**DEPARTMENT OF BIOMEDICAL ENGINEERING**

**SEMINAR SERIES**

Andrea Deranek - BME Ph.D. student

“Investigation of the Ability to Link Genotype to Phenotype by Characterizing Structural Alterations due to Point Mutations in Thin Filament Proteins”

**Abstract:** Per the American Heart Association, 5 million Americans have symptomatic heart failure and it is estimated that up to 50 million Americans are at risk of developing heart failure. Mutations in the cardiac thin filament are known to cause changes in protein structure and dynamics leading to pathological cardiac remodeling observed in patients with hypertrophic (HCM) and dilated (DCM) cardiomyopathies. In this complex system, mutations that are separated by only a few amino acids can cause divergent cardiomyopathies, thus highlighting the importance of the primary structural and dynamic “triggers” that lead to disease. To begin to correlate genotype to phenotype, we investigated five cardiomyopathy-linked mutations: Tm D230N (DCM-associated), Tm S215L (HCM-associated), TnT Δ160E (HCM-associated), TnT R173W (DCM-associated), and TnT R173Q (DCM-associated). We coupled computational predictions with in-vitro biophysical measurements to better understand the divergent disease mechanisms. This iterative process between computational and experimental measurements will allow us to build predictive tools to test known modifiers, and de-novo thin filament mutations associated with these cardiomyopathies and eventually to predict, design, and implement more precise therapeutic interventions.

Host: Dr. Jil Tardiff (jtardiff@email.arizona.edu)

Loi Do - BME Ph.D. Student

“Techniques In Diffusion MR Image Analysis for Characterizing Neurological Changes”

**Abstract:** Diffusion weighted MRI has the ability to noninvasively quantify and characterize degradation using non ionizing radiation in order to examine the fractional anisotropy of the white matter tracts. This study was performed on APOE-4 positive rats (n=8) fixed in trumps solution (fixative) after perfusion. The fixed rat heads were imaged using a t2-weighted sequence at b=1000, 2000, 3000, 4000, 5000 and 6000. Half of the cohort was treated with Allopregnanolone therapeutic intervention and half without. Image processing methodologies that will be described include registration and super resolution preprocessing.

Host: Dr. Ted Trouard (trouard@email.arizona.edu)

**Please join us on**

Monday, April 16th, 2018  2:00-2:50 pm, Keating 103

Refreshments will be available at 1:45 pm

**Persons with a disability may request a reasonable accommodation by contacting the Disability Resource Center at 621-3268 (V/TTY).**