

**Elissa Schwartz**

WASHINGTON STATE UNIVERSITY

e-mail: [ejs@wsu.edu](mailto:ejs@wsu.edu)

## **Immune Dynamics of Equine Infectious Anemia Virus**

Equine Infectious Anemia Virus (EIAV) is a retrovirus that establishes a persistent infection in horses and ponies. The virus is in the same lentivirus subgroup that includes human immunodeficiency virus (HIV). The similarities between these two viruses make the study of the immune response to EIAV relevant to research on HIV. We developed a mathematical model of in-host EIAV infection dynamics that contains both humoral and cell-mediated immune responses. The model is parameterized using clinical, virological, and immunological data from horses infected with EIAV. Analysis of the model yields results on thresholds that would be necessary for a combined immune response to successfully control infection. Numerical simulations are presented to illustrate the results. These findings have the potential to lead to immunological control measures for retroviral infection.