# Department of Mathematics Colloquium

**12:20 -1:20 p.m.**

**Thursday, October 8, 2015**

**Luter 372**

# The Effect of Systemic Estrogen and Cortisol on the Inflammatory Phase of Wound Healing


## Dr. Angela M. Reynolds

## Virginia Commonwealth University



Abstract: A complex combination of interactions initiates and regulates the inflammatory phase of the wound healing response. Many chronic wounds arise due to an improper transition out of this phase. To understand regulation of this transition, we developed a differential equation model of key interactions involving neutrophils and macrophages during wound healing. This model also accounts for the effects of cortisol, (a stress hormone, elevated post trauma), and estrogen (protective, treatment option) on the activity of these cells. Latin Hypercube sampling was performed to determine biologically feasible parameter sets modeling a population of healthy healers. The model was validated against experimental results and then used to explore the effects of estrogen removal and increased cortisol on the inflammatory phase of healing.


PhD info: VCU has a PhD program in System Modeling in Analysis. This program combines techniques from applied mathematics, operations research and statistics applied to solve real world problems. Our graduates develop a unique combination of skills that make them competitive for both industrial and academic jobs. For more info please plan to meet with Dr. Reynolds on Oct 8th at 1:30, Luter 350.

## Faculty and students are invited!

## Refreshments will be served.