**Texas Tech Chemical Engineering**

**Seminar Schedule**

**Genetic Engineering of Leukocyte Recruitment**

Alexander Buffone

Postdoctoral Fellow; Department of Chemical and Biomolecular Engineering;

University of Pennsylvania

**Abstract**

Chronic medical conditions including heart disease, hypertension, cancer, diabetes, and chronic obstructive pulmonary disease (COPD) are responsible for 7 in 10 of the deaths per year in the United States. My research will focus on the identification of critical targets of the innate immune response which can provide a possible therapeutic benefit for controlling inflammation and the development of chronic conditions. My primary focus is on the leukocyte adhesion cascade, the sequential series of binding and activation steps in which immune cells interact with the endothelium such as capture and rolling, activation, firm adhesion, migration, and eventual transmigration to sites of inflammation. The Buffone lab will apply the skills I have acquired throughout my training to pursue a multidisciplinary approach melding the fields of bioengineering, glycobiology, molecular biology, and immunology to better understand the leukocyte adhesion cascade. Through these means I seek to identify critical checkpoints in the cascade amenable to molecular or physical perturbation, with the overarching goal of modifying these checkpoints and leveraging them for clinical benefit. My initial research program will revolve around three mutually exclusive research areas, all of which correspond to a different step of the leukocyte adhesion cascade and work towards the goal of identifying therapeutic targets.

**Bio**

Dr. Alexander Buffone, Jr. is a postdoctoral fellow at the University of Pennsylvania in the lab of Daniel A. Hammer, Ennis Professor of Bioengineering and Chemical & Biomolecular Engineering. As a postdoc, Dr. Buffone studies the fascinating phenomena where hematopoietic stem cells can migrate against the direction of flow. This ability has implications in stem cell trafficking to the bone marrow and has the potential to improve the efficacy of stem cell transplantation. Prior to arriving at Penn, Dr. Buffone completed a first postdoc under the supervision of Prof. Joseph Lau at Roswell Park Cancer Institute studying the trafficking of neutrophils into the inflamed airway. Dr. Buffone received his Ph.D and B.S. from the State University of New York at Buffalo. For his Ph.D. research in the lab of Prof. Sriram Neelamegham, Dr. Buffone utilized genetic engineering to study the post-translational modifications critical in governing selectin-mediated adhesion in response to inflammation in human neutrophils. Dr. Buffone also quantified the stark species-specific differences in this selectin adhesion function between human and mice leukocytes.

**Seminar**

**Monday, Feb 12, 2018**

**3:00 pm**

**Livermore 101**