

University Scholars Symposium  
Monday, April 27, 2009  
1:00 – 5:00 p.m.  
Konover Auditorium – Dodd Center

## Pitch

Join us at the University Scholars Symposium, a showcase of interdisciplinary undergraduate research at UConn. Graduating University Scholars will present their projects on a variety of subjects including actuarial science, human rights, psychology and biology. Monday, April 27<sup>th</sup> 1:00 – 5:00 p.m. at the Konover Auditorium. Reception to follow. Visit [www.us.uconn.edu](http://www.us.uconn.edu) for more information.

## Schedule

1:00 – 1:10: Opening remarks  
1:10 – 1:35: Amanda Ploch  
1:35 – 2:00: Michael Sanders  
2:00 – 2:25: Dongnhu Truong  
2:25 – 2:50: Abena Sarfo-Mensah  
2:50 – 3:15: Thomas Murawski  
3:15 – 3:40: Amanda Buckley  
3:40 – 4:05: Anu Nellissery  
4:05 – 4:30: Benjamin Plourde  
4:30 – 5:00: Reception

## Presentations

Twenty-five minutes are allotted for each presentation. Plan for a 20-minute talk with a few minutes to take questions from the audiences. It is recommended that presentations are created and saved as a .pptx format in Microsoft PowerPoint 2007/2008.

## Participants

Amanda Buckley

CLAS – Physiology & Neurobiology

"The Effects of Acute Dehydration on the Cognitive Performance and Mood of Women"

My project dealt with testing the effects of mild dehydration on women's cognitive performance in the Human Performance Lab. The subjects walked on the treadmill for forty minutes in the environmental chamber. After this time, they moved to a cool room, rest for twenty minutes, and then performed eight cognitive tests, which lasted about one hour. The women then repeated the exercise followed by the cognitive test two additional times. Their cognitive performance was compared to the level of dehydration to see what effect dehydration has on cognitive function and mood.

Thomas Murawski

CLAS – Actuarial Science

“An Analysis of the Embedded Options in a Variable Annuity Contract with Investment Guarantees”

Abstract: This project will examine the surplus of a life insurance company in the context of fair value accounting. Statistical methods and stochastic principles will be employed to study the impact of specific economic and financial factors on the surplus. Changes in the term structure of interest rates, market volatility, hedging imperfections, policyholder behavior, credit ratings, and taxes are some of the factors that will be analyzed. After identifying key components that influence surplus, a model will be constructed to show how the surplus behaves under several assumptions and scenarios.

Anu Nellissery

CLAS - Physiology & Neurobiology and Molecular & Cell Biology

“Genetic Optimization of Bacteriorhodopsin for Use in an Artificial Retina Prototype”

Abstract: Bacteriorhodopsin (BR) is an integral membrane protein, which functions as a light-driven proton pump in the archaeon *Halobacterium salinarum*. The goal of this project is to generate variants of BR for use in artificial retinas and other sensory devices. Because modern semiconductors lack the ultra-fast response time of BR, BR-based photovoltaics may be better suited for high-speed devices, motion detection, and high-resolution imaging. Genetic optimization, via cysteine-scanning mutagenesis, may improve BR for use in such devices. Cysteine-containing variants will be generated and characterized for gold binding affinity using atomic force microscopy and surface-enhanced Raman spectroscopy. The ultra-fast response will also be examined using electro-optic sampling to determine variants suitable for photovoltaic devices.

Amanda Ploch

CLAS – Political Science and Individualized

"The Pursuit of Economic Human Rights: Perspectives from South Africa and the United States"

Abstract: I will explore the paths which NGOs in the United States and South Africa have taken concerning the achievement of economic human rights, such as the right to housing and the right to work. This project will utilize critical analysis of relevant literature concerning the varied political/social contexts in either nation; however, the most revealing information will come from interviews with NGO members, conducted while I am studying abroad in Cape Town and after my return to the States, which will illuminate the methods used and challenges encountered by these NGOs as they work to advance economic human rights.

Benjamin Plourde

CLAS - Biological Sciences

“Wood Specific Gravity and Life History of Secondary Tropical Rain Forest Trees”

Abstract: Rain forests around the world support three-quarters of known plant and animal species on only 3% of the land area. Since 1950, 90% of Central America's tropical rain forests have been subject to human destruction. As a result of deforestation, secondary forests have arisen as the dominant forest cover in many tropical countries. Wood specific gravity (WSG) was measured for abundant tree species in secondary and mature forests as well as plantations at La Selva Biological Station in northeastern Costa Rica. Wood specific gravity is an important trait used in biomass estimates and functional trait studies. This study incorporates an 11-year annual growth record of

secondary tropical forest trees with WSG data. Tree growth in both girth and height show a negative relationship with WSG across all forest types. Radial increases (pith to bark) in WSG were more common and pronounced in younger secondary forests. Trees of the same species in different aged forests showed significant differences in both average WSG and average radial change. This study contributes significant new information on WSG and tree growth in secondary forests.

Michael Sanders

CLAS – Ecology & Evolutionary Biology

“Conservation Education Media Productions for the University Audience”

Abstract: My project will consist of six half-hour wildlife documentaries. The subjects of the programs may include information pertaining to local wildlife species and conservation issues, as well as worldwide conservation issues. A goal will be to breed appreciation and empathy for wildlife species in general, and raise awareness about local and worldwide conservation issues. Biological information presented may include a range of topics ranging from evolutionary history, to physiological ecology and threats. This information will enable viewers to understand how each animal species covered is able to fit into its unique niche, and will foster greater appreciation for world biodiversity.

Abena Sarfo-Mensah

CLAS – Psychology

“Coping Methods and Meaning-Making of Liberian Refugees in Ghana”

Abstract: This project is an interdisciplinary study that uses qualitative research methods to gain insight into ways in which Liberian refugees cope with and find meaning in the day-to-day challenges they face while living in the Buduburam Refugee Camp located in Ghana. This project, unlike many that precede it, aims to understand the experiences of displaced West African communities from a perspective that incorporates their systems of thought. This line of inquiry can provide insight into the many ways in which discrepancies between Western philosophies and African philosophies have adversely affected the administration of mental health services in Africa.

Dongnhu Truong

CLAS – Psychology

“A knockout study of Dcdc2 in mice and its behavioral and neurological implications”