

Catalyst Fall Symposium

Lennon Boardroom

Thursday, October 24

4:00 Realizing an extension mechanism for a wind turbine blade by Matt Vanone

Increasing wind power output and efficiency have been consistent goals for the wind energy industry. Longer turbine blades maximize power output but are more susceptible to damage at high wind speeds. Recently gaining attention is an innovative blade design that extends at low wind speeds to harvest more wind energy, but retracts at high wind speeds. Matt Vanone worked with Dr. Yu at CWRU's Department of Civil Engineering to develop extension mechanisms for extensible designs.

4:30 Psoriasis biomarkers that associate with inflammatory bowel disease by Colton Slabe

Psoriasis and the spectrum of inflammatory bowel diseases (IBD) are chronic conditions. Various clinical studies have observed a coincidence of psoriasis and IBD. Colton assisted Dr. McCormick's team at CWRU as they searched for biomarkers common to both ailments.

5:00 Electrical stimulation and exoskeleton assisted therapies for stroke survivors by Elijah Wiertel

Stroke is the leading cause of motor disabilities around the globe. Electrical stimulation and robotic exoskeletons are two important technologies widely used for physical rehabilitation. Elijah Wiertel worked with Dr. Makowski's team at the Veteran Affairs Hospital to gain insights into the challenges associated with these technologies. He also helped design a modification to an exoskeleton for a stroke survivor.

5:30 Understanding the structure of a multidrug efflux pump in *Acinetobacter baumannii* by Olivia Hunyadi

Management of nosocomial infections caused by multidrug resistant *Acinetobacter baumannii* strains are becoming a growing clinical problem. Researchers link multidrug resistance in these bacteria to an over-expression of efflux pump proteins, making these proteins a primary candidate for structural investigation. Olivia worked with Dr. Yu's team at CWRU's Department of Pharmacology to purify and study the structure of AdeK, the outer membrane component of AdeIJK efflux protein.

Friday, October 25

4:00 Developing program to organize data using hierarchical clustering by Mollie Edmondson

Hierarchical clustering is technique that groups similar objects into groups called clusters. This approach seeks to build a hierarchy of clusters based on differentiating data points. Mollie Edmondson worked with Dr. Koyuturk's team at CWRU's Computer Science Department to develop a program based on hierarchical clustering, helping researchers organize and analyze massive amounts of data.

4:30 Antibiotics: a possible cure for psoriasis by Richard Jones

Psoriasis is a chronic inflammatory disease affecting about 2-3% of the worldwide population. Over the years, researchers have proposed multiple treatments for psoriasis; however, to date, a cure is still lacking. Richard Jones worked with Dr. Ward's group at CWRU's Dermatology Department to test the effectiveness of different antibiotics in clearing psoriatic lesions in a mouse model of human psoriasis.

5:00 Effect of aging on T cell subpopulations by Taniya Dsouza

As we age, our body's ability to fight off infections inevitably slows down. Older individuals are relatively more susceptible to infections and less responsive to vaccines. Taniya worked under the guidance of Dr. Canaday at CWRU's Medical Center to study changes in the T cell subpopulations in peripheral blood of young and elderly adults. The ultimate goal of the research relates to the development of strategies aimed at boosting immunity in the elderly.