

**The Berry Summer Thesis Institute Students  
would like to thank the following  
for making this program possible:**

**The Berry Family and Berry Family Foundation**

**Summer Thesis Mentors**

*Dr. Kimberly Bigelow, Dr. Albino Carrillo, Dr. Diana Cuy Castellanos,  
Dr. Madhuri Kango-Singh, Dr. Matthew Lopper, Dr. Thomas Morgan,  
Dr. Pothitos Pitychoutis, Dr. Amit Singh, Prof. Emily Sullivan Smith,  
Dr. Yvonne Sun and Prof. Misty Thomas-Trout*

**Dayton Community Partners in Servant Leadership**

*Catholic Social Services, Dayton Visual Arts Center, Mission of Mary Farm,  
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Pet Adoption Center*

**UD Campus Ministry's Center for Social Concern**

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**UD Housing and Residence Life**

**UD Administration**

**Office of the President**

**Office of the Provost**

**Offices of the Deans —**

*College of Arts and Sciences, the School of Engineering  
and the University Honors Program Review Committee*

**University Honors Program Staff**



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**Berry Summer Thesis Institute Symposium 2017**



arts    business    education    engineering    sciences





## **University Honors Program**

presents the

# ***Berry Summer Thesis Institute Symposium 2017***

**August 3, 2017**

**1:00 to 5:00 p.m.**

**Science Center Auditorium SC 114**

**Reception 5:00 to 6:00 p.m.**

**Science Center Prefunction Space**

*Thanks to a gift from the Berry Family Foundation and the Berry family, the UHP offered eleven rising juniors the opportunity to participate in the Berry Summer Thesis Institute. First initiated in the summer of 2012, the institute introduces students with a proven record of academic success and interest in research to experience intensive research, scholarship opportunities, academic Honors credits and professional development workshops. Students selected for the program were competitively selected for participation by the University Honors Program review committee.*

*Each student pursued a 12-week summer thesis research project under the guidance of a UD faculty mentor. In coordination with the Center for Social Concern, campus ministry and the Fitz Center for Leadership in Community, the students also learned about civic engagement and servant leadership by volunteering with local community partners.*

## Opening Remarks

1:00 p.m.

### Rose A. Rucoba

Major: English  
Mentor: Albino Carrillo, Ph.D.  
Department: English

#### Thesis Title

*Mortality in the Twenty-First Century: A Cycle of Short Stories about Death and the Afterlife*

#### Description

Inspired by the work of Elizabeth Evens, Flannery O'Connor and Stephanie Vaughn, this cycle of short stories focuses on the themes of death and the afterlife. The stories are separate from each other and are told from different points of view, following a variety of characters as each struggles with the inevitability of death and the afterlife that follows.



1:05 p.m.

### Claire F. Bowman

Major: Fine Arts  
Mentor: Emily Sullivan Smith, M.F.A.  
Department: Art and Design

#### Thesis Title

*The Art of Feminism*

#### Description

Growing up as a woman in today's society poses unique challenges. From the moment we are born, our gender defines us, from what colors we are expected to wear as toddlers to the very toys we play with. Society creates perceived standards for women that are inaccurate, impossible and stereotypical. Examples of women as objects for the male gaze still exist. Being a woman myself brings these issues close to my heart, even if it took me almost 20 years to realize it. In a world so determined to stifle her voice and opinion, art is an ever important medium for a woman to express her outrage, her disillusionment and her ideas for positive change. I plan to use art as my form of communication to expose these issues for all to see, hopefully expanding the mind of anyone who may not have previously given them much thought.



1:25 p.m.

## Mary A. Brinkman

Major: Graphic Design

Mentor: Misty Thomas-Trout, M.F.A.

Department: Art and Design

### Thesis Title

*Perceiving Place*

### Description

My research this summer worked to determine how the visual, cultural, social and environmental factors of an area affect one's perception of place. I began by studying diverse neighborhoods in the Dayton area and through qualitative research, narrowed down the various factors within these spaces. I then worked to determine how the characteristics of a space, and which ones in particular, change and impact perception. I plan on utilizing visual language—specifically graphic design with a socially-based agenda—as a medium to communicate this information and to promote a better understanding of place.

1:45 p.m.



## Joseph E. Saurine

Major: Biochemistry, Biology

Mentor: Pothitos Pitychoutis, Ph.D.

Department: Biology

### Thesis Title

*Investigating the Role of a Novel Calcium-Handling Protein in Regulating Locomotor and Cognitive Behavioral Processes in Mice*

### Description

Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent and debilitating neurodevelopmental disease that affects people of all ages. Our laboratory has recently identified a novel Ca<sup>2+</sup>-handling regulator that may play a role in the expression of ADHD-like pathology.

The current study will take a behavioral genetics approach to assess learning and memory processes in mice that lack this gene. Specifically, mice will be subjected to the novel object recognition task, the Y-maze memory test, as well as to the three-compartmental test of social interaction. Overall, results from this study will advance our knowledge on the role of central Ca<sup>2+</sup>-circuits in the neurobiology of ADHD.

2:05 p.m.



## Sarah P. Baxter

Major: Biochemistry

Mentor: Matthew Lopper, Ph.D.

Department: Chemistry

### Thesis Title

*Bacterial Efflux Pump Inhibitors*

### Description

Antibiotic resistance is becoming a major problem in the world of medicine. Antibiotics are no longer effective against resistant bacteria, and it is becoming increasingly difficult to develop new antibiotics. Efflux pumps actively eject antibiotics and drugs out of cells and prevent the accumulation of the antibiotics within the cell. These pumps are one of the main causes of resistance in bacteria. My research includes looking for natural efflux pump inhibitors from plant sources and as well as designing single-stranded DNA fragments that can bind to and block the outer membrane portion of the efflux pump.

2:25 p.m.



## Break

2:45 p.m.

## Logan J. Roebke

Major: Premedicine, Religious Studies

Mentor: Madhuri Kango-Singh, Ph.D.

Department: Biology

### Thesis Title

*Investigating Cell-Cell Interactions in Drosophila Glioma Model*

### Description

Glioblastoma multiforme (GBM) is a devastating form of primary brain cancer with poor prognosis. Capitalizing on the mutations found in GBM patients and the similarities between mammalian and *Drosophila* genes involved in glial cell biology, *Drosophila* glioblastoma models have been established that show similarities to anaplastic glia from high-grade human glioma. High grade glioma is known to be recurrent and therapy resistant. These aspects of GBM lead us to ask how different genetic signals (JNK, Wg and Yki) contribute to promoting glioma, and if interactions between glioma cells and the neighboring stromal cells play a role in the key aspects of disease presentation such as the rapid growth, the therapy resistance and the recurrent phenotype. We found that downregulation of Wg affects glioma growth. We are currently testing radio-resistance to establish the conditions under which the tumor-containing flies survive post-radiation. Here we present our progress from these studies.

3:00 p.m.



## Lauren M. Murray

Major: Dietetics

Mentor: Diana Cuy Castellanos, Ph.D., R.D.

Department: Health and Sport Science

### Thesis Title

*Breaking Down Barriers to Sustainable Eating at the University of Dayton*

### Description

This research assesses the carbon footprint of the foods that the University of Dayton serves in Marycrest and VWK. By looking at the greenhouse gas emissions from production and transportation, we analyzed which foods had higher carbon footprints. We then created a program to help educate faculty and students in the dining halls about sustainable eating.

3:20 p.m.



## Paige L. Ingram

Major: Mechanical Engineering

Mentor: Kimberly Bigelow, Ph.D.

Department: Mechanical Engineering

### Thesis Title

*A Comparative Analysis of Breast Cancer Treatments and the Role of Taxane-Based Chemotherapy-Induced Peripheral Neuropathy on Postural Stability*

### Description

Twelve percent of women suffer from breast cancer each year, but survivorship is increasing due to improvements in treatments. However it appears there are lasting effects after treatment due to the toxicity of chemotherapy compounds. One of the most severe side effects is peripheral neuropathy which results in decreased sensation in the nervous system. With this loss, an individual's balance and postural stability is likely impacted, leading to an altered quality of life. Monfort at Ohio State are among the first to identify balance deficits in breast cancer patients during treatment, even after the first treatment cycle. We recently joined with them as they extended this work to include long-term follow-up testing after the completion of treatment. Our efforts specifically investigate postural stability, range of motion and balance control while individuals stand on a force plate, looking at variances between individuals receiving different treatments and experiencing diverse outcomes.

3:40 p.m.



## William E. Landers

Major: English

Mentor: Thomas Morgan, Ph.D.

Department: English

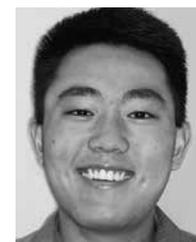
### Thesis Title

*Observing Racial Subtext in Contemporary American Literature*

### Description

My project arranges a framework for detecting racial norms as underlying structures in American writings. Growing currents in fields such as legal studies, philosophy and literary criticism assert that the ideology of racism is foundationally intertwined in modern Western societies. My interdisciplinary research indicates that socially and historically normalized racism continues to inform American cultural sensibilities. As a result, persons and places can be racially socialized both explicitly and unconsciously. In this context, I suggest that racism presents itself in the construction of normality in American cultural writings.

4:00 p.m.



## Ryan E. Restrepo

Major: Biology

Mentor: Yvonne Sun, Ph.D.

Department: Biology

### Thesis Title

*Determining the Effect of Alcohol on Barrier Function of Colonic Epithelial Cells*

### Description

Excessive alcohol consumption kills approximately 88,000 people in the United States each year, creating a financial burden over \$223 billion. For college students, consuming alcohol can significantly hinder mental and physical development. Moreover, alcohol consumption renders individuals more susceptible to infectious diseases. In my research project, I investigate how ethanol exposure affects the ability of foodborne pathogen, *Listeria monocytogenes*, to cause infections and how ethanol exposure affects the susceptibility of host models to *Listeria* infections. I hope to expand and use the knowledge gained from my research to educate people on the impact of excessive drinking on health.

4:20 p.m.



**Steven G. Borchers**

Major: Premedicine

Mentor: Amit Singh, Ph.D.

Department: Biology

4:40 p.m.

**Thesis Title**

*Role of Relish/NFkB Apoptosis Pathway in Amyloid-Beta 42 Mediated Neurodegeneration in Alzheimer's Disease*

**Description**

Alzheimer's disease is a progressive neurodegenerative disease that is the sixth leading cause of death in the United States. One of the leading causes of Alzheimer's disease is the accumulation of amyloid plaques. We have transgenic fruit flies which express these plaques in photoreceptor neurons in their eyes. The protein Lunasin has been shown to rescue our eye model but we do not know which cellular pathway it is affecting. We are looking into the IMD pathway to understand the mechanism by which Lunasin can rescue amyloid beta 42 mediated neurodegeneration.