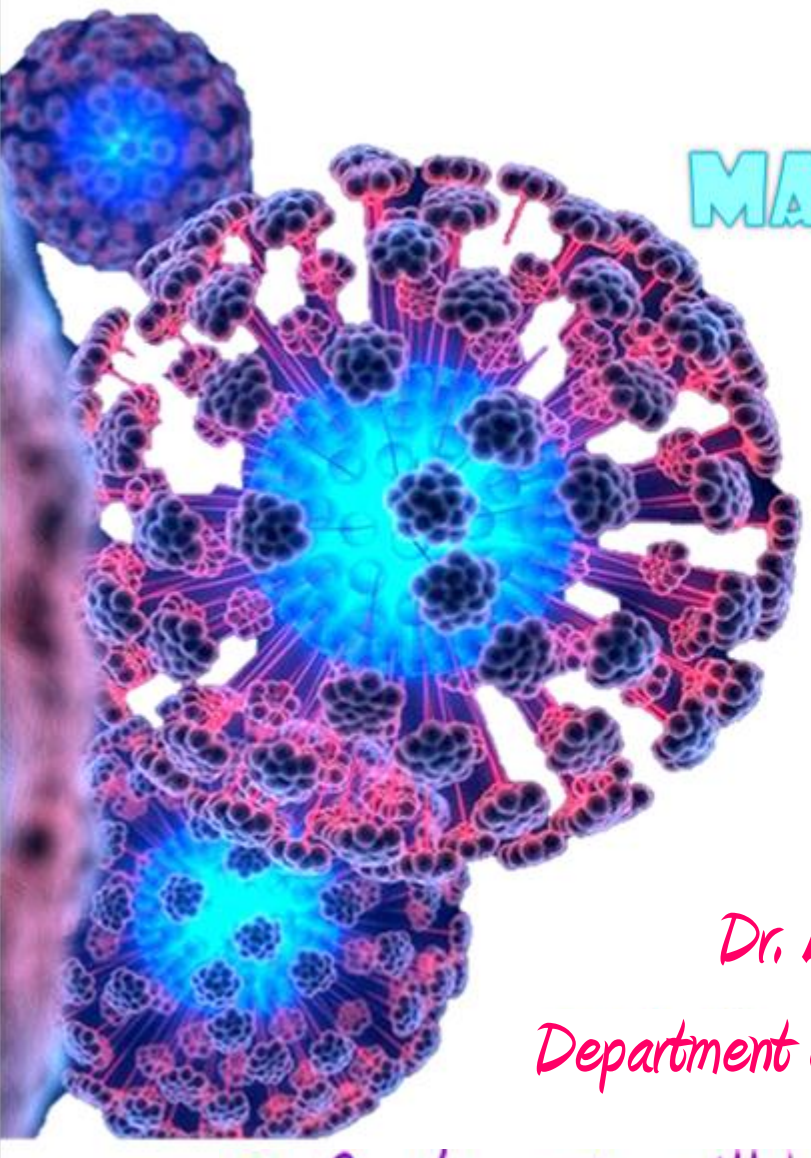
2013 Distinguished Lecture:

Women in Mathematics

March 27, 3-4pm at DSB 100



MATHEMATICAL MODELING OF INFECTIOUS DISEASE FROM POPULATION TO CELLS

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Refreshments will be provided afterwards in KOM 206.

Approximately 75% of human infectious diseases originate from an animal reservoir, many caused by viruses such as SARS coronavirus, avian influenza viruses, rabies virus, West Nile virus and Hantaviruses. Human diseases originating from a nonhuman animal reservoir are referred to as zoonosis and the transmission of infection from an animal reservoir to another species is referred to as a spillover infection. In this presentation, some deterministic and stochastic mathematical approaches developed for the study of the viral pathogen Hantavirus are presented. Hantavirus, carried by wild rodents, can be transmitted to humans through inhalation of viral particles from rodent excreta. Whereas Hantavirus infection in the rodent reservoir causes little impact on rodent survival, infection in humans results in Hantavirus cardiopulmonary syndrome, a frequently fatal disease. Application of mathematical models to study the dynamics at the population and the cellular level have increased our understanding of the mechanisms for viral persistence in the reservoir host and have led to new investigations about the potential role of the spillover infection in emerging diseases.

This lecture is a collaboration of Distinguished Lecture Series, Department of Mathematical Sciences, Department of Chemistry, College of Basic and Applied Sciences, Computational Science Program, MTSU WISTEM Center and National Women's History Month Committee.