

**Old Dominion University Undergraduate Research Symposium**  
**Saturday, February 12, 2011**  
**Diehn Fine and Performing Arts Building, ODU Campus**

Sessions at a Glance

8:00 -9:00 AM	Registration (FPA Foyer)
9:00-9:15 AM	Welcome and Opening Remarks (Chandler Recital Hall): Dr. David Metzger, Dean of the Honors College, Old Dominion University
9:15-9:45 AM	“Blood, sweat, and fears: the challenges of undergraduate research”: (Chandler Recital Hall)  Invited address on undergraduate research by Gary W. Miller Ph.D., Professor of Environmental Health and Associate Dean for Research Rollins, School of Public Health, and Professor of Neurology and Pharmacology, School of Medicine at Emory University.
10:00-11:00 AM	"The Effects of Parental Alcohol Abuse on College Student Drinking Problems: The Search for Mediators and Moderators" Chair: Dr. Henson, Department of Psychology (FPA 107)  "Engineering Better Lives - Undergraduate Research in Engineering" Chair: Dr. Kolb, Dept. Electrical and Computer Engineering (FPA 136)  "Presentations by 2010 Undergraduate Research Grant Winners Session 1" Chair: Dr. Ash, Honors College (FPA 142)
11:15-12:15	"Solar Decathlon: Engineering and Sustainability" Chair: Dr. Erten-Unal, Civil and Environmental Engineering Department (FPA 107)  "Presentations by 2010 Undergraduate Research Grant Winners Session 2" Chair: Dr. Ash, Honors College (FPA 136)
12:30-1:45 PM	Free Luncheon: North Cafeteria, Webb Center
2:00-3:00 PM	"Physics, GeoPhysics, And Environmental Optics Research At ODU" Chair: Dr. Sukenik, Department of Physics (FPA 107)  "New Directions in Undergraduate Art History Research" Chair: Dr. Lichi, Department of Art History (FPA 136)
3:00-4:30 PM	Reception, Poster Session, and Visual Arts Exhibition (FPA Foyer)  Featuring undergraduate research on "Managing the challenges of Global Supply Chain", "Undergraduate Research in Political Science and Geography" and a display of Undergraduate Visual Art

**Old Dominion University Undergraduate Research Symposium**  
**Saturday, February 12, 2011**  
**Diehn Fine and Performing Arts Building, ODU Campus**

**Symposium Program**

**9:00-9:45**

**Chandler Recital Hall**

**Welcome and Opening Remarks.**

Dr. David Metzger  
Dean of the Honors College  
Old Dominion University

**Blood, Sweat, and Fears: The Challenges of Undergraduate Research.**

An invited address discussing the importance of undergraduate research experiences  
by Gary W. Miller, Ph.D.

Dr. Miller will discuss his undergraduate research experiences at ODU and how they influenced his academic research career. He will also present research from his laboratory on the biological basis of Parkinson's disease and other brain disorders.

Dr. Miller is Professor of Environmental Health and Associate Dean for Research in the Rollins School of Public Health, and Professor of Neurology and Pharmacology, in the School of Medicine, Emory University. Dr. Miller received his B.S. in Exercise Science (1989) and M.S. in Biology (1992) from ODU, his Ph.D. in Pharmacology and Toxicology (1995) from the University of Georgia and completed postdoctoral training in molecular neuroscience at Emory University and Duke University. His research is focused on environmental and genetic factors involved in neurological diseases. Dr. Miller was a member of the inaugural class of the Honors College at ODU.

**10:00-11:00 AM (FPA 107)**

**The Effects of Parental Alcohol Abuse on College Student Drinking Problems:  
The Search for Mediators and Moderators**

**Chair: Dr. Henson, Department of Psychology**

**Parental Alcohol Abuse and College Student Drinking Problems: Buffering Effects of Self-Regulation.**

By Jessica Spruill (Advisors: Dr. J. Henson)

Adult children of alcoholics (ACOAs) are predisposed to greater alcohol-related problems than their non-ACOA peers. This paper examines whether self-regulation abilities (or self-control) can buffer against the risk associated with having an alcoholic parent, such that ACOA status confers risk only among those with poor self-regulation abilities.

**Parental Alcohol Abuse and College Student Drinking Problems: Impairments to Global Self-Control or Specific Drinking Control Strategies?**

By Benjamin Kite (Advisor: Dr. J. Henson)

This paper examines global self-regulation abilities and specific drinking control strategies as potential mediators of the effect of ACOA status on alcohol-related problems. Exposure to an alcoholic parent may result in impairments to global self-regulation abilities (for example, due to poor parental monitoring) or perhaps it may result in more specific impairments to regulating one's drinking behavior.

**Parental Alcohol Abuse and College Student Drinking Problems: Impulsivity-like Traits, Alcohol Expectancies, and Drinking Motives as Mediators.**

By Kacey Bunting (Advisor: Dr. J. Henson)

This paper examines several potential mediators of the effect of ACOA status on alcohol-related problems. Impulsivity-like traits, alcohol expectancies, and drinking motives have all been determined to be robust predictors of alcohol-related outcomes. We examine whether ACOA status is associated with increased impulsivity-like traits (personality hypothesis), increased positive alcohol expectancies (expectation hypothesis), or increased internal drinking motives (motives hypothesis), which in turn relate to alcohol-related problems.

**Parental Alcohol Abuse, Family Neglect, and Psychological Abuse: A Brief Look at Intimate Partner Violence.**

By Emily Muschek (Advisor: Dr. J. Henson)

This paper examines the unique and interactive effects that parental alcohol abuse, family neglect, and psychological abuse have on intimate partner relationships. We examine emotional abuse as well as physical abuse between intimate partners (self-to-partner abuse and partner-to-self abuse).

**10:00-11:00 AM (FPA 136)**

**Engineering Better Lives - Undergraduate Research in Engineering**

**Chair: Dr. Kolb, Electrical and Computer Engineering Department**

**Design and Feasibility of Liquid Rocket Motors Utilizing Algae Biodiesel Fuels.**

By Joshua Laub (Advisor: Dr. B. Newman)

Renewable fuels may soon find ever increasing applications in the aerospace industry. One current area of research is the use of biodiesels, including that derived from algae, as a rocket propellant. Hydrocarbon fuels have a long history of successful employment in the space launcher industry. Biodiesels share similarities with current hydrocarbon rocket propellant but also maintain unique characteristics. Early testing of Biodiesel powered rocket engines show promising results and provide motivation for technology development. This research evaluates biodiesel rocket propulsion theoretically, in comparison to current successful designs.

**Electric Current Generation in Hearts due to Ultra-short Pulses.**

By Allison Joiner (Advisor: Dr. S. Knisley)

Implanted cardiac pacemakers deliver pulses having millisecond duration. Shorter pulses would be advantageous to extend battery life. Research at ODU indicates pulses of 300 nanoseconds can stimulate hearts; however thresholds disagree with theory for stimulation. This study tests a new theory in which the pulse electroporates a cardiac region, producing a difference between transmembrane potentials in the electroporated vs. non-electroporated regions. This difference induces current that stimulates the heart. Hearts from goldfish were instrumented with a custom amplifier to apply ultrashort pulses in-vitro and measure potential differences between two cardiac regions after the pulse. Results will be presented.

**Effect of Potassium on Stimulation of Hearts with Nanosecond Pulses.**

By Amanda Sokolsky (Advisor: Dr. S. Knisley)

Measurements of stimulation thresholds suggest the process of cardiac stimulation with an ultrashort pulse (UP) differs from a previous hypothesis of stimulation in which injected current directly excites sodium channels. For UP, a novel electroporation-induced current that depends on transmembrane potentials is hypothesized to excite the channels. To test this, fish hearts in-vitro were given elevated potassium concentration that would produce supernormal excitation by the injected current hypothesis and subnormal excitation by the electroporation-induced current hypothesis. Results indicate the potassium alters the UP thresholds, indicating the process of UP stimulation of hearts involves one or both of the hypothesized currents.

**Kinematics of Gesturing.**

By Stephanie L. McCarthy (Advisor: Dr. S. Ringleb)

A person with aphasia as a result of stroke may benefit when gesturing is used to rehabilitate their speech, when compared to speech therapy with no gesturing. The purpose of this study is to quantify the kinematics of typical gesture motions used as the patient is trying to produce words before and after a period of speech therapy. As first steps toward this goal, a data collection protocol was set up to quantify the motion of the shoulder, elbow and wrist while following the guidelines of the International Society of Biomechanics. This set up was then used to collect kinematic data from healthy volunteers performing these motions, and a method of evaluating these data was developed.

**10:00-11:00 AM (FPA 142)**

**Presentations by 2010 Undergraduate Research Grant Winners: Session 1**

**Chair: Dr. I. K. Ash, Honors College**

**Studies of Amyloid Fibril Formation of Hen Egg Lysozyme.**

By George Leary (Advisor: Dr. L. Greene)

Amyloid fibrils are misfolded proteins that are associated with a variety of neurological diseases including Alzheimer's, Parkinson's, Huntington's disease, and type II diabetes. In order to understand the reason fibrils form in these disease and better understand possible methods of treatment the process of amyloid fibril formation is studied.

**Transpersonal Psychology Represented Through Art.**

By Danielle Jweid (Advisor: Dr. E. Jones)

Transpersonal psychology is a branch of psychology that draws from several other disciplines including philosophy, physics, and eastern religion. The multimedia painting produced exemplifies how these separate disciplines relate to transpersonal psychology and how they create a cohesive idea. This painting is meant to inspire personal growth in the viewer through its idea of a universally human expression.

**The Analysis of Sunscreen Intensity and Mutations in Yeast when Exposed to UV Radiation.**

By Aryles Hedjar (Advisor: Dr. D. Mills)

As the helpful and harmful effects of ultraviolet radiation (UV) light are being understood more, there are various ways to test their influence on organisms, specifically eukaryotic organisms. Yeast (*Saccharomyces cerevisiae*) is a simple organism that allows for easy laboratory work to study UV characteristics. Both non-mutated (wild type) and UV sensitive yeast were grown and irradiated with UV-A (long wavelength) and UV-C (short wavelength) light along with varying intensities of sunscreens. Largely qualitative patterns were monitored dealing with (most importantly) estimations of cell growth count, as well as cell size, and distribution. The results showed that UV-C was more effective, particularly without sunscreen, and that wild type yeast showed more predictability with expected growth patterns, while UV sensitive yeast produced large cell proliferations. An important test to come is using methylene blue stains to show cell viability, based on staining characteristics between living and dead cells. Another test can compare two types of proteins, *sic1* and *rad1*, that use two different pathways to regulate cell division, and observe which one radiation might affect more. Both tests hope to be used in the future to bring more quantitative characteristics.

**The Impact of Winter SST Anomalies on Summer Wind Direction along the Southeastern Seaboard.**

By Bryce Corlett (Advisor: Dr. M. Scully)

Analyses of historical wind data in conjunction with long-term climate data reveal a clear relationship between the winter sea surface temperature (SST) anomalies and shifts in the summer wind direction along the Southeastern Seaboard. These wind shifts are largely influenced by the subtle changes in the position and strength of the dominant summer high-pressure system over the southeastern US. The atmospheric downstream effects of wind blowing over SST anomalies in turn drive this shift in pressure. These 'downstream effects' are shown by increases in atmospheric pressure observed downstream of regions where wind blows over cooler water, as opposed to the decrease in pressure observed downstream of regions of warmer waters. Therefore, the along-shelf SST gradient, presumed linked to the Gulf Stream transport and/or the strength of evaporative heat loss during the winter months, plays an important role in the prediction of summer wind direction.

**11:15 AM -12:15 PM (FPA 107)**

## **Solar Decathlon: Engineering and Sustainability**

**Chair: Dr. Erten-Unal, Civil and Environmental Engineering Department**

### **Solar Decathlon 2011- Team Tidewater Virginia: Net-zero energy, Sustainable Single and Multi-Family Housing.**

By Holly A. Hillard and Mark Callazzo (Advisor: Dr. M. Erten-Unal)

ODU Engineering and Hampton University Architecture departments were among the twenty universities selected to compete in the Department of Energy's Solar Decathlon 2011 to develop a single net-zero energy demonstration research house conceived as a single unit of a multi-family building. Team Tidewater Virginia also challenged itself to enlarge its Decathlon effort beyond the design of its entry and to demonstrate its conviction that true sustainability mandates nurturing livable walkable center city neighborhoods. So its members elected also: to demonstrate that net zero housing can be made affordable in a low to moderate income market by sharing equipment cost in multi-family housing; to demonstrate that net zero housing – both single and multi-family – can fit comfortably, supportively and seamlessly within an existing historic center city neighborhood

### **Structural/Architectural Elements of UNIT 6: Solar Decathlon House.**

By Wayne Laustsen and Lukas Terry (Advisor: Dr. S. Bondi)

A precedent for the effort was found in a building type ubiquitous in the area. Three units are stacked on either side of a circulation core, its facades developed with deep porches. These porches provide three-season thermal comfort, enliven neighborhood street life, allow great architectural variety, and present a dignified face to the street. For the single, research unit, Team Tidewater is working with a Virginia company modifying high-performance German window units in the development of fenestration allowing the porch to be enclosed in cold weather to create a sunspace. Opened, the units provide a code-compliant porch rail; closed they will work with thermal mass to reduce heating requirements. In pursuit of high envelope performance and to solve issues of Decathlon transport, Team Tidewater has paired with an innovative modular construction company who will include the Team Tidewater design in its inventory for future purchase. Structural challenges involved the design of a set of easily transportable modules capable of assembly into an architecturally elegant home, integration of heavy and complex window technologies and solar elements into the overall structure.

### **Mechanical and Solar Elements of UNIT 6: Solar Decathlon House**

By Ann Hageman, Joshua Davis and Peter Jaeckel (Advisors: Mr. D. Cwick, SENCON Engineers; Ms. Nina Szewczak, AECOM Engineering; Dr. I. Flory and Mr. S. Wells)

Students of Team Tidewater are employing systems and techniques that are tried and true such as: photovoltaic (PV) panels, solar thermal collectors, high quality insulation and tight envelope and heat pumps. Core design elements are the use of passive design to minimize the active heating and cooling loads, combined with smart control systems and correctly sized active components to minimize overall energy consumption while providing a comfortable living environment. The team performed a conservative estimate of heating performance of the sunspace and other passive systems to make sure our active heating systems have enough capacity for extreme temperatures. They have used a model to calculate the performance of all systems carefully under the supervision of mechanical engineers from industry with extensive experience. Team members will discuss temperature and humidity control features and solar systems that will be installed for the house.

**11:15 AM -12:15 PM (FPA 136)**  
**Presentations by 2010 Undergraduate Research Grant Winners: Session 2**  
**Chair: Dr. I. K. Ash, Honors College**

**Tiffany Studios and the Wisteria Lamp: A Process of Research and Discovery.**

By Samantha Karam (Advisor: Dr. R. Wojtowicz)

In this presentation, I will discuss the present state of my research into Tiffany Studios' Wisteria Lamp. My initial approach was based in the methodology of connoisseurship; could the Wisteria Lamp in the collection of the Chrysler Museum of Art be the creation of Clara Driscoll, one of Tiffany Studios' leading women designers? Following a semester-long tutorial and a four-day trip to New York City, which was funded by an Undergraduate Research Grant, I reevaluated this approach, shifting it toward a study of the lamp's feminine iconography. This will be the focus of my senior thesis to be completed in spring 2011.

**Do People Living with HIV use Deservingness or Deterrence as a Motive when Meting out Punishment for HIV Non-Disclosure Violations?**

By Brittany Neilson (Advisor: Dr. V. Derlega)

Currently, 23 states have HIV non-disclosure laws that penalize someone with HIV who engages in sexual intercourse without prior disclosure of his or her HIV status. Previous research has suggested that people justify punishment exclusively using a deservingness perspective, such that an offender deserves a punishment equal to the crime committed. An alternative theory of punishment comes from a deterrence perspective, which attempts to reduce the frequency of negative behavior in society. The present study examines deservingness and deterrence motivations for punishment of HIV non-disclosure violations among people living with HIV. Consistent with previous studies, there was a significant effect of deservingness motive for meting out punishment based on the severity of consequences associated with HIV non-disclosure. Evidence for the use of deterrence as a basis for meting out punishment was not present. Corroborating results from previous studies among college students and implications for public health will be discussed.

**Molecular identification of potentially invasive *Cuscuta* in Brunei Darussalam.**

By Amanda L. Bieber (Advisor: Dr. L. J. Musselman)

A previously unidentified species of the parasitic plant genus *Cuscuta* (Convolvulaceae) is commonly found parasitizing plants in disturbed areas along roadsides in Brunei Darussalam, and has the potential to become a serious agronomic threat. Many populations have been observed since March 2008 and produced no flowers. Without reproductive structures, this plant is nearly impossible to identify. While several populations were found flowering in 2010, the sterile populations remained unidentified. Therefore, DNA sequence data from the nuclear and chloroplast regions was generated from plant tissue of flowering and sterile *Cuscuta*. Using this data, phylogenetic study was used to identify the sterile *Cuscuta* as *C. australis*, and was the first definitive record of *C. australis* and *C. campestris* found in Brunei. In addition, a unique insertion of base pairs was found only in Bruneian *Cuscuta*. Additional study of this region of DNA may provide insight into the unusual parasitic plant genome.

**Toxicity of Propofol and Taxol on Mouse Embryonic Cells.**

By Sheel Patel (Advisor: Dr. R. J. Swanson)

Propofol is a tranquilizing agent with a normal dosage of 2-2.5 mg/kg body weight. Propofol has been shown to cross the placenta in a pregnant woman during cesarean sections and thus could be harmful to the fetus. Understanding propofol's influence on the human embryo is extremely important. Taxol is a chemotherapy drug recently proved successful in remission of cancers, e.g., ovarian, breast, lung and prostate. Prescribed amounts of taxol range from 75-300 mg/meter<sup>2</sup> with the normal dose being around 135-175 mg/m<sup>2</sup>. However, past research deals only with effects of taxol on chick embryos. We studied different concentrations of propofol and taxol on mouse embryo development to establish the outcome of 0.1x, 1x and 10x propofol solutions and 0.1x and 1x taxol solutions on mouse embryos with x equaling the average suggested drug dose/kg. Female mice were superovulated with hormones and allowed to mate with the males, producing embryos for the research. Thirty-six hours after the second hormone injection, female mice were euthanized, 2-cell embryos isolated and transferred to culture plate wells containing the three concentrations of the drugs. The effects of the drugs were recorded and observed showing a dramatic decrease in embryo development for both compounds.

**2:00 -3:00 PM (FPA 107)**  
**Physics, GeoPhysics, and Environmental Optics Research At ODU**  
**Chair: Dr. Sukenik, Department of Physics**

**Transiting Exoplanets.**

By Kevin Mitchell (Advisor: Dr. S. Bueltmann)

Exoplanets orbiting distant stars can be detected on Earth optically if the planet crosses the visible face of the star. In this case, the light from the star will be slightly dimmed during the transit. We are using a remotely operated telescope, owned and operated by Norfolk State University and located on Fan Mountain, Virginia, to measure the light curves of stars to search for these transits. The known exoplanet star system that I am presently observing is called Hat-P5. The data are used to calibrate and test our ability to detect transits and to search for additional exoplanets orbiting the same star.

**Remote Sensing with LIDAR.**

By Lindsey Andrews (Advisor: Dr. C. I. Sukenik)

Light Detection and Radar (LIDAR) is a type of remote sensing that emits and collects waves of light for applications such as mapping or tracking. Using an “in-situ” LIDAR system, the research project initiated at ODU will investigate the vertical structure of the ocean. The system will use a pulsed Nd:YAG laser, photomultiplier tubes for detection of the return signal, and high-speed analog to digital conversion to record the data. The collected data will then be applied to test models of biological productivity in the ocean. In addition, the data will both complement and test existing records obtained from NASA satellites (CALIOP and MODIS).

**Creation of Virtual Geological Specimens Using Laser Technology and Their Use With Google Earth”**

By Melissa R. Beebe (Advisor: D.G. De Paor)

Geoscience places great emphasis on the use of specimens to help with analyses of the natural processes that formed the earth. Specimens, however, can be difficult to obtain, limiting the opportunity to understand different parts of the earth’s physical formation. With advances in technology, specimens can now be recreated virtually. Models are added to Google Earth at the specimens’ real location and can also be loaded into the Google Earth Application Programming Interface (API). Specimens can also be integrated into “virtual field trips”, where students can access them in an engaging, interactive manner.

**A theoretical study of (e,2e) processes on K and L shells of neutral atoms.**

By John Hagee (Advisor: Dr. C. Whelan)

In this report I will discuss the electron impact ionization of neutral atoms. I will present results for the triple differential cross section calculated in several different variants of the Born approximation and compare with experimental measurements.

**Spectral Analysis of  ${}^7\text{Li}$   ${}^4\text{He}$  Rotational and Vibrational Energy Transitions.**

By Cabot Zabriskie (Advisor: Dr. M. D. Havey)

The purpose of this project is the analysis of previously obtained data for  ${}^7\text{Li}$   ${}^4\text{He}$  rotation-vibration energy level transitions. Thus far the analysis has yielded information as to the nature of a single energy transition including the determination of necessary constants for prediction of the structure of other rotational-vibrational bands. With the use of these determined constants further transitions will be predicted and analyzed. Once analyzed, these transitions will be used to create a model of the potential energy curve for  ${}^7\text{Li}$   ${}^4\text{He}$  observed in the data. This curve describes the interaction between the two atoms as a function of the separation between the atoms.

**Jefferson Lab CLAS-12 Drift Chamber Wire Tension Testing**

John Guthrie (Advisor: Dr. L. Weinstein)

The Jefferson Lab CLAS (CEBAF Large Acceptance Spectrometer) uses drift chambers to make position and momentum measurements for high energy particles. The ODU Nuclear Group is building six of these chambers for the 12-GeV CLAS upgrade. Each chamber contains about 4000 wires, and each wire must be strung at the correct tension. I worked with the CLAS-12 Drift Chamber group at J-Lab measuring wire tensions using various methods. In order to optimize the tension measurements and automatically record the results, I developed a system using a PC with a PicoScope device and LabView software. This system works with the different tension measurement methods to measure and record the wire tensions at the push of a button.

**2:00 -3:00 PM (FPA 107)**

**New Directions in Undergraduate Art History Research**

**Chair: Dr. A. J. Lichi, Department of Art History**

**Domenico Ghirlandaio's *The Birth of the Virgin* (1486-90).**

By Melissa Demarcantonio (Advisor: Dr. A. Lichi)

Religious murals, such as the ones adorning the walls in the Tornabuoni Chapel at Santa Maria Novella in Florence have created much debate among art historians regarding the inspirations, influences, and ideas of beauty on the part of both patron and artist. This paper will examine Flemish influences on Florentine art prior to the rule of Dominican Friar Girolamo Savonarola. Domenico Ghirlandaio's *The Birth of the Virgin* (1486-90), located in the Tornabuoni Chapel, exemplifies the connection between the Italian and Northern European styles, even as it depicts the social and economic power of his patron's family during the Medici period.

**Discovering and Determining a Painting by Gerard David.**

By Amanda Schwartz (Advisor: Ms. A. Whelan)

Christ on the Cross between Saints John the Baptist and Francis of Assisi, a painting in the Chrysler Museum, is attributed to Gerard David. This attribution is not the result of any documentation or mark of authorship, but is the supposition of specialists who examined it in 1973. For centuries, experts have incorrectly attributed works to David. And James Weale insisted in 1860, that due to the scarcity of documentation on David, "caution should be exercised" when accepting attributions to him. With this warning, we can explore evidence that supports this attribution and add this Crucifixion to the David canon.

**The United States Customs House in New York City.**

By Andi Thomas (Advisor: Dr. R. Wojtowicz)

The architectural firm of Town and Davis designed numerous buildings nationwide using the Greek revival style, including the United States Customs House in New York City completed in 1842. This paper will examine how Town and Davis' temple-like design was greatly changed – despite the firm's vocal opposition – due to budgeting and potential structural problems. Since its construction, the building has housed several government offices, and it now stands as a public museum known as the Federal Hall National Memorial.

**James Ingo Freed's *The United States Holocaust Memorial Museum*.**

By L'Tasha Shields (Advisor: Dr. R. Wojtowicz)

In designing the United States Holocaust Memorial Museum, architect James Ingo Freed used abstract imagery to present the story of the Holocaust from multiple vantage points: the Nazi state, those it governed, and those it victimized. Visitors to the Museum follow a complicated interior path that approximates the experience of being deported to a concentration camp. With this remarkable design, Freed wanted visitors to grasp the essential, universal truths that hate does not discriminate based on race or creed and that without critical reflection the Holocaust could happen again.

**3:00 -4:30 PM (FPA Foyer)**  
**Reception, Poster Session, and Visual Arts Exhibition**

**Undergraduate Research Poster Session**

1. **Explaining Individual Civic Engagement.** By Liz Young (Advisor: Dr. J. Richman)
2. **Candidate Characteristics and Vote Choice.** By Tyler Deatley (Advisor: Dr. J. Richman)
3. **Smoking and Public Policy Choice.** By Albert Jesmer (Advisor: Dr. J. Richman)
4. **Coastal Topography and Rip Currents at a Local Level.** By Alexandra Yarbrough (Advisor: Dr. J. Richman)
5. **Does Living in a Flood Zone Change Global Warming Attitudes?** By Blake Sheldon (Advisor: Dr. J. Richman)
6. **Striving for supply chain excellence: A case of a US textile company.** By Grant Berger (Advisor: Dr. L. Li)
7. **Apple iPhone, a flexible and efficient supply chain.** By Joachim Nilsen (Advisor: Dr. L. Li)
8. **Managing an efficient wine distribution system in Shanghai.** By Yao Li (Advisor: Dr. L. Li)
9. **Phosphoglucomutase is a Suspected Virulence Factor for Streptococcus parauberis.** By Monet Stevenson (Advisor: Dr. A. N. Haines)
10. **Breeding and Rearing the High-Fin Shrimp Goby (*Stenogobius nematodes*) in a Closed Recirculation System.** By Emilie Stump (mentors Dr. I. Barton and Dr. K. Carpenter)
11. **Quillworts of the Lower Chickahominy River, Virginia.** By Sarah Key (Advisors: Dr. Musselman and Dr. Bray, coauthor Jerry Pacillo)
12. **Multi-annual Caribbean Current Shifting Modes.** By Bryce Corlett (Advisor: Dr. T. Ezer)
13. **Burnout and American University Faculty: A Small Tale.** By Joseph Volpetti & Divya Varier (Advisor: Dr. M. Padilla)
14. **My Parents Don't Approve of my Date: Parents' Preferences for Their Young Adults' Dating Partners as a Function of Ethnicity.** By Jessica Bodkins (Advisor: Dr. M. L. Kelley)

**3:00 -4:30 PM (FPA Foyer)**  
**Reception, Poster Session, and Visual Arts Exhibition**

**Undergraduate Visual Art Exhibit**

<b>Student</b>	<b>Concentration</b>	<b>Faculty Mentor</b>
Ty Forehand	Drawing & Design	Heather Bryant
Russell Yerkes	Drawing & Design	Heather Bryant
Matthew Kuntz	Graphic Design	Kenneth FitzGerald
Susan Richter	Graphic Design	Kenneth FitzGerald
Alexandria Walker & Jennifer Hobbs	Graphic Design	Kenneth FitzGerald
Elizabeth Gathagan	Metalsmithing & Jewelry	Dianne deBeixedon
Melissa Hill	Metalsmithing & Jewelry	Dianne deBeixedon
Matt Zophy	Metalsmithing & Jewelry	Dianne deBeixedon
Kathy Adams	Painting	Elliott Jones
Elizabeth Hufstedler	Painting	Elliott Jones
Danielle Jweid	Painting	Elliott Jones
Elizabeth Carney	Print & Photo Media (Photography)	Greta Pratt
Heather Prestage	Print & Photo Media (Photography)	Greta Pratt
Jamie Armstrong	Print & Photo Media (Printmaking)	Ken Daley & Heather Bryant
Julianna Heck	Print & Photo Media (Printmaking)	Ken Daley & Heather Bryant
Kjerstin Torpmann-Hagen	Print & Photo Media (Printmaking)	Ken Daley & Heather Bryant
Karine Lombardo	Sculpture	John Roth
John Shield	Sculpture	John Roth