



# Florida Gulf Coast University Department of Mathematics

## MATHEMATICS SEMINAR

Friday, November 1, 2019  
2:30-3:20 pm

Seidler Hall  
Room 220

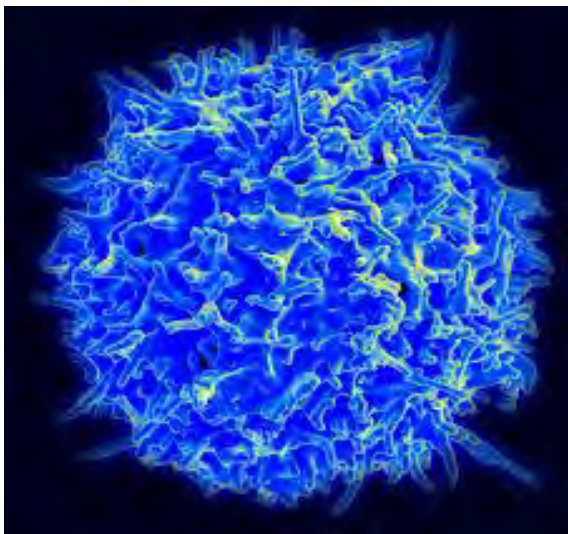
### HOW MATHEMATICS CAN HELP WIN THE WAR AGAINST CANCER

Faculty Speaker: Dr. Peng Feng



In this talk, I will present a few mathematical models that aim to help us better understand how our immune system interacts with cancer cells. In particular, we focus on a model that studies the role of regulatory T cells.

One recent advance in the field of regulatory T cells reveals that they play a vital role during immunotherapy. For example, a higher ratio between regulatory T cells and effector T cells within tumor tissue is associated with worse prognoses in many cancers, including ovarian cancer (Leffers et al., 2009), lung cancer (Tao et al., 2012), and glioblastoma (Sayour et al., 2015). On the other hand, the tug of war between regulatory T cells and effector T cells for interleukin-2 (IL-2) may chisel one's immune response against cancer. In this talk, we demonstrate mathematically, for the first time, that the initial ratio between regulatory T cells and effector T cells does impact the tumor recurrence time. We also demonstrate the effectiveness of utilization of IL-2 to flip the outcome of immunotherapy, providing further evidence that it may be clinically viable to modulate the consumption of IL-2 by regulatory T cells.



LIGHT REFRESHMENTS WILL BE PROVIDED



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