

## Pharmaceutical Sciences Seminar

Wednesday, April 5, 2023  
4:00pm  
NCRC Building 10 Research Auditorium or [Zoom](#)

### “Advances in engineering particles for inflammatory disease therapy”

Presented by:



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Family Department of Biomedical Engineering at the University of Florida

**Abstract:** Current paradigms for the treatment of autoimmune diseases (e.g. rheumatoid arthritis [RA]) are woefully inadequate, often missing the mark on desired physiological responses and not targeting the root cause of the disease. Predictably, novel approaches to re-establish immune homeostasis in patients afflicted by autoimmune conditions are now under intense investigation. Notably, we are developing an array of multifunctional, biomaterial-based ‘regulatory vaccines’ that can be easily administered to remediate some of the prevalent inflammatory diseases. In this talk, I will focus on three particulate systems currently under development in my lab, which attempt to control critical cellular and humoral mediators that engender conditions such as RA, osteoarthritis and autoimmune autism. Additionally, the Lewis lab is currently investigating the interaction of innate immune cells and biodegradable polymers (e.g. PLGA). More specifically, we are interested in deciphering the mechanisms that govern the effects of these materials on innate immune cells. Finally, the Lewis lab is investigating vomocytosis for its potential to enhance delivery of particulates to the brain. Likened to the Trojan horse used by the Greeks to infiltrate Troy, this approach has the potential to tremendously boost the efficacy of CNS drug delivery.

**Biography:** Prior to his professorship, Dr. Lewis was Senior Scientist at OneVax, LLC (now Inspira Therapeutics) and a Post Doctoral Associate in the J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida, where he also received a Ph.D. in Biomedical Engineering in 2012. Dr. Lewis completed his B.S. in Chemical Engineering from Florida A&M University in 2004, and M.S. in Biomedical Engineering in 2007 from North Carolina State University. His research, educational and entrepreneurial efforts have been supported by the NIH and DOD. His honors and awards include the prestigious NIH Early Stage Investigator MIRA, Regenerative Medicine Workshop Young Faculty Award, and the Cellular and Molecular Bioengineering Young Innovators Award.

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