elsa Rousseau, Leah Shaw, Simone Bianco** and **Raul Andino**. *Multiscale Competition Between Defective Interfering Particles and Wild Type Poliovirus*.

Defective interfering particles (DIPs) are a mutation of a wild type (WT) virus that lack essential elements needed for viral reproduction. In order to successfully reproduce, they steal these elements from the WT, acting as cheaters and limiting WT production. With shorter genomes, DIPs are able to reproduce more quickly, giving them an advantage over the WT. DIPs have been engineered to steal capsids from WT poliovirus. Poliovirus, still endemic in some countries, is a model RNA virus, so results can yield insights into other RNA viruses. We have created a two-patch organ model to simulate the competition between DIPs and WT poliovirus, allowing free virus particles to travel from one organ to another. By changing parameter values, initial conditions, and virion migration rates, we can simulate different scenarios of DIP and WT competition. Using parameter values found in the literature and from individual experiments, DIPs will lower the WT population size. Additionally, we have created a one-patch interferon immune response model to capture the competition of DIPs and WT poliovirus in a single organ with the added complication of reduced susceptible cells. (Received September 25, 2018)