



2016 SRS

22nd

**Annual SUNY New Paltz
Student Research Symposium**

Abstract Book



New Paltz
STATE UNIVERSITY OF NEW YORK

22nd ANNUAL SUNY NEW PALTZ STUDENT RESEARCH SYMPOSIUM

Sponsored by:
The Research, Scholarship, and Creative Activities Program

***Friday, April 29, 2016
Sojourner Truth Library
4:00 - 6:30 p.m.***

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Editor: Maureen Morrow, RSCA Director
Cover Design: Michelle Pielli, RSCA secretary
Cover Photograph: Morgan Gwenwald

The 2016 Student Research Symposium

Once again, as the academic year comes to a close, we have this opportunity for scholarly exchange amongst our faculty and students. The 2016 Student Research Symposium includes 76 poster presentations of work performed by 140 students representing 20 majors, sponsored by 37 faculty mentors representing 16 departments. This is an occasion for us to share our accomplishments in a spirit of camaraderie.

The Student Research Symposium is sponsored by the Research, Scholarship and Creative Activities (RSCA) Program. The mission of the RSCA program is to encourage and support student- faculty collaboration in the active participation of scholarly and artistic activities that generate new knowledge or works.

Such activities enable students to gain knowledge, skills, and confidence to contribute as productive members of their professions and contribute to a learning environment which is challenging, student-centered, and personalized.

Acknowledgements

The following people have provided generous support of this event:

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The RSCA Advisory Board:

Kara Belinsky (Biology), Michael Chuang (Business), Gregory Bynum (Educational Studies),
Meredith Eldridge (Student Representative), Vicki Tromanhauser (English),
Heather Shimon (Library), Ekatarine Shemyakova (Mathematics),
Maria Montserrat Gimeno (Music), Roberto Velez-Velez (Sociology),
Maureen Morrow (RSCA Director, Biology)

Minds @ Work

1-3:00pm – Honors Thesis Presentations, Honors Center

3-4:30pm - Celebration of Writing, Library Lobby

4:00-6:30pm - Student Research Symposium, Library Main Room

4:30-6:30pm - Student Documentaries, Library, room M34

5:00-7:00pm – CAPs Art Exhibition, Fine Arts Building

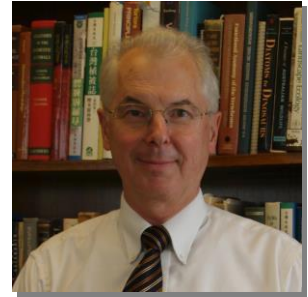
Baroque Art Exhibition - **on display** at the Dorsky Museum,

“Dutch Prints of Daily Life: A Gift from the Collection of Wendell and Karen Van Lare”

5:00–7:00 pm – Opening Reception: *BFA II Student Thesis Exhibition*, Dorsky Museum

Welcome to the Student Research Symposium

Student research participation is one of several “high-impact” educational practices known to produce especially deep and meaningful learning. These practices require students to devote time and effort to purposeful tasks; make frequent decisions about their work; interact with faculty and sometimes peers about their work; and receive frequent feedback about performance. Such experiences deepen understanding of the substance and methodology of a discipline, and provide opportunities to develop important intellectual capabilities.



Research participation is directly relevant to the education of all students, not just those planning to pursue graduate education. More than 80% of employers responding to recent national surveys value completion of a research project or similar endeavor that demonstrates knowledge in the major, and the ability to solve problems, communicate, and make evidence-based decisions. Recent surveys of college graduates show that those who had worked on a long-term project beyond the classroom were more likely to be engaged in the workplace and thriving in their overall well-being.

Such findings highlight why we value the Research, Scholarship, and Creative Activities (RSCA) program and other New Paltz programs that encourage student research engagement.

Successful undergraduate research programs depend on the dedication, knowledge, and scholarly expertise of faculty. I recognize the commitment of time and effort of those who mentor and advise student research and scholarly projects, and am grateful for these important contributions to the education and future of our students. I also want to take this opportunity to express my deep gratitude to Professor Maureen Morrow, campus-wide RSCA coordinator, and the advisory committee for their dedication to managing our funding allocation processes, advising students, organizing events such as this symposium, and many other responsibilities.

I congratulate students and faculty both for your hard work and your success in projects this past year, and wish you continuing success and fulfillment in the future.

Donald Christian
President

Congratulations on your accomplishments this year. In conducting research, you demonstrate and develop sophisticated knowledge and skills. In addition, you formulate questions, draw on your previous studies, and create original projects in close consultation with members of the New Paltz faculty. Research and creative projects force us to be adaptable, allowing us to grow and mature intellectually. Moreover, your efforts represent a crucial step in moving from a *consumer* to a *producer* of knowledge. By claiming control of your own education you participate in expanding our collective understandings of our physical, social, and cultural world.



The hard work and dedication of faculty and students make possible the accomplishments on display at the Student Research Symposium. In addition to applauding the work of your faculty mentors, we would like especially to recognize the important contributions of the RSCA Advisory Board and Professor Maureen Morrow, who lead campus efforts in support of undergraduate research, scholarship, and creative activity and develop the symposium.



For many of us, the most gratifying part of being an educator is when we step away and see our students pursue the advancement of knowledge. At the same time, we recognize that this involves a significant commitment. For the faculty, close collaboration with students enhances the intellectual and creative possibilities of the educational experience beyond the classroom. For students, the commitment results in significant intellectual growth, but also more tangible benefits like higher graduate school acceptance rates and greater success in finding positions in their chosen fields.

We look forward to learning of your continued academic and professional success in the years to come.

Stella Deen

Interim Provost/V for Academic Affairs

Lee Bernstein

Interim Associate Provost for Undergraduate Studies

On behalf of the Research, Scholarship, and Creative Activities Program Advisory Board, I would like to welcome you to the 2016 Student Research Symposium. Today's event is the 22nd consecutive celebration of student-faculty scholarship at SUNY New Paltz.

The process of producing scholarship through research and/or creative activities is both challenging and exciting. I am certain the faculty - student interactions you experienced in this process were unique and stimulating. We know that these types of experiences impart gains in important skills such as critical thinking and communication. We are grateful to the faculty who provide these opportunities.



Please know that these types of interactions are a particularly fulfilling part of a college professor's job. Do stay in touch after you have graduated. It brings us all great joy and inspiration to hear of your post- New Paltz adventures and successes. I hope this event brings you fulfillment in presenting the results of your work and inspiration from your fellow students' accomplishments.

Maureen Morrow

RSCA Director and Professor of Biology

Research, Scholarship and Creative Activities Program

Faculty student collaborators may propose projects for support funds through the Summer Undergraduate Research Experience (SURE) and Academic Year Undergraduate Research Experience (AYURE) programs. Both of these programs are competitive and are selected for support by a faculty committee. Students whose work is accepted for presentation at a professional conference are eligible for the RSCA travel awards. Congratulations to all award recipients (see pages 51-54).

SURE

The focus of the SURE program is to encourage intensive student participation in an aspect of faculty research. Each student participant is supported with a stipend for the 8 week summer project and is expected to devote 37.5 hours per week to the project. Faculty mentors direct and provide guidance to participating students as they work on a particular aspect of the faculty's research program. As a goal of this program is to encourage ongoing faculty student collaboration, and thus students are encouraged to continue working on the project during subsequent semesters.

ACADEMIC YEAR FUNDS

This program (AYURE) supports student faculty collaborations on projects that span the Disciplines. Projects that generate new knowledge or works are eligible for support. Funds for supplies and support of the research, scholarship or creative activities are provided through this program.

STUDENT CONFERENCE TRAVEL AWARD

The RSCA program supports students to present the results of the collaborative work at professional conferences.

WE ARE ON FACEBOOK

SUNY New Paltz Undergraduate Research, Scholarship and Creative Activities Group
[https://www.facebook.com/group.php?gid=44644830786#!/pages/SUNY -New-Paltz-Research-Scholarship-and-Creative-Activities/43858825348](https://www.facebook.com/group.php?gid=44644830786#!/pages/SUNY-New-Paltz-Research-Scholarship-and-Creative-Activities/43858825348)

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COUNCIL ON UNDERGRADUATE RESEARCH INSTITUTIONAL MEMBERSHIP

CUR provides support for undergraduate research in a variety of way. All faculty, staff, and students are eligible for free membership in CUR. You membership sends a strong message to lawmakers and provides you with access to the CUR Quarterly Publication and monthly e-newsletters.

Students should consider participating in CUR's Undergraduate Registry. The purpose of this Registry is to facilitate matching between undergraduates and graduate schools seeking high quality students who are well prepared for research.

<http://www.cur.org/ugreg/register.asp>



SUNY NEW PALTZ
IS AN INSTITUTIONAL MEMBER OF THE
COUNCIL ON UNDERGRADUATE RESEARCH

Learning Through Research

Student Documentaries

4:30p- 6:30p
Library M34

The three documentaries will play throughout the SRS Poster Sessions

Serendipity: The Genius Behind Electric Lady

This documentary tells the story of John Storyk, audio studio designer who has worked for some of the top recording artists in the world including Alicia Keyes and Jay-Z.

Congratulations to Alec Cafaro ('16), Catherine Kaczor ('16), Meagan Sullivan ('16), and Alyssa DeRosa ('16) for having been honored with the SUNYWide Film Festival First Place Documentary Award for their film 'Serendipity: The Genius Behind Electric Lady.'

Against All Odds

A documentary about a group of individuals who work against their physical injuries to participate in outdoor sports, by Aaron Brander ('16), Dave Kassirer ('16), Corey Mathes ('16), and Joseph Pallotta ('16).

Tinderland

A young woman decides to use Tinder for its 'intended' application and find love in cyber-space, by Daniel Kolpin ('15) and Nick Covell ('15).

Poster Sessions at-a-glance

Poster Session I 4:30-5:10 pm

Effects of Urbanization and Pedestrian Traffic on Bird Diversity

Derek Decarr (Biology)

Faculty Mentor: Kara Belinsky (Biology)

Bringing Nature Into the Classroom: a Bird-themed Curriculum

Aidan Mabey (Environmental Science) **Nyoka Bigsby** (Biology)

Faculty Mentor: Kara Belinsky (Biology)

An Audio Analysis of Urbanization Using Campus Bird Feeder Network

Troy Ellick (Biology)

Faculty Mentor: Kara Belinsky (Biology)

Challenging Invasion: an investigation of the invasive paper wasp, *Polistes dominulus*, and its native counterpart, *Polistes fuscatus*, in locally disturbed environs.

Maddie-Blair Wright (Biology)

Faculty Mentor: Aaron Haselton (Biology)

Octopamine Pathways of *Polistes dominulus*

Jessica Weeks (Biology)

Faculty Mentor: Aaron Haselton (Biology)

Fluorescence Detection of Xenoestrogens Using HPLC

Abigail Fagan (Chemistry)

Faculty Mentor: Pamela St. John (Chemistry)

Differentiating Cognitive Decline from Normal Aging using EBP

Jessica Sternlicht (Communication Disorders)

Faculty Mentor: Inge Anema (Communication Disorders)

The Kaldor-Verdoorn Law in Explaining the Importance of the U.S. Manufacturing Sector

Nuria Fernandez (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

Factors that Impact Free-Agent Salaries in the MLB

Talal Nweiran (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

Evidence of Employment and Foreign Direct Investment: a Case of the United States

Jose Ignacio Campo Cadenas (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

Dutch Disease: a Case Study of Azerbaijan

Waheed Alabede (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

Climate Awareness Under the Utility Maximization Approach: The Cases of Japan and Indonesia

Emily Vanderpool (Business)

Faculty Mentor: Hamid Azari Rad (Economics)

Household Savings and Social Insurance Retirement Income

Simon Li (Economics/Mathematics)

Faculty Mentor: Simin Mozayeni (Economics)

Problems and Promise: A Preliminary Study on Charter Schools

Jaclyn Greco (Adolescent Education, Mathematics)

Faculty Mentor: Kate McCoy (Education Studies)

Urban Farms in Chongqing: Examining Opportunities and Challenges

Aidan Mabey (Environmental Science)

Faculty Mentors: Salvatore Engel-Dimauro (Geography) Melissa Rock (Geography)

German Environmental Consciousness

Katherine Matus (Sociology)

Faculty Mentor: Vanessa Plumly (Languages, Literatures & Cultures)

The Grotesque and the Uncanny in E.T.A. Hoffmann's The Sandman

Brianna Best (English Literature)

Faculty Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

Turks in Germany: Contemporary Germany through a Turkish Lens

Nicole Cager (International Relations)

Faculty Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

Seductive German Film during the Weimar Period

Elizabeth Chase (Languages, Literatures, and Cultures)

Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

Past Tense Morphology in Heritage and L2 Speakers of Spanish

Ali Matthews (Linguistics)

Faculty Mentor: Oksana Laleko (Linguistics)

Optical Tweezers: How to Get a Good Trap

Chevonne McInnis (Physics)

Faculty Mentor: Catherine Herne (Physics)

Optical Micromanipulation in Beams with Polarization Singularities

Ann O'Brien (Physics)

Mentor: Catherine Herne (Physics)

Calculation of Torque Exerted on Calcite Crystals by Laser Light through Analysis of Angular Forces

Alexander Ostrander (Physics)

Faculty Mentor: Catherine Herne (Physics)

A View From The Bridge: Costume Design
Krista Arena (Theatre Arts)
Faculty Mentor: Andrea Varga (Theatre Arts)

Set Design for Shakespeare's Julius Caesar
Dana Weintraub (Theatre Arts)
Faculty Mentor: Ken Goldstein (Theatre Arts)

Projection Design for Julius Caesar at SUNY New Paltz
Elizabeth Mallison (Theatre Arts)
Faculty Mentor: Ken Goldstein (Theatre Arts)

Poster Session II 5:10-5:50 pm

Evaluation of 3-D Printed Artifacts from CT Scans
Kyra Nolte (Anthropology)
Faculty Mentor: Kenneth Nystrom (Anthropology)

Iron Age Croatia: Reconstruction of Diet
Jessica Mortensen (Anthropology)
Faculty Mentor: Kenneth Nystrom (Anthropology)

Isolation and Identification of an Antifungal Metabolite
Bethany O'Hara (Biology) **Stephanie Hanna** (Biology)
Faculty Mentor: Maureen Morrow (Biology)

Phototoxicity and Antimicrobial Assays of Heracleum Maximum
John Hoffmann (Biochemistry) **Gabrielle Jones** (Chemistry) **Renato Lúcio De Carvalho** (Chemistry) **Isadora Maria Vicente Da Silva** (Chemistry)
Faculty Mentors: Preeti Dhar (Chemistry) Maureen Morrow (Biology)

Regioselective Electrophilic Addition Reactions of Alkenes as Alkenes as Experiments for the Introductory Organic Chemistry Laboratory
Melanie Pereira (Chemistry) **Julia Heim** (Chemistry)
Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Improved Syntheses of Macrocycles Containing both Trans-1,-2 Diaminocyclohexane and 1, 1'-BI-2-Naphthol and Control Compounds
Edward Deramon (Chemistry) **William Rosenkrantz** (Chemistry)
Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Towards Demonstration of Enantioselective Function by Synthetic Macrocycles Containing Trans-1,2-Diaminocyclohexane and 1,1'-BI-2-Naphthol Subunits
Adam Noach (Chemistry)
Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Analytical and Preparative Studies to Enable the Evaluation of Enantioselective Molecular Recognition by Synthetic
Joseph Dunstan (Chemistry)
Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Facile Ring Opening of Cyclic Ethers Using NaBH₄ and I₂

Mackenzie Cummings (Biochemistry)

Faculty Mentors: Frantz Folmer-Anderson (Chemistry) Preeti Dhar (Chemistry)

Does Triggering Students' Interest Make Them Overconfident?

Kyle F. Law (Psychology)

Faculty Mentor: Corwin Senko (Psychology)

Eye Movements in 4-month-olds Viewing Impossible Objects

Julie Planke (Psychobiology)

Faculty Mentor: Sarah Shuwairi (Psychology)

The Impact of Cooperative versus Competitive Board Game Play on Positive Emotion and Vitality

Allison Vaughn (Psychology) **Vania Rolon** (Psychology) **Leah Mancini** (Psychology)

Faculty Mentor: Douglas Maynard (Psychology)

The Allure of Struggle and Failure in Cooperative Board Games

Joanna Herron (Mathematics/Psychology)

Mentor: Doug Maynard (Psychology)

A Path to College Success: Peer Expectation and Life Balance

Carlyne Hazer (Sociology) **Nicole Santa Maria** (Sociology) **Bridget Clark** (Sociology)

Daivon Lloyd (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Past Rejection and Engagement

Aidan Morse (Sociology) **Ferne Hibbins** (Criminology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path To College Success: Does Goal Setting Matter?

Sami Nash (Sociology) **Barbara Alcime** (Psychology) **Arianna Williams** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Electronics Inhibiting Communication

Ashley Capone (Sociology) **Sabrina Soto** (Sociology) **Louis Bozzella** (Sociology)

Mccartney Malak (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Development and Social Skills in College

Kaylee Belden (Sociology) **Maggie Babcock** (Sociology) **Nicole Simonelli** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Emotional Wellbeing and Academic Success

Kayla Pardee (Sociology) **Breanna Hanson** (Sociology) **Matthew Smith** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Responsibility in Work/Academics

Lailaa Cunningham (Sociology) **Alyssa Drury** (Sociology) **Christina Boland** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A Path to College Success: Self-Identity and Resiliency

Caitlin Reardon (Sociology) **Taylor Lesky** (Sociology) **Natalie Bayrami** (Sociology)

Kayleigh Madormo (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

Poster Session III 5:50-6:30 pm

Interaction of BHT with BPA in Planaria

Zachary Thom (Biology) **Chyanne Dieujuste** (Biology)

Faculty Mentor: Spencer Mass (Biology)

When Axolotls Metamorphose: the Kinematics of Salamanders that Shouldn't Walk

Tobin Mathew (Biology) **Amy Glazer** (Biology) **Meredith Eldridge** (Biology)

Jessica Siconolfi (Biology) **Karen Santamaria** (Biology) **Danielle Sperando** (Biology)

Faculty Mentor: Spencer Mass (Biology)

Investigating the Effect of BPA on the Actin Cytoskeleton

Alvin Mathew (Biology) **Christina Johnson** (Biology) **Josh Johnikutty** (Biology)

Faculty Mentor: Spencer Mass (Biology)

Dissolved Oxygen in Lake Minnewaska after the Introduction of Fish

Bobbetta Davis (Biology) **Matthew Farragher** (Environmental Geochemical Science)

Julia Herten (Biology) **Anthony Hollander** (Biology) **Krista Micelli** (Geography)

Brian Wilcove (Biology)

Faculty Mentor: David Richardson (Biology)

The Effect of Acidity and Zooplankton Presence on the Growth of Green Algae

Matt Farragher (EGS) **Bobbetta Davis** (Biology) **Julia Herten** (Biology)

Anthony Hollander (Biology) **Krista Micelli** (Geography) **Brian Wilcove** (Biology)

Faculty Mentor: David Richardson (Biology)

Decreasing Acid Precipitation in the Shawangunk Mountains, New York and the Differential Recovery of Lake Acidity

Brian Wilcove (Biology) **Bobbetta Davis** (Biology) **Matthew Farragher** (Biology)

Julia Herten (Biology) **Anthony Hollander** (Biology) **Krista Micelli** (Biology)

Faculty Mentor: David Richardson (Biology)

Relating AFM Force Mapping to Conventional Force Curve Collection on Bacteria

Catherine Mahoney (Biochemistry) **Alexa Criollo** (Biochemistry)

Faculty Mentor: Megan Ferguson (Chemistry)

Use of Computational Fluid Dynamics to Study Air Infiltration on a Commercial Building

Ariel Pignatelli (Mechanical Engineering)

Faculty Mentors: Kevin Shanley (Engineering)

Heejin Cho (Department of Mechanical Engineering, Mississippi State University)

Groundwater Flow Modeling to Assess the Impact of Groundwater on Stream Bank Erosion in the Stony Clove Creek Watershed, NY

Sarah Sansone and **Sawyer McFadden** (both Environmental Geochemistry)

Faculty Mentor: Shafiul Chowdhry (Geology)

Hydraulic Conductivity of Glacially Derived Sediments in the Stony Clove Creek Watershed, Catskills Mountains

Sarah Sansone and **Sawyer McFadden** (both Environmental Geochemistry)

Faculty Mentor: Shafiul Chowdhry (Environmental Geochemistry)

Restricted Minimal Face Colorings of Solids

Brandee Williams (Mathematics)

Faculty Mentor: Edward Hanson (Mathematics)

Supersymmetric Darboux Transformations and Wronskian

Simon Li (Economics/Mathematics)

Faculty Mentor: Ekaterina Shemyakova (Mathematics)

Dynamic Templates and Networks: from Hardwiring to Temporal Behavior

Ariel Pignatelli (Mechanical Engineering)

Faculty Mentor: Anca Radulescu (Mathematics)

Mean Field Modeling of Neural Population Interactions

Caitlin Kennedy (Mathematics)

Faculty Mentor: Anca Radulescu (Mathematics)

Modeling Synaptic Control of Obsessive Compulsive Behavior

Joanna Herron (Mathematics)

Faculty Mentor: Anca Radulescu (Mathematics)

A Systems Model of Brain Dynamics in Obsessive Compulsive Behavior

Rachel Marra (Physics)

Faculty Mentor: Anca Radulescu (Mathematics)

Sums of Consecutive Polygonal Numbers

Samantha Wyler (Mathematics)

Faculty Mentor: Diego Dominici (Mathematics)

Partner Insurance: Females May Have a Backup Romantic Partner as a Mating Strategy

Nicole Wedberg (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

"You're Dead to Me": The Evolutionary Psychology of Estrangements

Richard Holler (Psychology) **Matthew Chason** (Psychology) **Vania Rolon** (Psychology)

Kian Betancourt (Psychology) **Brittany Mabie** (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

Examining the "Atheists are Jerks" Hypothesis: Are there Really Any Significant Differences between Religious and Non-religious Individuals?

Vania Rolon (Psychology) **Lauren Smith** (Psychology) **Stephanie Padich** (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

Working with your Enemy: The Effect of Competitive/Cooperative Gameplay on Altruistic Tendencies in Video Games

Kian Betancourt (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

What If We Never Cut Ties: Estrangements Influence on Counterfactual Narrative

Brittany Mabie (Psychology) **Jackie Eisenberg** (Psychology) **Katrina Lippolt** (Psychology)

Faculty Mentors: Glenn Geher (Psychology) Tabitha Holmes (Psychology)

Personality Correlates of Creativity

Elizabeth Levy (Psychology) **Kian Betancourt** (Psychology) **Maureen McCarthy** (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

Exploring the Antecedents of Anticipatory Emotions

Robert Arena (Psychology)

Faculty Mentor: Maryalice Citera (Psychology)

Goals Adjustment in Older Persons Maximize Emotional Regulation and Promote Species Survival

Jeffrey Zalta (Psychology)

Faculty Mentor: Jacquelyn Berry (Psychology)

The Effects of Intertrial Priming and Target Certainty on Attentional Capture in Visual Search

Anthony Giorno (Psychology) **Cari Marivelli** (Psychology)

Faculty Mentor: Jacquelyn Berry (Psychology)

Honesty is such a Lonely Word

Joseph Russo (Sociology) **Emily Bonnabeau** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

Analysis of Underlying Variables in the 2015 Graduating Senior Survey

Leah Mancini (Psychology)

Faculty Mentor: Eve Waltermaurer (Sociology)

"Career Readiness" for High School Graduates in Ulster County

Micaela Kayser (Women's, Gender, and Sexuality Studies)

Faculty Mentor: Robin Jacobowitz (The Benjamin Center) Kt Tobin (The Benjamin Center)

Robert Curran (Ulster County School Board Association)

Abstracts

Evaluation of 3-D Printed Artifacts from CT Scans

Kyra Nolte (Anthropology)

Faculty Mentor: Kenneth Nystrom (Anthropology)

Three dimensional scanning and printing is an emerging technology and one that holds great promise for the study of past cultures and peoples. The increasing availability of this technology is having a significant impact on biological anthropology and archeology, particularly as it relates to cultural heritage and data sharing. The focus of this research is on the application of 3D technology in the analysis of intact Peruvian mummy bundles. As many of these bundles will not be opened, the technology offers the opportunity to visualize as well as ‘extract’ material artifacts and biological specimens contained within them. Therefore the goal of this project was to digitally extract and print both organic (e.g., bones, gourds, corn cobs) and inorganic (e.g., metal, textile) objects from several different mummy bundles. The CT scans are from mummy bundles curated at the Museo de Sitio Puruchuco-Arturo Jimenez Borja, which were originally scanned by the Horus Team as part of a project on atherosclerosis. The CT data was imported into the CAD modeling software Rhino and subsequently printed out utilizing two different types of printers (Project 660 3D Printer and a Fortus 400mc 3D printer) as well as different print mediums at the Hudson Valley 3D Design and Manufacturing Lab at the State University of New York at New Paltz. We evaluated which printers and print mediums were best for the reproduction of organic and inorganic objects, and for paleopathological description.

Three-dimensional printing represents the ability to study these objects and share data that otherwise would never be accessible. The printed replicas can be used in cultural anthropological fields, for example in museum preservation efforts, as well as in biological anthropological fields. This project gives us the opportunity to study and make available objects that otherwise would never be, and gives us the ability to evaluate how best to reproduce organic and inorganic materials.

Iron Age Croatia: Reconstruction of Diet

Jessica Mortensen (Anthropology)

Faculty Mentor: Kenneth Nystrom (Anthropology)

Through analysis on bone and teeth samples for carbon and nitrogen stable isotope ratios it is possible to reconstruct diet of individuals dated to the Iron Age period (~400-150 BC) from Nadin, Croatia. Variations in nitrogen isotope ratios exist between marine and terrestrial food sources, and variations in carbon isotope can imply reliance on specific plants, such as maize. Samples are carefully prepared for mass spectrometry isotope analysis through decalcification processes. Extensive developed background literature review on Iron Age diet of Europe, consisting of previously completed archaeological and biochemical research will aid in interpreting and analyzing the isotopic results. Bone and teeth are dynamic living organs that respond to environmental, cultural, and physiological stressors. For example, increased urbanization results in increased population density and therefore exposure and susceptibility to crowd based diseases and pathogens. Additionally, changes in subsistence strategies can be caused by either cultural or environmental factors. After death, the bones and teeth of an individual sustain significant evidence regarding food type consumption during his or her lifetime. The proposed project is one component of a larger archaeological investigation of the site with researchers from the University of Maine and the University of Zadar, Croatia. The depth of the archaeological record at the site of Nadin provides the opportunity to reconstruct the long-term consequences of changes in the cultural (e.g., urbanization) and natural (e.g., global warming/cooling) environments. The overarching goal is the examination of the impact of urbanization on the natural environment, human health, and mobility, topics that resonate across disciplinary boundaries and speaks to current issues facing human society.

Effects of Urbanization and Pedestrian Traffic on Bird Diversity

Derek Decarr (Biology)

Faculty Mentor: Kara Belinsky (Biology)

As more of the natural landscape is modified to accommodate the ever growing human population, the effects of urbanization will be felt by the surrounding fauna. Our study aims to examine how bird species composition at birdfeeders is affected by urbanization. Urbanization here is represented by pedestrian traffic and types of human development at four location types on campus. We measured pedestrian foot traffic at 16 bird feeders scattered across four categories of urbanization: “Campus” feeders represented the most urban areas of campus, “Residential” feeders represented student dormitory areas, “Forest” feeders represented the least urban areas on campus all being on the forest edge, and “Turf” feeders represented areas composed of the sports fields. We counted the numbers of pedestrians crossing transects in front of each feeder during a ten-minute period twice a month at 1:45 PM and 4:00 PM representing a class transition time and a sports practice time respectively. We compared pedestrian numbers at each feeder with observations of birds conducted for ten minutes at each feeder once a week for two months. Initial impressions of data support our hypothesis that “Turf” locations are the least accommodating to birds perhaps because of the lack of canopy or perching locations, although these locations have less pedestrian traffic. We hope that by understanding more about the impact of urbanization in terms of pedestrian traffic and ambient noise on birds, we can learn how to create more bird-friendly campuses and towns.

Bringing Nature Into the Classroom: a Bird-themed Curriculum

Aidan Mabey (Environmental Science) **Nyoka Bigsby** (Biology)

Faculty Mentor: Kara Belinsky (Biology)

Recent studies have shown that children who feel like they have a connection to the natural world which develops at a young age tend to mature into adults who are more conscious about the overall ecological health of the planet and about their particular impact on the ecological health of the planet. More and more academic programs are including lessons which foster this development of a connection to nature in hopes of supporting this growth. With this idea in mind, we developed a bird-themed curriculum which was taught at the SUNY New Paltz Childcare Center. The purpose of this research was to determine whether children between the ages of 2-5 will show an increased interest in the natural world once presented with this bird-themed curriculum. We developed three lessons for each classroom, each exploring a different aspect of birds. These lessons included basic bird identification, adaptations of wings, beaks and feet, and eggs, nests and parental care. Lessons often involved the use of books, crafts, and games. We gave group assessments before and after the presentation of the curriculum in order to determine if the presentation of the curriculum had the desired effect of encouraging the children’s interest in and knowledge of birds as well as of the natural world. The assessment involved asking the class to look at a collage of pictures of natural and human made items as a group and asking them to describe what they see. We hypothesize that each class as a whole will make more bird specific comments, and will pick out and identify more nature related imagery after the presentation of the curriculum than they did beforehand.

An Audio Analysis of Urbanization Using Campus Bird Feeder Network

Troy Ellick (Biology)

Faculty Mentor: Kara Belinsky (Biology)

The effects of urbanization on the world around us are vital to for humans to understand. It is possible that human expansion need not harm the environment, but only if the aspects harming wildlife can be identified and remedied. In an effort to identify components of urbanization that negatively impact bird species diversity, we measured anthropogenic noise and observed bird diversity at a bird feeder network on the SUNY New Paltz campus. This campus bird feeder network contains 16 feeders divided into 4 categories based on the environment immediately around the feeder. Categories represent different levels of urbanization and human presence ranging from the highly dense academic campus to the edge of the forest. The 4 categories are: Central, Turf, Residential, and Forest edge. To determine the cause for observed differences in species composition at each of the feeder categories, we focused on the effects of urban noise. This was accomplished by examining noise levels at each of the feeder categories. We measured maximum noise levels at each bird feeder using 10 minute digital audio recordings taken at each feeder at two times of day (1:45pm, and 4:30) which were predicted to yield maximum noise levels at all feeders from classes changing and sports respectively. We imported the sound files into RAVEN sound analysis software to calculate maximum and average powers (dB) of the noise in each recording. A high average noise level at feeders known to attract a low diversity of native birds and a high abundance of invasive species would demonstrate intolerance by native species to noise associated with human land use. Data gathered thus far indicates the highly urbanized central campus is the loudest category on average, supporting our initial hypothesis.

Challenging Invasion: an investigation of the invasive paper wasp, *Polistes dominulus*, and its native counterpart, *Polistes fuscatus*, in locally disturbed environs.

Maddie-Blair Wright (Biology)

Faculty Mentor: Aaron Haselton (Biology)

The invasive European Paper Wasp, *Polistes dominulus*, has expanded its range across North America since its initial discovery in Massachusetts in the late 1970's. Evidence suggests that this invasive wasp is displacing the native paper wasp, *Polistes fuscatus* throughout much of this range. In this study, we surveyed the populations of both paper wasp species within the greater New Paltz area. Specific attention was given to the prevalence of each species in areas that represented low, medium, and high levels of human disturbance as well as the quality of surrounding vegetation. The purpose of this study was to determine if a correlation exists between *P. dominulus* invasion success and human activities. Our findings support *P. dominulus* prevalence relative to *P. fuscatus* in areas of high disturbance.

Octopamine Pathways of *Polistes dominulus*

Jessica Weeks (Biology)

Faculty Mentor: Aaron Haselton (Biology)

Octopamine is the invertebrate analog to the vertebrate neuromessenger molecule norepinephrine. In insects, octopaminergic neural pathways mediate behavioral and physiological activities that involve nutrient mobilization (e.g. feeding, aggression, and physical exertion). To better understand the importance of octopamine signaling in insects, a detailed understanding of both unique and shared aspects of octopaminergic neuroarchitecture among insects is required. Here we map octopaminergic cells in processes in the adult European paper wasp, *Polistes dominulus*, using immunohistochemical techniques and laser confocal microscopy.

Interaction of BHT with BPA in *Planaria*

Zachary Thom (Biology) **Chyanne Dieujuste** (Biology)

Faculty Mentor: Spencer Mass (Biology)

Bisphenol compounds such as BPA are environmental endocrine disruptors that act as xenoestrogens. BPA is commonly used to make certain types of plastics and epoxy resins that are used in food packaging, thermal printing and a variety of other consumer and industrial products. Prior work in our lab has demonstrated that moderate to high doses of BPA adversely affect regeneration in flatworms. Common antioxidants like Butylated-hydroxytoluene (BHT) that are used as preservatives in foods and cosmetics have been coming under renewed scrutiny as potential endocrine disruptors and carcinogens. In this work, we examine the effects of co-administration of BHT with BPA at doses below the LC50 for BPA. Our preliminary results indicate that the combination is more lethal than either compound alone. BHT may be acting synergistically with BPA.

When Axolotls Metamorphose: the Kinematics of Salamanders that Shouldn't Walk

Tobin Mathew (Biology) **Amy Glazer** (Biology) **Meredith Eldridge** (Biology)

Jessica Siconolfi (Biology) **Karen Santamaria** (Biology) **Danielle Sperando** (Biology)

Faculty Mentor: Spencer Mass (Biology)

Axolotls (*Ambystoma mexicanum*) are neotenic salamanders that do not typically complete metamorphosis and remain aquatic when they reach sexual maturity. However, very rarely, some axolotls may undergo spontaneous metamorphosis. Due to the extremely rare occurrence of metamorphosis, very little is known about the biology of terrestrial axolotls. Our lab happens to have two metamorphosed axolotls. This study uses motion analysis to investigate the kinematics of the terrestrial axolotl gait. Comparisons to the closely related Tiger salamander (*Ambystoma tigrinum*) indicate differences in the kinematics. Because axolotls are well adapted to the aquatic environment, there may be losses or changes in developmental processes relative to other terrestrial ambystomoids that are not apparent phenotypically until metamorphosis. Future studies will examine the neuromuscular anatomy after their natural death to determine whether there are gross anatomical differences between metamorphosed axolotls and Tiger salamanders.

Investigating the Effect of BPA on the Actin Cytoskeleton

Alvin Mathew (Biology) **Christina Johnson** (Biology) **Josh Johnikutty** (Biology)

Faculty Mentor: Spencer Mass (Biology)

The effect of the xenoestrogen bisphenol-A (BPA) on the actin cytoskeleton of regenerating planaria was studied. Previous experiments in our lab have shown that BPA delays and disrupts regeneration and disrupts the microtubule cytoskeleton. This experiment involved exposing transected planaria tails which were regenerating their heads to a 10 μ M BPA solution with appropriate controls (water and DMSO which served as our solvent control). The worms were demucoused, permeabilized, fixed and bleached on day 3 of regeneration. The specimens were stained using fluorescently labeled phalloidin, a fungal toxin which irreversibly binds to filamentous actin. The specimens were imaged using confocal microscopy and the resulting images were analyzed using FIJI, an open source image processing package based on NIH image J. Preliminary results indicate that BPA is disrupting actin organization. This is consistent with our prior studies.

Xenoestrogens such as BPA alter normal regeneration in planaria with a characteristic non-monotonic dose response. Prior work in our lab has demonstrated that alterations to the microtubules also occur with xenoestrogen exposure and we have hypothesized that effects on the tubulin cytoskeleton may be one of the mechanisms that mediate the disruption in regeneration. This work examines the effects of xenoestrogens on the actin cytoskeleton. As with our tubulin work, disruption in macroscale patterning of cytoskeleton is observable in whole mount confocal imaging of worms exposed to BPA. In order to examine the microfilaments at the sub-cellular level, we also adapted several protocols for obtaining individual planarian cells so that we could grow them in culture and examine single cells with confocal microscopy. We also present preliminary results from this in vitro method.

Isolation and Identification of an Antifungal Metabolite

Bethany O'Hara (Biology) **Stephanie Hanna** (Biology)

Faculty Mentor: Maureen Morrow (Biology)

Isaria fumosorosea is a fungus known for its entomopathogenic activity. We have determined our isolate of *Isaria fumosorosea* produces and secretes a metabolite with antifungal properties. The metabolite has been tested on various pathogenic fungi and has shown consistent species specific antifungal activity. We have begun characterizing this unknown metabolite with the goal of isolation and identification. The antifungal activity is quantified through the metabolite's ability to inhibit the growth of fungal spores. Various concentrations of metabolite were added to fungal spores and, using a 96-well plate inhibition assay, the minimal concentration of metabolite needed to effectively stop spore growth was recorded as the Minimal Inhibitory Concentration (MIC) value. One primary goal of this research is to determine the composition of the metabolite (eg. protein or a non-protein). We tested the effects of various factors including high temperatures, exposure to sunlight, exposure to Proteinase K, and size separation via centrifugal filtration on the MIC values. The apparent small size, light sensitivity, heat tolerance, and Proteinase K inactivation indicate that the metabolite may be a peptide. Thin Layer Chromatography (TLC) was performed in an attempt to isolate as well as identify the composition of the metabolite. Further analysis is required before determining a purification protocol.

Dissolved Oxygen in Lake Minnewaska after the Introduction of Fish

Bobbetta Davis (Biology) **Matthew Farragher** (Environmental Geochemical Science) **Julia Herten** (Biology) **Anthony Hollander** (Biology) **Krista Micelli** (Geography) **Brian Wilcove** (Biology)
Faculty Mentor: David Richardson (Biology)

Lake Minnewaska is a historically acidic and fishless lake located in Minnewaska State Park, New York. A popular tourist attraction, Lake Minnewaska has recently experienced an introduction of the piscivorous fish species *Micropterus salmoides*, or Largemouth Bass. The presence of *M. salmoides* has caused a trophic cascade in the lake's ecosystem resulting in increased algal biomass. The main focus of this study was to observe the possible effects the fish population has had on Lake Minnewaska. We made frequent sampling trips to Lake Minnewaska to collect a wide range of physical, biological, and chemical data. The fish population size was estimated using the mark and recapture method via electrofishing. We measured the dissolved oxygen concentration at the deepest point of lake at 1 m intervals to examine the effect of the trophic cascade on the water chemistry. We found that the dissolved oxygen concentration has decreased in the deep water since the introduction of *M. salmoides* in 2012. With fish now in the lake, there is more algal production which generates biomass at the lake surface. The algae sink to the bottom of the lake. During warm months, the dissolved oxygen concentration is lower at the bottom of the lake than the surface. This is mainly due to decomposition of sinking algae, whereas there is more dissolved oxygen at the bottom of the lake during the winter because of cold water's high capacity to hold oxygen.

The Effect of Acidity and Zooplankton Presence on the Growth of Green Algae

Matt Farragher (EGS) **Bobbetta Davis** (Biology) **Julia Herten** (Biology)
Anthony Hollander (Biology) **Krista Micelli** (Geography) **Brian Wilcove** (Biology)
Faculty Mentor: David Richardson (Biology)

The three Shawangunk Ridge "Sky Lakes" in our study have unique zooplankton community structures. Lake Awosting (pH~4.5) has a small but present population of zooplankton (20 zoo/L). Lakes Minnewaska and Mohonk (pH~6 and pH~7) have higher overall zooplankton densities (60 zoo/L). The effects of acidity and zooplankton presence on the concentration of green algae (*Ankistrodesmus*, *Chlorella*, *Scenedesmus*, and *Selenastrum* species) were examined in two experiments. Both experiments had three treatments with filtered (0.7 μ m) Mohonk Lake water adjusted to different acidities of pH ~4.5, 6.0, and 7.0 (n=12 reps per treatment with half as zooplankton-free controls). All 36 250 ml bottles were suspended on a rotating wheel in an incubator at 15°C for approximately 70 hours. Experiment 1 was run on a 12:12 hour light cycle with 4.00 ml algae and four *D. pulex* per bottle. Experiment 2 was run completely in the dark with 0.50 ml algae and three *D. pulex* per bottle.

In experiment 1, chlorophyll a concentrations increased in all experimental and control treatments over time. The difference in chlorophyll a growth rate between experimental and control bottles was 74.4 μ g/L/day, 29.8 μ g/L/day, and 3.0 μ g/L/day for the low, medium, and high pH treatments respectively. This indicates that the presence of *D. pulex* in the experimental bottles influenced the growth rate of algae, and more so at the low pH. This outcome could be due to the high initial algae concentrations and exposure to light. We expect the unprocessed experiment 2 results to show a lower chlorophyll a concentration of the experimental bottles to the controls due to zooplankton grazing, and differences between the three pH treatments.

Decreasing Acid Precipitation in the Shawangunk Mountains, New York and the Differential Recovery of Lake Acidity

Brian Wilcove (Biology) **Bobbetta Davis** (Biology) **Matthew Farragher** (Biology)

Julia Herten (Biology) **Anthony Hollander** (Biology) **Krista Micelli** (Biology)

Faculty Mentor: David Richardson (Biology)

Acidification of freshwater ecosystems from external sources has historically been a problem in northeastern North America due to increased anthropogenic production of sulfur, nitrogen, and acidity in precipitation. Acidification of lakes results in changes in chemistry and a loss of sensitive taxa including fish and macroinvertebrates. The Daniel Smiley Research Center, located on Mohonk Lake within the Shawangunk Ridge in southeast New York, has kept an extensive record of rainfall, precipitation pH, and pH of three nearby lakes: Minnewaska, Mohonk, and Awosting. We hypothesized that the precipitation pH would show an increase over the past 41 years and that this decrease in the acidity of precipitation would be the mechanism driving changes in the acidity of the three lakes. Precipitation pH has been increasing over the past 41 years resulting in less acidic conditions. Most acid precipitation pH observations ranged between 3-4 in 1976, 4-5 in 1994, and 4.5-5.5 in 2013. Mohonk had a slightly increasing rate of 2.71×10^{-3} pH units per year. Awosting had a greater increasing rate of 3.11×10^{-2} pH units per year. Minnewaska had the largest increase with a rate of 7.19×10^{-2} pH units per year. Several mechanistic factors control these differences in rates of change. The underlying bedrock is an erosion resistant quartz-conglomerate with little buffering. Mohonk has been able to remain neutral due to an exposed shale outlier in the lake that buffers the acidic precipitation. Changes in Awosting appear to be closely related to changes in precipitation pH. However, the pH in Minnewaska has been changing at a faster rate than the other two lakes. We hypothesize that this is caused by erosion of shale from walking paths that are along the edges of the lake.

Phototoxicity and Antimicrobial Assays of *Heracleum Maximum*

John Hoffmann (Biochemistry) **Gabrielle Jones** (Chemistry) **Renato Lúcio De Carvalho** (Chemistry)

Isadora Maria Vicente Da Silva (Chemistry)

Faculty Mentors: Preeti Dhar (Chemistry) Maureen Morrow (Biology)

Heracleum maximum (HM), is a plant native to North America and contains a class of compounds called furanocoumarins. The stem and root of this plant are edible and have been used in traditional medicine by Native Americans to prevent and treat several ailments like tuberculosis, influenza and cholera. Systematic screening of extracts obtained from plants of medicinal importance in folklore medicine is still an important strategy in the search for new drugs. Prior research from our lab has shown the ethanolic seed extract of this plant to be toxic towards *Artemia salina* (brine shrimp). Brine shrimp are very sensitive to phototoxic compounds under long-wave UV light. To assess which of the HM extracts are phototoxic but not toxic, we extracted HM seeds with solvents of increasing polarity (hexane, ether, ethyl acetate and ethanol) using soxhlet extraction. A series of brine shrimp bio-assays were conducted to elucidate the potential toxicity/photo-toxicity of these extracts, which correlates with the presence of furanocoumarins. Crude ethanolic and hexane seed extracts were found to be toxic whereas the sequential ether, ethyl acetate and ethanolic extracts were found to be phototoxic but not toxic. Antimicrobial assays were conducted on the hexane, crude aqueous and ethanolic seed extracts of HM using gram-negative *Pseudomonas aeruginosa* and *Escherichia coli* and gram-positive *Staphylococcus aureus* and *Enterococcus faecalis*. None of the above mentioned extracts showed antimicrobial activity.

Fluorescence Detection of Xenoestrogens Using HPLC

Abigail Fagan (Chemistry)

Faculty Mentor: Pamela St. John (Chemistry)

Xenoestrogens are organic compounds that bind to estrogen receptors, and include bisphenol (BPA), butylated hydroxytoluene (BHT), and bisphenol S (BPS). They can be harmful to organisms, considering they are estrogen mimics that can alter the body's own production of estrogen. These compounds can be found in the environment in various concentrations, originating from wastes like cleaning and beauty products, pharmaceuticals, and plastics. High performance liquid chromatography (HPLC) is a commonly used instrumental technique for the detection of bisphenol A, a xenoestrogen, as it absorbs light in the ultraviolet range and fluoresces upon UV excitation. Solutions of varying concentrations of BPA were used to determine the limit of detection of the compound using HPLC and fluorescence detection, as well as to quantitate the amount of BPA absorbed by planaria, a model organism. Preliminary results show that planaria incubated in a 10 μ M BPA solution will absorb approximately 30% of the BPA over a period of ten days compared to control samples. Experiments are underway to measure the extent of BPA absorption as a function of time and future experiments will examine the dose dependence of BPA absorption.

Relating AFM Force Mapping to Conventional Force Curve Collection on Bacteria

Catherine Mahoney (Biochemistry) **Alexa Criollo** (Biochemistry)

Faculty Mentor: Megan Ferguson (Chemistry)

Atomic force microscopy can be used to collect force curves on bacteria, yielding information on cell stiffness and adhesion of cell surface biomolecules that relate to biofilm-forming capacity, cell function, interactions with other bacteria, and virulence. For all AFM work, bacterial cells must first be fixed to a surface, and some cells cannot readily be strongly adhered. Force mapping, in which force curves are collected in a rasterized fashion, is more gentle on the sample because the AFM tip contacts the cell only dozens of times and only in the z-direction, whereas conventional force curve collection requires first imaging the cells by dragging or tapping the AFM tip over the cell surface. Force maps also yield many force curves at different locations on the cell, but this adds a new source of variability. In this study we determined that force maps performed across whole cells yielded smaller and more variable cell spring constants than force maps zoomed in on the center of cells, indicating that when comparing force map and conventional data, points near the center of cells should be compared. Other parameters such as scan rate, effect of different buffer solutions, and different bacteria lines were also investigated.

Regioselective Electrophilic Addition Reactions of Alkenes as Alkenes as Experiments for the Introductory Organic Chemistry Laboratory

Melanie Pereira (Chemistry) **Julia Heim** (Chemistry)

Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Electrophilic addition reactions of alkenes comprise a major topic in introductory Organic Chemistry, and are typically used to present the concept of regioselectivity. The fact that electrophilic reagents add to unsymmetrical alkenes with a common and consistent orientation shows the mechanistic similarity of these reactions, and reinforces fundamental carbocation stability trends. However, published laboratory activities demonstrating this principle are surprisingly scarce. Consequently, we have developed a series of synthetic procedures appropriate for incorporation into the teaching laboratory that illustrates the regioselectivity of alkene addition reactions, and includes other pedagogically valuable features. Specifically, Markovnikov additions to 2-methyl-2-butene by HCl, H₂O, CH₃OH, and HBr have been performed, and an anti-Markovnikov addition of HBr has been achieved with the same substrate. Each procedure can be comfortably carried out in a 3-hour period, and the results are easily interpreted by ¹³C nuclear magnetic resonance spectroscopy. We plan to introduce these activities in a multi-section laboratory course in the fall.

Towards Demonstration of Enantioselective Function by Synthetic Macrocycles Containing Trans-1,2-Diaminocyclohexane and 1,1'-BI-2-Naphthol Subunits

Adam Noach (Chemistry)

Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

We, and others members of our laboratory, have previously prepared a series of three isomeric chiral macrocycles containing both trans-1,2-diaminocyclohexane (DACH) and 1,1'-bi-2-naphthol (BINOL) subunits. By virtue of the DACH subunit, these compounds are Bronsted bases and also have the potential to chelate kinetically labile and catalytically important metal ions, such as Zn(II), Cu(II), or Ni(II). The BINOL group imparts conformational rigidity in addition to fluorescence properties. Accordingly, we envision that these compounds may act as synthetic receptors by preferentially binding one enantiomer of a smaller chiral guest molecule, and/or may hold promise as enantioselective catalysts, optical sensors, or extraction agents. We are currently performing both structural and functional studies to assess these capabilities and will present our progress in these areas.

Analytical and Preparative Studies to Enable the Evaluation of Enantioselective Molecular Recognition by Synthetic

Joseph Dunstan (Chemistry)

Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

Our laboratory has a longstanding interest in the development of synthetic receptor molecules that can differentially bind enantiomeric substrates. In order to better investigate this function, we have initiated efforts to use chiral stationary phase high-performance liquid chromatography (CSP-HPLC) for the measurement of enantiomeric ratios of chemical samples. So far, we have employed two chiral stationary phases: (1) a leucine-Pirkle column, which uses a 2,5-dinitrobenzoyl leucine chiral modifier and which we operate under "normal" phase (ethyl acetate/hexanes as eluents), and (2) a ligand-exchange column, which uses a non-covalently bound penicillamine selector under "reverse" phase (aqueous CuSO₄/alcohols as eluents). We have successfully separated the enantiomers of several compounds, and plan to apply the technique to explore the efficacy of our receptor molecules as enantioselective liquid-liquid extraction agents. Additionally, we have prepared some potential substrates by reducing both enantiomers of phenylglycine to phenylglycinol using NaBH₄/I₂ in THF, and recrystallizing the amino alcohols as the hydrochloride and hydroperchlorate salts.

Facile Ring Opening of Cyclic Ethers Using NaBH₄ and I₂

Mackenzie Cummings (Biochemistry)

Faculty Mentors: Frantz Folmer-Anderson (Chemistry) Preeti Dhar (Chemistry)

Iodo-alcohols are important starting materials in organic synthesis, but are difficult to purchase as most chemical suppliers either have limited supplies or do not carry these compounds. Custom ordering of these compounds jacks up their price. We found a simple and inexpensive way to synthesize these compounds using the sodium borohydride/iodine reagent system. In the presence of sodium borohydride /iodine, cyclic ethers undergo ring opening to give corresponding iodo-alcohols. The cyclic ethers investigated included tetrahydrofuran, 2-methyltetrahydrofuran, and tetrahydropyran. Several experimental conditions were explored for ring opening and the results of these findings will be presented.

Improved Syntheses of Macrocycles Containing both Trans-1,2-Diaminocyclohexane and 1, 1'-BI-2-Naphthol and Control Compounds

Edward Deramon (Chemistry) **William Rosenkrantz** (Chemistry)

Faculty Mentor: Frantz Folmer-Andersen (Chemistry)

In recent years, our laboratory has developed syntheses of several new chiral macrocycles containing both trans-1,2-diaminocyclohexane (DACH) and 1,1'-bi-2-naphthol (BINOL) subunits, with the aim of using these compounds as receptors, sensors, and catalysts. The final step in the preparation of these macrocycles is a reductive amination, in which DACH reacts with a BINOL-containing dialdehyde in 1:1 ratio to encourage cyclization. Precisely achieving this stoichiometry has been difficult because DACH is a deliquescent solid and is volatile under reduced pressure. The crude reaction product is purified by column chromatography on silica gel; but this process has also been challenging because the product is basic and therefore requires methanolic ammonia as co-eluent, which leads to poor separation. We have recently overcome both of these challenges and improved the reaction substantially. We have altered the procedure to substitute neutral DACH with its tartrate salt, which is easily handled. Additionally, we found that pre-treating the silica gel with large quantities of methanolic ammonia allows for the column to be run with a less polar eluent, which improves separation. We have also applied this methodology to some non-macrocyclic control compounds, and are currently exploring the scope and scale of this new procedure.

Differentiating Cognitive Decline from Normal Aging using EBP

Jessica Sternlicht (Communication Disorders)

Faculty Mentor: Inge Anema (Communication Disorders)

Evidence-based practice (EBP) integrates clinician's expertise, best current research evidence and client's needs in clinical decisions. The purpose of the project was to compare, using EBP, an older cognitive screening, the mini mental state examination (MMSE; Folstein et al., 1975) and a newer one, the self-administered gerocognitive examination (SAGE; Scharre et al., 2014). Student clinicians administered both screenings to colleagues in the same course and answered questions about the content and administration. Despite length of testing, high number of subtests and vagueness in scoring, student clinicians would use the SAGE in practice. After completion of testing and reading research demonstrating validity and reliability of both tests, student clinicians still preferred the SAGE over the MMSE. This project demonstrates that experience with available tests and integration of best current evidence enables clinicians to select a cognitive screening best suited for each client.

The Kaldor-Verdoorn Law in Explaining the Importance of the U.S. Manufacturing Sector

Nuria Fernandez (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

The United States post-WWII era has experienced a decline from the contribution of the manufacturing sector to GDP. This has been of great concern throughout the past decades due to the strong correlation amongst the manufacturing sector and the economic growth of a country. The manufacturing sector enjoys characteristics such as increasing returns to scale, labor with multiplier effects, an output that is highly tradable, and research and innovation; the nature of this sector boosts the economic growth of a country. Kaldor's laws have been used to explain the growth of an economy and its relation to the manufacturing sector. This study uses the Kaldor-Verdoorn law, which studies the relationship between labor productivity growth and output productivity growth in the manufacturing sector. A modification to this law has been made, in an open economy there is a close relation between manufacturing output growth and manufacturing export growth, thus, the growth rate of manufacturing exports has been included to apply this law with a contemporary approach. The Kaldor-Verdoorn law that proves 'manufacturing as the engine of growth' has been tested for the United States over the period 1989-2015 using time series data and growth rates. The results suggest a strong correlation between the three variables and is consistent with explaining the importance of the manufacturing sector as a driver of the economic growth of the U.S.

Factors that Impact Free-Agent Salaries in the MLB

Talal Nweiran (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

Player salaries in the MLB are performance based and are negotiated between a player's agent and the team's owner. There is a competitive labor market in the MLB, and the demand for labor is based on the marginal value of the worker. The marginal value is based on the player's production on the field. For this paper, only free-agent salaries will be examined. Free agents have a minimum six years of previous experience in the MLB; this provides a larger body of work that can be examined for each player. Free-agents are also unrestricted, meaning they can negotiate a contract with any team. The freedom of negotiation ignites a bidding war for a player. Teams will bid on free agents, and often times the player will sign with a team that offered the highest salary.

The model that will be used to estimate what factors impact player salaries will be based on previous works and strategies, but not identical. There are some variables that were constant between most papers, such as using run producing statistics for hitter's (RBI, OPS and SLG), and the general statistics for pitchers (wins, strike-outs, and saves). Other than performance, contract length and a player's age significantly impact salaries. Longer contracts yield a higher salary, and a player's age correlates with the length of a contract. Pitchers and hitters are valued using different performance variables, and will be studied individually by having two separate models. Pitcher and hitters have different roles for a team and are valued differently. Average salary will be used as the dependent variable for both models.

Evidence of Employment and Foreign Direct Investment: a Case of the United States

Jose Ignacio Campo Cadenas (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

The goal of this research paper is to study the nature of the correlation between the outward flow of capital and employment in the United States of America in recent years, focusing in the role of both parent firms and their corresponding affiliate companies; from 1997 to 2008. Many economists have considered whether the effect of these processes has harmed or benefited the home economy and none of them has been able to provide with categorical conclusions. This research has focused on Robert E. Lipsey's NBER working paper by following his econometrics methodology; four different models have been created according to both parent companies and their affiliates. The goal of this research was to conduct a similar but updated research, and compare and contrast Lipsey's results, which were based in previous decades (mostly 70s and 80s), with the results obtained by regressing much more recent data, concretely from 1997 to 2008. Surprisingly, very similar conclusions have been drawn despite the observance of different time periods. International trade trends show that foreign direct investment activities have been steadily increasing over the past few years, which should have been represented in the results obtained. However, it seems like parent and affiliate net sales still have an ambiguous effect in home employment. In other words, net sales do not seem to have a significant impact in the aggregate level of hired employees, results that apply for both models, one which utilizes data from across industries and the other which is based on the manufacturing sector. Furthermore, parent net sales seem to slightly benefit home employment while affiliate net sales seem to harm it, but the impact is not quite significant overall.

Dutch Disease: a Case Study of Azerbaijan

Waheed Alabede (Economics)

Faculty Mentor: Hamid Azari Rad (Economics)

The goal of this study is to investigate the Dutch disease economic complications in Azerbaijan. The study covers post independent period of 1995 to 2014 in Azerbaijan. While the first oil well in the world was drilled in Azerbaijan in 1848, independence from Russia was recently obtained in 1992. Hence the focus on 1995 to 2014. Empirical analysis based on a theoretical component is used to study the Dutch disease in Azerbaijan. The model of the Dutch disease by Corden and Neary (1982) is used to conduct the analysis. I investigate the effect of the relationship between the transformation taking place within Azerbaijan economy and the product concentration index of export during a span of 20 years starting from 1995. I used linear log regression model to test for one of the main effect of the Dutch disease, and control for the effect of government spending.

The result shows that based on the estimation of the spending effect and resource movement effect, the impact of the Dutch disease is seen in Azerbaijan. There is an indication that the non-oil sector shrank as the number of export partners shrink. There is also a shrinking of the non-oil sector as export value outstrips import value. Government spending also impacts the shrinking of the non-oil sector. The study did not explain whether it is the agricultural or the manufacturing sector that shrinks.

Climate Awareness Under the Utility Maximization Approach: The Cases of Japan and Indonesia

Emily Vanderpool (Business)

Faculty Mentor: Hamid Azari Rad (Economics)

The conversation about climate change and policy adaptations has progressed rapidly over the past few years. The incidence of natural disasters has devastated millions of people and economies all over the world, and policy controls have been responding to these disasters. This research will analyze consumption of traditional energy resources to see if there is a relationship between adverse weather impacts, specifically natural disasters, and a substitution towards greener alternatives in Japan and Indonesia through the lens of the expected utility hypothesis. This research is rooted in utility-seeking consumption behavior. While economic incentives are certainly primary drivers of consumption, it is necessary to consider that there are other elements that greatly impact the decision-making process. Social interactions with friends and neighbors, personal value judgments, political alignment and so many more factors may be at play in consumption behavior that cannot be captured by nominal values. This research is an attempt to capture how people value information- specifically evidence of climate change.

Household Savings and Social Insurance Retirement Income

Simon Li (Economics/Mathematics)

Faculty Mentor: Simin Mozayeni (Economics)

Feldstein (1974) proposed that social security benefits decrease the household savings in the US. (American Economic Review). We use a generalized linear model to investigate that hypothesis. Our independent variables included: gross replacement rate (post retirement social insurance benefits), per capita income, the long-term interest rate and the Gini Coefficient (a measure of income inequality). We estimate the magnitude of their effects on Household Savings (HS) and evaluate their significance. Our data set includes panels for both the OECD and G7 countries. Our results concluded that social security replacement rate has an insignificant effect on household saving if any.

Problems and Promise: A Preliminary Study on Charter Schools

Jaclyn Greco (Adolescent Education, Mathematics)

Faculty Mentor: Kate McCoy (Education Studies)

In a preliminary study on charter schools, data has been gathered on the race, socioeconomic status, gender, first language, and employment and/or college attendance. Open ended questions created using phenomenology methodology elicit the participants' impressions of their high school experience and its impact on their preparedness for college and/or the work place. Thus far, preliminary interviews have shown that charter schools had a positive impact on educations when the students are strong academically. Charter schools are highly debated because they are run by education management organizations that are not government affiliated, so there is a large question of the impact charter schools have on students' educations. Currently, the influence schools have on their students is measured by standardized tests which have unreliable results that are strongly correlated with race and socioeconomic levels. The debate on charter schools is superficial if we continue to analyze their impact based on tests that have proven to be biased, so this preliminary study will contribute to future education policy regarding the financial support of charter schools. I expect that this preliminary study will yield rich questions for further study that may provide clearer data to illustrate the overall impact of charter schools on their students in terms of their personal backgrounds and generate possible strategies for rethinking public schooling.

Use of Computational Fluid Dynamics to Study Air Infiltration on a Commercial Building

Ariel Pignatelli (Mechanical Engineering)

Faculty Mentors: Kevin Shanley (Engineering)

Heejin Cho (Department of Mechanical Engineering, Mississippi State University)

Buildings in place to service the public need to consume energy in order to maintain a comfortable environment for its workers and patrons. Wind incident on a building plays a significant role in the energy needs for the building in large part, because these types of buildings tend to experience a relatively large number of door opening events throughout the course of a day. Empirical models like that of Mahajan use measured data and correlations to predict energy usage. This work aimed to inform such models by analyzing air infiltration/exfiltration during a single door opening event.

Computational Fluid Dynamics (CFD) was performed to simulate wind incident on a standard low rise commercial restaurant building. In the study conducted by Vatistas, results had shown that swinging doors allowed for a higher air flow rate than sliding doors. Cho showed that high pressure differences cause a decreased ability for swinging doors to function properly. Unlike swinging doors, sliding doors are able to function normally under high pressure differences. They are very accessible, and allow for a high flow of people. This makes them ideal for commercial buildings. Incident angles of 30 degrees to 150 degrees were investigated at wind speeds of 3 to 15 m/s. Simulations showed an identical infiltration/exfiltration trend to that of Mahajan. Infiltration rates were highest as the wind direction was predominantly directed at the door; slight exfiltration of air was observed as the wind direction was predominantly orthogonal to the door's entry path. Flow rates obtained by these simulations were consistently higher than those obtained by the method of Mahajan: this is most likely due to the fact that Mahajan employed a vestibule at the front of the building while this study did not. Future work will study the effects of a vestibule and attempt to maximize its effectiveness in minimizing air infiltration/exfiltration. A structured block mesh was computed, and simulations were performed with OpenFOAM v2.3.1; visualization and data analyses were performed with Paraview v4.1.0.

Groundwater Flow Modeling to Assess the Impact of Groundwater on Stream Bank Erosion in the Stony Clove Creek Watershed, NY

Sarah Sansone and **Sawyer McFadden** (both Environmental Geochemistry)

Faculty Mentor: Shafiul Chowdhry (Geology)

The Stony Clove Creek has been identified as the primary contributor of the suspended sediments that are contaminating the water in the Ashokan Reservoir. The turbidity problem can be attributed to the failing slopes along the banks of the Esopus Creek, and other tributaries. Localized morphology and stream patterns along with high precipitation events created high groundwater (GW) pressure zones along the stream bank. These zones of GW convergences create failures along the banks of the river. These banks consist of glacially derived clay materials, which is the source of the suspended solids. Geologic mapping was used to identify critical areas. A GW flow model has been created for an active failing site along the bank of the Warner creek, a tributary of Stony Clove creek to simulate these groundwater convergence zones. We identified three different layers of glacially derived sediments along these banks. We utilized field surveying data as an input to make these layers in the Visual Modflow software. We ran the model after assigning the appropriate boundary conditions. We have not yet been able to simulate the groundwater zones of convergence as predicted. Additional information will be needed to run the groundwater flow model for better simulation.

Hydraulic Conductivity of Glacially Derived Sediments in the Stony Clove Creek Watershed, Catskills Mountains

Sarah Sansone and **Sawyer McFadden** (both Environmental Geochemistry)

Faculty Mentor: Shafiul Chowdhry (Environmental Geochemistry)

The Ashokan Reservoir is experiencing an increase in turbidity due to the stream bank failure primarily coming from the Stony Clove Creek Watershed. The stream bank material consists of glacially deposited sands and clay-rich sediments. The hydraulic conductivity (K) values of these sediments are vital to understanding the groundwater flow systems along the stream banks which could be used in managing and mitigating slope failures. The purpose of the research is to develop a better and cost effective way to determine the hydraulic conductivity of these sediments in the Catskills area reliably utilizing the grain size distribution method. Samples were collected from the Stony Clove Creek watershed and analyzed using the grain size distribution and constant head permeameter methods (CHP) to determine the hydraulic conductivity of the sediments. Usually, the CHP method is more reliable than the grain size distribution method, but is also more expensive and time consuming. The Hazen Equation is used to determine the hydraulic conductivity from the grain size distribution data. It is an empirical equation that relies on a coefficient (C) that can vary greatly. Hydraulic Conductivity values obtained from both methods were compared with each other and analyzed. The coefficient chosen for the Hazen Equation was adjusted so that the hydraulic conductivities from grain size distribution method matched those of the CHP method. A new method of observational analysis was also developed to estimate the Hazen Equation's coefficient. The approach developed by this study has decreased the uncertainty of determining the hydraulic conductivity values of glacially derived sediments using grain size distribution method in the Stony Clove Creek Watershed.

Urban Farms in Chongqing: Examining Opportunities and Challenges

Aidan Mabey (Environmental Science)

Faculty Mentors: Salvatore Engel-Dimauro (Geography) Melissa Rock (Geography)

Over the past several decades, interest in urban agriculture (UA) has risen markedly, involving a great range of social groups, from self-organized communities to international agencies. Research on UA in China is sparse and largely limited to Shanghai and Beijing. Further, such research has focused on UA potential where officially supported, rather than urban farmers' identities, motivations, and the conditions they face, especially where no official support exists, as in the city of Chongqing. We were interested in looking at the social composition and background of urban farmers in this city as well as determining their specific motivations for farming and the challenges they faced. We conducted fieldwork in China during July of 2015. A series of transect walks were taken to determine site feasibility and then a total of 30 semi-structured interviews of urban farmers were conducted with the help of translators. We also took a crop inventory at each site and conducted soil analysis at 15 of the sites. All of our interviewees were over the age of 30, and 86% of them were over the age of 50. We found that a majority of them were not native to the city of Chongqing and that 63% had had some form of previous farming experience. For most of the farmers, their plots were producing food mainly for subsistence, and only a small percentage sold their crops if they had a surplus. Reasons varied from raising food provisioning to supplementing income and/or recreation. One major challenge farmers in this area face is that of land access. Conditions for UA in Chongqing are precarious. With no government support, farming occurs largely in marginal spaces and informally. Given such social and environmental conditions, urban farmers show great innovative capacity in finding ways to access land and in successfully growing enough food to improve their livelihoods.

German Environmental Consciousness

Katherine Matus (Sociology)

Faculty Mentor: Vanessa Plumly (Languages, Literatures & Cultures)

This project looks at the contradictory environmental policies and practices that are currently in place throughout Germany. Germany uses several different types of renewable energy within the country, but coal plants are still used in order to meet the nation's energy needs. Germany portrays itself as a green state, with minimal fossil fuel use. However in the real world, Germany is not only burning mass amounts of coal but also mining in the country for it, as well. Germany has still been able to create an image that there is little fossil fuel burning, but in reality that is what provides most of the energy to the country. I want to know if the majority of Germans are aware of massive fossil fuel use in their country. In order to learn more about the environmental policies and practices in Germany, I will use reputable newspaper articles and academic peer-reviewed sources for my research. Some have protested the country's coal industry but have not received much media attention. The one thing that the coal industry and protesters have in common is their concern for saving energy. While this is unlikely, both agree that Germany (and other developed nations) need to cut their energy use significantly. Germany has strong political and economic power on a global scale, and they set an example for developing countries throughout the world. If Germany covers up their own fossil fuel use, what does this mean for the war on climate change?

The Grotesque and the Uncanny in E.T.A. Hoffmann's The Sandman

Brianna Best (English Literature)

Faculty Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

Terry Eagleton, in his introduction to the field of psychoanalysis in literature, says: "...since...all human beings must be repressed to some degree, it is possible to speak of the human race, in the words of one of Freud's commentators, as the 'neurotic animal.'" In E.T.A. Hoffmann's *The Sandman*, reality is an unstable concept in the main character's world. In the text, the word "uncanny" appears often and in fact was one main example Freud used in his text, "das Unheimliche," published over a hundred years after *The Sandman*. Looking at the story through a psychoanalytic lens can help one make sense of the events that occur. They have something of the grotesque in them. They are presented to the reader as ambiguous. Is Coppola real? Does he really steal eyes? What is important is that he does—for the main character. I will examine the events of the story as both uncanny and grotesque approaching them through a psychoanalytic lens and drawing on: Freud's idea of the uncanny and how it unnerves the characters and skews reality; Lacan's argument for signifiers acting on the unconscious—as in his paper on Poe's "The Purloined Letter;" and Peter Brooks's arguments for a narrative-based and -focused death drive and repetition compulsion. This will demonstrate how Nathaniel's repression results in what Eagleton says form the basis of psychoanalysis: "anxiety, fear of persecution and the fragmentation of the self."

Turks in Germany: Contemporary Germany through a Turkish Lens

Nicole Cager (International Relations)

Faculty Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

This presentation analyzes the socioeconomic implications of Turkish immigrant treatment in Germany. This presentation gathers information from academic journals and research papers that present how Turkish people are put at a disadvantage in a socioeconomic context. Turkish immigration starts from the early 1960s, as “Gastarbeiter” (guest workers), with Germany under the assumption that they would return back to Turkey after their jobs were done. According to the Berlin Institute for Population and Development, they are the least integrated immigrant group in Germany. Awaiting on government and academic reports, as well as other documentary sources and interviews, this presentation examines the nature of the modern lack of effort from the state of Germany makes for Turkish-German integration. I review how well Turkish-Germans do in Germany society, comparing incomes. This presentation will examine how Turkish immigrants are economically disadvantaged and discriminated against in the job market.

Seductive German Film during the Weimar Period

Elizabeth Chase (Languages, Literatures, and Cultures)

Mentor: Vanessa Plumly (Languages, Literatures, and Cultures)

This poster presentation focuses on the portrayal of women in Weimar cinema (approximately 1918-1933) in Germany. During the Weimar period, German film was extraordinarily prevalent globally, just as Hollywood is in the film industry today. In examining the portrayal of women as “the seductress,” I emphasize how historical contexts influenced this representation. In doing so, I will comment on representative Weimar films such as *The Cabinet of Caligari* (1920), *Nosferatu* (1922), *Metropolis* (1927), *Pandora's Box* (1929), and *The Blue Angel* (1930). Each of these films draws on women as a sexual outlet for societal fears, while also highlighting the equally threatening nature of female seduction. The multiple crises of the Weimar period, from the crisis of masculinity and the rise of feminism to the crisis of capitalism and the revolt of the proletariat, are all represented through and inscribed into the female body. While the image of the female seductress has been ubiquitous throughout history, during the period of Weimar cinema there was an overemphasis on employing her as a means through which to approach historical conditions as well as bring political movements to life.

Past Tense Morphology in Heritage and L2 Speakers of Spanish

Ali Matthews (Linguistics)

Faculty Mentor: Oksana Laleko (Linguistics)

This study examines bilingual Spanish heritage speakers (HSs) and English speaking L2 learners of Spanish on their ability to form the preterit and imperfect tenses in Spanish in oral and written settings. The aspectual difference between the preterit and imperfect is a common problem area in bilinguals (Montrul & Perpinan 2011). The ten participants of the study, five HSs and five L2 learners, were given a wordless picture book. The participants were first asked to first narrate and then write out the story in Spanish.

Two general questions are addressed: How do HSs and L2 learners differ in choosing between the preterit and imperfect tenses of verbs? Is there a clear distinction in choice of aspect between the oral and written depictions of the story within both types of bilingual speakers?

The findings are as follows:

L2 learners outperform HSs in the written portrayal of the story whereas the HSs are more successful in oral depiction. This can be attributed to HSs using Spanish in non-academic settings, while L2 learners have a stronger academic understanding of the language. L2 learners generally learn in a step-by-step process which follows grammatical structure and rules. HSs show stronger ability to correctly use verb tense on the oral task due to their more pragmatic understanding of Spanish (Bowles 2014).

The theoretical implications of these findings in relation to bilingualism and second language acquisition are discussed.

Dynamic Templates and Networks: from Hardwiring to Temporal Behavior

Ariel Pignatelli (Mechanical Engineering)

Faculty Mentor: Anca Radulescu (Mathematics)

Behavior under iterations of quadratic maps has been one of the earliest and most studied topics in discrete dynamics, in both the real and complex case. However, many subtler aspects of discrete dynamics centered around the behavior of logistic maps remain largely unexplored. For example, while iterations of a single map have been exhaustively studied, less effort has been directed towards addressing what happens (1) when the map itself evolves in time according to a symbolic template and (2) when the maps are organized as nodes in a network, and interact in a time-dependent fashion.

We investigate how the traditional theory changes in these cases, illustrating how the hardwired structure (e.g., symbolic template, or respectively adjacency graph) can affect dynamics (behavior of orbits, topology of Julia and Mandelbrot sets). This is of potential interest to a variety of applications (including genetic and neural coding), since (1) investigates how an occasional or a reoccurring error in a replication or learning algorithm may affect the outcome and (2) relates to algorithms of synaptic restructuring and neural dynamics in brain networks.

Sums of Consecutive Polygonal Numbers

Samantha Wyler (Mathematics)

Faculty Mentor: Diego Dominici (Mathematics)

In mathematics, a polygonal number is a number represented as dots or pebbles arranged in the shape of a regular polygon. Fermat proposed that every number is expressible as at most k k -gonal numbers (Fermat's polygonal number theorem). Fermat claimed to have a proof of this result, although this proof has never been found. Jacobi, Lagrange (in 1772), and Euler all proved the square case, and Gauss proved the triangular case in 1796. In 1813, Cauchy proved the proposition in its entirety.

In this presentation I will show what polygonal numbers are and the formula for computing them. I will also show a general formula that I have found involving sums of consecutive polygonal numbers and some examples.

Restricted Minimal Face Colorings of Solids

Brandee Williams (Mathematics)

Faculty Mentor: Edward Hanson (Mathematics)

The aim of this project is to classify minimal face colorings of solids such that no two faces with the same color share an edge or vertex. The more general class of face colorings without the vertex restriction is well understood and has been studied extensively. However, little attention seems to have been paid to face colorings with the vertex restriction. The idea for this project was inspired by the Ball of Whacks® toy, a puzzle based on the 30-sided rhombic triacontahedron whose instruction manual mentions such colorings. To better understand these colorings, we also studied the platonic solids. We will present some strategies for achieving such colorings, as well as methods for counting the number of distinct colorings up to symmetry.

Supersymmetric Darboux Transformations and Wronskian

Simon Li (Economics/Mathematics)

Faculty Mentor: Ekaterina Shemyakova (Mathematics)

In physics, supersymmetry is a special relationship between two classes of particles: bosons and fermions. Supermathematics was formed to model these interactions. In the past decades many classical equations, representing waves and solitons, have been adapted into its super counterparts. For the classical case solving these equations can be accomplished with the help of an important tool called the Darboux transformation. It has many nice properties which mathematicians would like to see in the super case extension. The purpose of my research was to see if we can rewrite the Wronskian determinate representation of differential operators in terms of Berezinians, an analogue of determinants. We were successful and created structure, called the super-Wronskian, which can be used to represent monic nondegenerate differential operators.

Mean Field Modeling of Neural Population Interactions

Caitlin Kennedy (Mathematics)

Faculty Mentor: Anca Radulescu (Mathematics)

Bursting (defined as a period of high firing rate followed by a period of quiescence) has been observed experimentally in groups of neurons in certain brain regions (such as the thalamus, the hippocampus, or the midbrain) during normal or pathological behavior. Biophysical membrane- potential models of single cell bursting involve at least three equations; extending such models to study the network behavior of coupled populations would involve thousands of equations and can be very expensive computationally.

Using a mean field approach, we construct a two-dimensional population model that retains crucial biophysical aspects. We then use this system as a building block for modeling brain regulatory networks. We study synchronization and mechanisms that trigger and stop transitions between tonic and phasic population firing. Our model helps contextualize and understand the factors involved in regulating burst firing, and how it may modulate distinct aspects of behavior.

Modeling Synaptic Control of Obsessive Compulsive Behavior

Joanna Herron (Mathematics)

Faculty Mentor: Anca Radulescu (Mathematics)

The neuronal circuit that controls the execution of stereotyped behaviors involves three major regions of the brain: the cortex, the striatum and the thalamus (the CSTC pathway). Coordinated interplay between activation and inhibition within the CSTC pathway is crucial for proper thought-processing and movement execution. However, there is no clear understanding of basic mechanisms generating hyperactivity in the CSTC pathway – a hallmark feature of patients with increased anxiety and motor activity, like the ones affected by obsessive compulsive disorder. We build a coupled nonlinear model of neural and synaptic activity that captures salient information in the CSTC circuit provided by basic empirical studies in rodents, and by imaging studies in humans. Using methods from non-linear dynamics and bifurcation theory, we study the system's temporal behavior and its dependence on parameters. We verify and interpret current molecular theories on the role of CSTC regulation in the formation of obsession and compulsions.

A Systems Model of Brain Dynamics in Obsessive Compulsive Behavior

Rachel Marra (Physics)

Faculty Mentor: Anca Radulescu (Mathematics)

The neuronal circuit that controls obsessive and compulsive behaviors involves a few major regions of the brain: the cortex, the striatum and the thalamus (which compose the CSTC pathway) as well as other units involved in reward processing (such as the amygdala, and dopamine pathways). Abnormal dynamic behavior in this brain network is a hallmark feature of patients with increased anxiety and motor activity, like the ones affected by OCD. There is currently no clear understanding of the basic mechanisms that generate this behavior.

We attempt to address these questions by means of a computational model of the brain circuitry that governs emotion and motion execution. Mathematically, we will use methods from ordinary differential equations and continuous time dynamical systems. We will use classical analytical methods as well as computational approaches to study phenomena in the phase plane (e.g., behavior of the systems solutions when given certain initial conditions) and in the parameter space (e.g., sensitive dependence of initial conditions, bifurcations).

Partner Insurance: Females May Have a Backup Romantic Partner as a Mating Strategy

Nicole Wedberg (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

The science behind reproductive success is arguably the most prominent area of study within evolutionary psychology. Humans utilize a variety of mating strategies as a result of strategic pluralism (Gangestad & Simpson, 2000) which explains that both men and women have evolved with a plethora of conditional mating strategies that may be more or less beneficial depending on the context and circumstance. Recent research points to the existence of “back-burner relationships” (Dibble & ouin, 2014) as a means to compare and consider potential alternatives in the way of romantic relationships. The current study refers to this phenomenon as partner insurance, and focuses on heterosexual women in committed relationships. A new scale called the Plan B Proclivity scale (PBP) was designed for the current study to measure the degree to which women consider their closest platonic male friend a romantic “backup plan.” Results suggest that 20% of women report having some level of partner insurance, and various variables predict this including being young in age, having low relationship satisfaction with a current partner, having an unrestricted sociosexual orientation, and having a personality composed of relatively high narcissism, Machiavellianism, and psychopathy (i.e. the Dark Triad). Implications for these findings are discussed.

"You're Dead to Me": The Evolutionary Psychology of Estrangements

Richard Holler (Psychology) **Matthew Chason** (Psychology) **Vania Rolon** (Psychology)
Kian Betancourt (Psychology) **Brittany Mabie** (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

This study seeks to learn about the effects of social estrangements on subjective and social well-being. The study defines "social estrangement" as the complete social cut-off, for a number of possible reasons, between two individuals who had previously been close. More specifically, the study defines a "direct estrangement" to a situation in which the two individuals are directly cut-off from one another (e.g., not talking to an ex-partner). An "indirect estrangement" pertains to a situation where an individual is cut-off from another as a result of a direct estrangement (e.g., not talking to an ex-partner's mother). All participants will be asked to respond to items that measure: the amount and type (direct or indirect) of social estrangements, subjective well-being, the Dark Triad, the Big Five personality traits, sociosexual orientation, social connectivity, life history, bipolar tendencies, attachment style, and depressive tendencies. The researchers expect the Dark Triad, sociosexual orientation, bipolar tendencies, and depressive tendencies to be positively correlated with the amount of social estrangements; henceforth, subjective-wellbeing and social connectivity are expected to be negatively correlated with the amount of social estrangements. The researchers are also interested in understanding the relationship between amount of social estrangements and the Big Five personality traits, life history strategy, and attachment style.

Examining the "Atheists are Jerks" Hypothesis: Are there Really Any Significant Differences between Religious and Non-religious Individuals?

Vania Rolon (Psychology) **Lauren Smith** (Psychology) **Stephanie Padich** (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

Atheists are among the most disliked and distrusted groups of people in areas with religious majorities (Gervais, Shariff & Norenzayan, 2011). The purpose of our research is to explore whether there is any real basis for these negative attitudes towards non-religious individuals. Past research has shown that atheists do seem to be slightly less social, less conformist, and more individualistic than religious individuals (Caldwell-Harris, 2012). Our study aims to further investigate personality differences between believers and non-believers. Participants were asked to fill a survey measuring religion and religiosity and several variables such as magical ideation, beliefs in free will and determination, the dark triad, sociosexual orientation, the big five and social desirability. Preliminary analyses using an analysis of covariance (ANCOVA) found significant differences in some of these variables among atheists, agnostics and Christians. Further analyses and results will help shed light on whether non-religious individuals do, in fact, possess different traits than religious individuals.

Working with your Enemy: The Effect of Competitive/Cooperative Gameplay on Altruistic Tendencies in Video Games

Kian Betancourt (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

Many studies across a multitude of fields have demonstrated our propensity to assist someone in our in-group versus someone in our out-group. We even go so far as to act in derogation toward our out-group to protect our identity and affiliation to our in-group. However, no such study has examined the relationship of cooperating with an out-group or competing against an in-group member on altruistic tendencies. The current study seeks to examine whether the in-group/out-group favoritism is overridden by cooperation and competition against an out-group and in-group in a video game, respectively. Participants will be placed in a scenario being told they are playing with (cooperative) or against (competitive) a SUNY New Paltz student (in-group) or a Marist College student (out-group) in a video game called Rocket League. Rocket League can be played either competitively or cooperatively, and involves a soccer game with RC cars. After playing Rocket League, participants will fill out a short questionnaire assessing their likelihood to help their partner/opponent if given the opportunity, as well as how they would rank their own skill at the game versus the player/opponent they played with. This study is currently under development as a thesis prospectus and will soon be submitted to HREB for data collection approval.

What If We Never Cut Ties: Estrangements Influence on Counterfactual Narrative

Brittany Mabie (Psychology) **Jackie Eisenberg** (Psychology) **Katrina Lippolt** (Psychology)

Faculty Mentors: Glenn Geher (Psychology) Tabitha Holmes (Psychology)

The end of a significant relationship is difficult for majority of individuals. Within a society that notarizes close ties with other people, it can be detrimental to the human psyche when ties are cut from another person. Humans are born with innate need to develop and maintain interpersonal relationships. This social interaction is fundamental for the development of an individual's emotional and psychological growth. Because of this, it should come as no surprise that when a significant relationship ends abruptly, the impact can have detrimental ramifications. One particularly abrupt method of ending a close relationship is to completely cut off any and all times between individuals, otherwise known as a complete estrangement. When an individual remains in physical contact but maintains an emotional distant with an individual, this can be referred to as an emotional estrangement. Very little research has investigated the difference between a romantic relationship estrangement and a parental estrangement, why it occurs, how often it is present and what predicts this separation. The purpose of this study is to explore how an individual narrates the cost and benefits of being estranged from a particular relationship.

Personality Correlates of Creativity

Elizabeth Levy (Psychology) **Kian Betancourt** (Psychology) **Maureen McCarthy** (Psychology)

Faculty Mentor: Glenn Geher (Psychology)

This study was initially designed to examine the correlates of relative genetic overlap with the ancient Neanderthal genome. While an analysis based on a preliminary subset of the final data (of about 50 participants) found that the Neanderthal overlap was related to several personality variables (such as being negatively related to level of extraversion), with the final N of more than 200 participants, Neanderthal overlap percentage was not found to be related to these same personality variables. This research also included a novel measure of creativity. Participants were asked to caption an image of an ambiguous situation. Based on this measure, 10 indices of creativity were computed for each participant. We decided to examine the personality correlates of creativity given the data in hand. Generally, we found that rated creativity was predictive of conscientiousness (such that high creativity corresponded to low levels of conscientiousness). Also, high levels of creativity corresponded to high levels of ability-based empathy, extraversion, and other socially adaptive traits.

Exploring the Antecedents of Anticipatory Emotions

Robert Arena (Psychology)

Faculty Mentor: Maryalice Citera (Psychology)

We examined the antecedents of anticipatory emotions. One hundred sixty participants wrote personal narratives about a task that invoked one of four anticipatory emotions (anxiety, dread, enthusiasm, or comfort) and provided their expectations about the tasks, personality variable ratings (Grit, Big 5, and Trait Procrastination), and anticipated outcomes. We measured heart rate before and during the writing of their personal narratives. Anticipatory emotions were measured after they wrote the narrative. The survey and heart rate variability data were analyzed using analysis of variance and multivariate analysis of variance. Personal narratives were also qualitatively coded for tasks, rationale, and feeling. The quantitative analysis demonstrated that ratings of anticipatory emotions reflected the emotional condition the participants were assigned. Trait procrastination was the only personality variable that correlated with anticipatory emotions, in particular with dread. Contrary to our predictions, heart rate variability did not correlate with any of the anticipatory emotions. In terms of antecedents for the anticipatory emotions, self-efficacy positively correlated with comfort scores and negatively correlated with anxiety and dread scores. Procrastination and importance of the task positively correlated with anxiety and dread and negatively with comfort. These results suggest that anticipatory emotions may be linked to both motivation and behavioral outcomes.

Does Triggering Students' Interest Make Them Overconfident?

Kyle F. Law (Psychology)

Faculty Mentor: Corwin Senko (Psychology)

Theoretical Background: Teachers often try to trigger students' interest with jokes, imagery, and anecdotes. The research, however, is mixed about the wisdom of such efforts. Cultivating student interest can harm students by seducing their attention away from important material and toward the catchy tangents. Present Research Purpose: The present study introduces another way that interest-arousing tactics might harm learning: by producing overconfidence in students. We base this assumption on evidence that interest has a strong, positive correlation with self-efficacy for any task. Although self-efficacy increases resilience during difficulty, it can also hamper performance by reducing preparatory efforts (e.g., study time for exams). Thus, interest-triggers may be problematic if they make students overconfident. Methods: We tested this hypothesis in an experiment. Undergraduate participants learned a new "mental math" strategy for solving multiplication problems in a manner that was either interesting (i.e., the tutorial folder used colorful, clever, and humorous imagery) or dull (i.e., the tutorial folder contained no interest-triggers). They then used the strategy on four problem sets. Prior to each set, they reported their interest in the strategy and their expectation for how many problems they would answer correctly on the upcoming set. Comparing students' expectations to their actual performance allows a measure of overconfidence. Expected Results: We expect participants will perform similarly in each condition, but report more interest and overconfidence in the interesting condition. Additionally, this overconfidence effect should gradually subside with each successive problem set, because participants could draw from their task experience instead of interest to anchor their expectations. Such findings would provide the first-ever evidence that interest triggers – so commonly used by well-intentioned teachers – can inflate self-efficacy to harmful levels. Future studies could test if this overconfidence, in turn, reduces students' study time, hindering performance as a result.

Eye Movements in 4-month-olds Viewing Impossible Objects

Julie Planke (Psychobiology)

Faculty Mentor: Sarah Shuwairi (Psychology)

Previous work showed that 4-month-olds respond with longer looking toward pictures of impossible cubes relative to possible ones, which suggests that infants may selectively respond to vertex information that is diagnostic of global coherence. However, it left open the question of whether 4-month-olds would systematically respond with increased visual interest to other geometrically impossible figures. We tested 4-month-olds in an eye-tracking paradigm with novel pairs of possible and impossible objects. We hypothesized that infants would engage in active comparison of the objects, and that impossible figures would evoke increased visual attention in order to ascertain structural integrity. Infants again showed a preference to fixate longer on the impossible cube relative to possible one and produced a greater number of transitional saccades between the central interior juncture and peripheral regions of the impossible cube. In contrast, infants responded with similar dwell times in compared regions for possible and impossible items across the other object pairs. However, there were reliable differences in shifts of gaze between upper and lower halves of the ovals and peg-squares as a function of possibility. There was a high degree of variability in infants' fixation behaviors toward the shapes that may be due to individual differences in selective looking, or, alternatively, this may be a stimulus-dependent response that manifests only with certain shapes.

The Impact of Cooperative versus Competitive Board Game Play on Positive Emotion and Vitality

Allison Vaughn (Psychology) **Vania Rolon** (Psychology) **Leah Mancini** (Psychology)
Faculty Mentor: Douglas Maynard (Psychology)

Our presentation will discuss our current study on the effects of cooperative versus competitive board game play on positive affect, subjective vitality and feelings of relatedness with the other player. Participants are brought into our lab and asked to fill a pretest questionnaire assessing their positive and negative affect, joviality, and subjective vitality. They are then asked to play a simple tabletop game either in a cooperative form or a competitive form for approximately 20 minutes. After the game, participants are asked to complete a post-game questionnaire that measures the same constructs as the pre-game questionnaire, as well as additional measures such as feelings of relatedness with the other player, immersion during the game, enjoyment, competitiveness, past experience with board game play, and some demographic information. By using multi-level modeling we aim to investigate potential differences in the effects of competitive versus cooperative board games and whether these effects depend upon the competitiveness of the person playing the game. We predict that participants will experience an increase in positive affect immediately following the completion of the game in both the cooperative and competitive versions. Additionally, for the competitive version, we anticipate there will be a greater increase in positive affect for participants who identify as competitive in nature as compared to participants who report being non-competitive.

The Allure of Struggle and Failure in Cooperative Board Games

Joanna Herron (Mathematics/Psychology)
Mentor: Doug Maynard (Psychology)

It has been argued that the experience of failure in games is inherently unpleasant, despite being necessary for the overall enjoyment of the game. We argue that cooperative board games are a unique enough experience to warrant a closer look. We took a qualitative, introspective approach to studying failure in several cooperative board games, and have identified several factors which may contribute to whether failure is experienced with enjoyment or pain. We found that much of the enjoyment comes from the social nature of cooperative games. Contributing factors include the camaraderie and amusement tied to facing a defeat as a group, the ability to discuss and analyze gameplay for future attempts, and the opportunity to construct a unique and memorable narrative from experience.

Goals Adjustment in Older Persons Maximize Emotional Regulation and Promote Species Survival

Jeffrey Zalta (Psychology)

Faculty Mentor: Jacquelyn Berry (Psychology)

A study done by Laura L. Carstensen (2006) has suggested that one's perception of time has an essential role on human motivation. Carstensen's Socioemotional Selectivity Theory (SST) suggests that constraints on one's time horizons shift motivational priorities in such a way that the regulation of emotional states becomes more important than other types of goals. This motivational shift occurs with age but also appears in other contexts that limit subjective future time such as moving to a new geographical location, war, or serious illness. Our poster would depict and describe what it means to have experienced a "shift in goals" from maximizing interesting and novel pursuits, presumably the approach taken by younger persons, to maximizing goals that are closer to home and based upon maintaining current personal assets and emotional stability that is noted in older persons. We are also drawing a line between this and evolutionary theory and further suggesting that motivational priorities and goals may change in an effort to promote the survival and flourishing of the species.

The Effects of Intertrial Priming and Target Certainty on Attentional Capture in Visual Search

Anthony Giorno (Psychology) **Cari Marivelli** (Psychology)

Faculty Mentor: Jacquelyn Berry (Psychology)

Experiment 1:

In this visual search task which replicated the procedures of Berry (2013) subjects responded to targets that could either be circle or diamond in shape by indicating the orientation of the line segment embedded within the shape. The remaining items in the display were irrelevant nontarget shapes – hexagons – and subjects' reaction times were measured. We theorized that when a singleton distractor was present in the display (a nontarget shape that was unique in color) subjects' attention would be captured by the singleton resulting in longer reaction times for those displays. Targets shapes were either constant and consistently a circle or a diamond, or they alternated in a predictable sequence between the two shapes. Our results indicate that when the target identity is known and there is no possibility of intertrial priming between targets and nontargets/singleton distractors there is NO SIGNIFICANT EFFECT OF THE SINGLETON DISTRATOR.

Experiment 2:

In this visual search task subjects again responded to targets that could either be circle or diamond among irrelevant nontarget shapes. However, the nontarget shape was not neutral and changed depending on the identity of the target. That is, when the target was a circle the nontarget shapes were diamonds (including the singleton distractor which differed only in color from the other nontargets) and when the target was a diamond the nontarget shapes were circles. Furthermore, when the target shape was variable it alternated predictably between the two shapes on every other trial. Our results indicate that when there is the possibility of intertrial priming there IS A SIGNIFICANT EFFECT OF THE SINGLETON DISTRATOR. However, whether the target is constant or variable does not interact with the present of the singleton suggesting that knowing the target in variable conditions is sufficient to ward off increased likelihood of interference.

Optical Tweezers: How to Get a Good Trap

Chevonne McInnis (Physics)

Faculty Mentor: Catherine Herne (Physics)

We analyze the properties of effective optical traps for absorbing materials. By mathematically and experimentally testing variations of an optical tweezer design, we are able to produce optical trapping of polystyrene spheres. This apparatus will be used to trap and rotate absorbing materials, so we use Laguerre-Gauss modes to transfer angular momentum to the targeted material.

Optical Micromanipulation in Beams with Polarization Singularities

Ann O'Brien (Physics)

Mentor: Catherine Herne (Physics)

We constructed a beam carrying a C-point mode and confirmed the polarization at each transverse position in the mode. Using the theoretical properties of the beam we found the reaction torque on a calcite crystal due to the polarization. The torque results from the change in Spin Angular Momentum as the beam passes through the crystal. Different positions in the beam have different polarizations and therefore carry different amounts of Spin Angular Momentum, resulting in different rotations.

Calculation of Torque Exerted on Calcite Crystals by Laser Light through Analysis of Angular Forces

Alexander Ostrander (Physics)

Faculty Mentor: Catherine Herne (Physics)

This research investigates the torque exerted on microscopic calcite crystals by laser light. Light waves carry angular momentum as a consequence of a particular form of polarization of their electric field, known as circular polarization. A change in the angular momentum of light will occur when light passes through a material with two refractive indices, such as calcite. The material causing the change in the light's angular momentum will itself experience a change in angular momentum in the form of a torque. Such a change in angular momentum can be observed when laser beams exhibiting circular polarization are incident upon microscopic calcite crystals. Our experiments accomplished this by immersing calcite crystals in a liquid solution and, with the aid of a microscope, observing their behavior when placed in the path of a circularly polarized laser beam. It is expected that these crystals will reach a constant rotational frequency when the torque due to the laser is balanced by viscous drag torques due to rotation within the fluid. These drag forces, which resist the rotational motion of the crystals, are a consequence of the viscosity of the fluid and the proximity of adjacent surfaces. Approximations of the torque due to viscous drag forces are calculated using both spherical and cylindrical models, and theoretical calculations of expected rotational frequencies are compared to actual rotation observed in our experiments.

A Path to College Success: Peer Expectation and Life Balance

Carlyne Hazer (Sociology) **Nicole Santa Maria** (Sociology) **Bridget Clark** (Sociology) **Daivon Lloyd** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

Upon entering college, students are exposed to more responsibilities and pressures than they ever may have experienced in their lives before. Dealing with these new challenges often causes an imbalance in the lives of young students. One particular struggle students' face is finding a way to balance peer pressure and their budding social lives with their academic workload. By using the non-probability snowball approach, we used a quantitative online survey to reach out to 200 college freshman-seniors to see how peer pressure effected balance in their college lives. Our data collection consists of an online survey posted on Facebook for friends to complete and share, as well as sending personal emails with our survey to college friends for them to fill out and forward to other college students. By finding what effects instability in a student's life, we hope to contribute to the eradication of such factors and promote students' finding their happy balance.

A Path to College Success: Past Rejection and Engagement

Aidan Morse (Sociology) **Ferne Hibbins** (Criminology)

Faculty Mentor: Eve Waltermaurer (Sociology)

College students have a lot of opportunity to engage, but not all humans have the ability to confidently and proactively engage. Recognizing how important proactive engagement is for college students in both social and academic spheres, our research is focusing on whether or not previous rejection affects a student's willingness to fully engage in their college experience. Through in-depth 30-minute interview with a diverse selection of college students, we explore both prior rejections experienced before entering college and comfort level in a variety of potentially intimidating scenarios such as starting a new romantic relationship, speaking out in class, and joining a club. We feel our research offers an in-depth analysis into how college students past experiences can affect their level of college engagement in the present.

A Path To College Success: Does Goal Setting Matter?

Sami Nash (Sociology) **Barbara Alcime** (Psychology) **Arianna Williams** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

A large part of being in college is being able to set and complete goals in order to be successful undergraduate students. Unfortunately, not all students have the ability to effectively do this. As a way to determine what impact the ability to set and complete goals has on student success, we conducted in-depth interviews with 12 SUNY New Paltz students between 18 and 25 years of age. Each interview is approximately 30 minutes examining goal setting both in social and academic environments. Our research will help to understand the impact that setting and completing goals has on a students' ability to find success both inside and outside of the classroom.

A Path to College Success: Electronics Inhibiting Communication

Ashley Capone (Sociology) **Sabrina Soto** (Sociology) **Louis Bozzella** (Sociology) **Mccartney Malak** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

College students are expected to communicate in many different areas if they expect to be successful in college; some are more capable than others. In this era of high use of electronic communication and use, particularly among college-age individuals, our study explores how this electronic device usage affects face-to-face communication. A non-probability convenience sample of undergraduate SUNY New Paltz students are surveyed regarding the extent of their use of electronic media as well as their level of comfort communicating face-to-face in both social and academic situations. With the expectation that electronic communication will only increase over time, it is important to understand how this type of interactions impact others. We seek to contribute to what is a growing interest among educators.

A Path to College Success: Development and Social Skills in College

Kaylee Belden (Sociology) **Maggie Babcock** (Sociology) **Nicole Simonelli** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

Once a student starts college, social skills are as important as academic skills to ensure a successful undergraduate experience. Some students fare better when tasked with engaging in the new dynamics of undergraduate life, using strong social skills to meet the needs of their undergraduate careers. Students who have poorer social skills may not do well when tasked with working with peers, new group living situations, engaging with professors, and outside networking, all of which are vital to success in college, as well as post-graduate life. Because students with poorer social skills usually don't get as much from their undergraduate experience, our research sought to find which of three factors— family, school and peer interaction— was most influential in developing good social skills. We used a quantitative survey with questions on both childhood and college social interaction. We handed these surveys out at several locations around the SUNY New Paltz campus to 60 students, with representation from each class.

A Path to College Success: Emotional Wellbeing and Academic Success

Kayla Pardee (Sociology) **Breanna Hanson** (Sociology) **Matthew Smith** (Sociology)

Faculty Mentor: Eve Waltermaurer (Sociology)

Emotional well-being has an effect on academic success of an undergraduate student. Emotional well being has previously been linked to higher levels of emotional intelligence, stress management, problem solving skills, and mental health. Because of this, our research is attempting to answer, is emotional well-being in students associated with undergraduate student academic success. Surveying a multi-layered quota sample of students from each of the four academic years, across gender, and racial/ethnic background we examine academic success asking questions related to achievement, course satisfaction and obtainment of learning objectives. Emotional well-being is measured asking questions related to ability to be aware to feeling and their resiliency in difficulty situations. Data is entered and analyzed using SPSS. Results will identify the extent that students emotional well-being influence their academic experience allowing us to better understand potential paths to improving the experience of student who experience emotional challenges.

A Path to College Success: Responsibility in Work/Academics

Lailaa Cunningham (Sociology) **Alyssa Drury** (Sociology) **Christina Boland** (Sociology)
Faculty Mentor: Eve Waltermaurer (Sociology)

It is integral for college students to have financial means in order to have a successful undergraduate career. Knowing the importance of financial means, the problem many college students face today is how they will successfully balance their schoolwork while maintaining a job in order to support themselves. To answer the research question, does a student's sense of responsibility enhance their engagement in work and how does this carry over to their academic success?, we surveyed full-time SUNY New Paltz undergraduate students who were working while attending school. Sense of responsibility measures related to the level students trusted their decisions and held themselves accountable. Academic success examined engagement in classroom and the capacity to apply information across courses. Engagement in work included feeling proud of the work they do and taking extra steps in their work environment. Results will identify patterns in a student's capacity to not only manage work but apply it to being a stronger student.

A Path to College Success: Self-Identity and Resiliency

Caitlin Reardon (Sociology) **Taylor Lesky** (Sociology) **Natalie Bayrami** (Sociology) **Kayleigh Madormo** (Sociology)
Faculty Mentor: Eve Waltermaurer (Sociology)

A student's ability to be resilient is instrumental to getting the most out of their college experience. Our research examines resiliency among college students who identify outside of the gender binary and/or of a non-heterosexual (straight) sexual orientation. Specifically, we seek to answer the question, how does resiliency look among college students who self-identify outside of the gender binary and/or as non-heterosexual and what are the differences in resiliency among those respondents who feel they comfortably fit into a category compared to those who do not. To obtain our sample, we begin with inclusion of four students who self-identify as outside the gender binary and/or as non-heterosexual. Each of these participants are asked to refer a friend who also satisfies our sampling criteria. In-depth interviews of these students examine participant's resiliency in several areas including social, academic, and professional setting resiliency. Responses are coded for prevailing themes applying blind inter-rater assessments whereas disagreements of interpretations are discussed and resolved.

Honesty is such a Lonely Word

Joseph Russo (Sociology) **Emily Bonnabeau** (Sociology)
Faculty Mentor: Eve Waltermaurer (Sociology)

Surveying has proven to be a very useful research methodology, although it does not come without its flaws. The issue of honesty in surveying, particularly among youth and particularly when asking questions about substance use, is often identified as a potential concern but rarely examined empirically. Using a survey of youth risk behaviors conducted among xx youth, we examine the prevalence of dishonesty as well as the implication on reported rates of substance use behaviors. Dishonesty is based on three different measures including reports of an invented drug, excessive reports of serious drug use, and a direct question of student's honesty in the survey. Current alcohol, marijuana, and cocaine use rates are compared in scenarios including and excluding "dishonest" youth. Data is cleaned and analyzed using SPSS.

Analysis of Underlying Variables in the 2015 Graduating Senior Survey

Leah Mancini (Psychology)

Faculty Mentor: Eve Waltermaurer (Sociology)

The Institutional Research department at SUNY New Paltz aims to provide a culture of evidence, and data driven decision making through analysis of the college and its students. Working with institutional research, we have created the research objective of applying factor analysis to the 2015 graduating senior survey to see if there are identified correlates among graduating seniors. Factor analysis is a statistical tool used to examine relationships among variables, to discover variables that were not directly measured. The 2015 graduating senior survey, which was a required survey among graduating seniors, has questions relating to careers after graduation, factors in deciding on a graduate school, and overall satisfaction while at New Paltz. Using SPSS, 90 variables will be analyzed with factor analysis to see how they cluster together, revealing latent variables.

A View From The Bridge: Costume Design

Krista Arena (Theatre Arts)

Faculty Mentor: Andrea Varga (Theatre Arts)

Arthur Miller's masterpiece *A View From the Bridge* confronts the American dream in this dark tale filled with passion, bigotry, envy, and betrayal. SUNY New Paltz's 2016 spring production explored the themes of family relationships, resentment, cultural identity, class affiliation and gender roles. These themes were expressed in the production through design, acting, and directorial choices and in part, through the costume design. Through my research and process I have explored the relationship between clothing decisions and character development. I have investigated the role color plays in creating the world of this play and how it can assist in telling the story. Being a period piece, I also delved into research regarding working class life and immigrant culture in New York City during the 1950s. After my work was rendered on stage and the show closed, I presented my design process and final designs at United States Institute for Theatre Technology Conference in Salt Lake City.

Set Design for Shakespeare's Julius Caesar

Dana Weintraub (Theatre Arts)

Faculty Mentor: Ken Goldstein (Theatre Arts)

Creating the visual vocabulary on stage that supports and propels the emotional journey of the characters and articulates the world of the play is the responsibility of the production's set designer. Put into the context of an all girl's boarding school by the director, I analyzed the action and emotion of Shakespeare's *Julius Caesar* to begin my process. Using photographic imagery I researched the aesthetic dynamics of boarding schools, fascist regimes and fairytale-like forests in order to create a world that perpetuated the story our team was trying to tell. The ideas from my research culminated in sketches and these preliminary ideas were tested in a handmade 1/4" 3D scale model. Mechanical drafting was done for every piece of scenery; this drafting was brought to the technical director who constructed a full scale practical set to these specifications. After going through the technical rehearsal process with lights, sound, costumes and actors, the production and design team had created a cohesive world for *Julius Caesar* and *Marcus Brutus* to live, breathe and of course, eventually, stab each other in the backs.

Projection Design for Julius Caesar at SUNY New Paltz

Elizabeth Mallison (Theatre Arts)

Faculty Mentor: Ken Goldstein (Theatre Arts)

Shakespeare's *Julius Caesar* is a play about power, love, and betrayal. In the fall of 2016, SUNY New Paltz put together a production of this play set in a girls' boarding school, present day. As the projection designer, my job was to enhance the story without distracting from the true meaning of the text. The preliminary research for this show provides both literal and emotional imagery. Throughout the design process, the goal was to make the girls on stage feel small and trapped in their own little world. One solution to making this happen onstage came through "journal entries" projected onto a platform. These entries were quotes of Brutus, etched onstage between scene changes to give the audience both time to take in what they have just seen and to prepare for what was to come. Another major area that projections were used was to create a dream-like forest where Caesar's ghost comes to haunt Brutus. This moment was the most technologically-challenging, as multiple projectors were used to cover the space as well as isolating the ghost's image and syncing her action with not only sound but with the action of the live actor onstage. The outcome of the research and design process was a production of *Julius Caesar* unlike any before; the storytelling goals of the director, designers and actors were reached.

Costume Design – The Great Gatsby

Rachel Reinecker (Theatre Arts)

Faculty Mentor: Andrea Varga

My role in achieving the goal of a successful production of *The Great Gatsby* is to research and design period accurate costumes. Through collaboration with other designers and the director I will be able to achieve a realized design. I will first conduct research of New York in the 1920s using resources of the SUNY New Paltz library, books my mentor lends me, and online databases. Once I come up with a concept that is approved by the director, I will create a series of sketches that will represent what the final costumes will look like. I will fabricate several costumes with the use of the materials in my budget, as well as alter costume pieces that are pulled from SUNY New Paltz costume storage. Throughout the process I will keep a costume bible that will contain my sketches, paper work, etc for the production. The product of my work will be the complete costume design for *The Great Gatsby*. This will consist of costumes that will be historically accurate and will help the actors convey the story.

"Career Readiness" for High School Graduates in Ulster County

Micaela Kayser (Women's, Gender, and Sexuality Studies)

Faculty Mentor: Robin Jacobowitz (The Benjamin Center) Kt Tobin (The Benjamin Center)

Robert Curran (Ulster County School Board Association)

Each year, about 1,700 students graduate from Ulster County's high schools. Of these, about one in every ten have no interest in going to college. What employment options are available to high school degree holders in the Hudson Valley? Through visits to job fairs, in-depth interviews with educators, local business people, and industry and economic development professionals, and review of data from state and federal sources, we learned of career potential for high school graduates in the Hudson Valley. We also examine the meaning of "career readiness," present data on the employment market in Ulster County and the Hudson Valley, and discuss the "skills gap" that employers bemoan. Finally, we highlight some of the exciting initiatives that school districts in Ulster County have developed to respond to the challenge of producing "career-ready" graduates.

Publication Opportunities for Undergraduates

Stanford Undergraduate Research Journal is an annual peer-reviewed publication of research articles written primarily by Stanford undergraduates, but also well-qualified students at other institutions, from all academic fields. <http://surj.stanford.edu>

Pittsburgh Undergraduate Review PUR is a multidisciplinary journal that accepts papers from around the world <http://www.pur.honorscollege.pitt.edu/>

Undergraduate Economic Review aimed at promoting high quality undergraduate research <http://titan.iwu.edu/%7Eecon/uer/index.html>

Undergraduate Journal for Global Business and Community, offers undergraduate students a venue for publishing works <http://jgbc.fiu.edu/index.php?journal=JGBC>

The Dialectics Undergraduate Journal of Leadership, Politics, and Society aim is to promote undergraduate discourse and scholarship and to encourage students to pursue and engage in thoughtful discourses on topics of societal importance. <http://www.abington.psu.edu/dialectics/>

Pi Sigma Alpha Undergraduate Journal of Politics built a reputation for publishing outstanding research by undergraduate students. <http://web.ics.purdue.edu/~psalpha/journal/call.html>

Issues in Political Economy is committed to supporting and encouraging quality undergraduate research in all areas of economics. <http://www.elon.edu/e-web/students/ipe/journalinfo.shtml>

Critique provides a forum for graduate and undergraduate students of politics to express and exchange diverse ideas and to imagine new possibilities for democracy and justice <https://about.illinoisstate.edu/critique/Pages/default.aspx>

Journal of Science and Health at the University of Alabama - JOSHUA includes topics with societal or ethical implications, emerging methodologies or fields, et cetera. <http://www.bama.ua.edu/~joshua/index.htm>

The Penn Bioethics Journal is the nation's premier peer-reviewed undergraduate bioethics journal. <http://bioethicsjournal.com/about/>

BIOS to publish their undergraduate biology work <http://www.tri-beta.org/publish.html>

IMPULSE is the first international, online neuroscience journal for undergraduate publications. <http://impulse.appstate.edu/>

Undergraduate Research Journal for the Human Sciences The URC Undergraduate Research Journal is an annual online national, reviewed journal dedicated to the publication of undergraduate student research. The twofold purpose of the journal is to foster and reward the scholarly efforts of undergraduate human sciences students as well as to provide a valuable learning experience.

http://www.kon.org/CFP/cfp_urjhs.html

National Undergraduate Research Clearinghouse accepts any scientific manuscript. They can be empirical studies or literature reviews. <http://www.webclearinghouse.net/help.php>

American Journal of Undergraduate Research A refereed journal for undergraduate research in the pure and applied sciences, mathematics, engineering, technology, and related areas in education.

<http://www.ajur.uni.edu/>

Catalyst: Rice Undergraduate Science and Engineering Review <http://catalyst.rice.edu/> Submissions for reviews will be accepted from undergraduate students who have performed science or engineering research at any international university or research institution laboratory.

The Undergraduate Psychology Journal (UPJ) at the University of California Los Angeles is a publication which features outstanding research work performed by undergraduate students at UCLA and around the country <http://www.studentgroups.ucla.edu/psychjournal/>

The Yale Review of Undergraduate Research in Psychology is an annual journal that showcases the best and most original research in psychology conducted by undergraduates from around the world.

<http://www.yale.edu/yrurp/>

Psi Chi Journal of Undergraduate Research a national, fully reviewed, quarterly journal dedicated to the publication of undergraduate psychology student research. <http://www.psichi.org>

Journal of Young Investigators JYI's web journal (which is also called JYI) is dedicated to the presentation of undergraduate research in science, mathematics, and engineering.

<http://www.jyi.org/about/>

Morehead Journal of Applicable Mathematics MEJAM accepts papers which are outside the realm of the typical undergraduate curriculum and which emphasize the applicability of mathematics while maintaining significant mathematical interest. <http://www.moreheadstate.edu/mejam/>

Rose-Hulman Undergraduate Mathematics Journal is devoted entirely to papers written by undergraduates on topics related to mathematics

<http://www.rose-hulman.edu/mathjournal/index.php>

Journal of Undergraduate Chemistry Research is a new peer review journal that will be published quarterly with papers of original research performed by undergraduates.

http://www.vmi.edu/show.aspx?tid=36955&id=2214&ekmense=8f9c37c3_156_160_2214_3

The Allegheny Review is one of America's few nationwide literary magazines dedicated exclusively to undergraduate works of poetry, fiction, creative nonfiction, and art

<http://alleghenyreview.wordpress.com/>

The Oswald Review, An International Journal of Undergraduate Research and Criticism in the Discipline of English <http://scholarcommons.sc.edu/tor/>

Young Scholars in Writing: Undergraduate Research Young Scholars in Writing: Undergraduate Research in Writing and Rhetoric, a peer-reviewed journal for undergraduates. <http://cas.umkc.edu/english/publications/youngscholarsinwriting/index3.html>

Undergraduate Journal of Service Learning and Community-Based Research

<http://www.bk.psu.edu/Academics/33679.htm>.

History Matters: An Undergraduate Journal of Historical Research.

<http://www.historymatters.appstate.edu/>

AnthroJournal is an open source journal of outstanding scholarly research papers and reports authored primarily by undergraduate and graduate college students. <http://www.anthrojournal.com/>

Valley Humanities Review <http://www.lvc.edu/vhr>

Discussions, the Undergraduate Research Journal of Case Western Reserve University

Information about *Discussions* can be found at: <http://case.edu/discussions/>

2015 SURE Award Recipients

Jared Flagler, Geography, '16 (Mentor: Huicheng Chien, Geography)
Combining Air Temperature and Streamflow to Estimate Stream Water Temperature

Sarah Sansone, '16 and **Sawyer McFadden** '18, both Environmental Geochemical Science
(Mentor: Shafiul Chowdhury, Geological Sciences)
Groundwater Flow Modeling to Evaluate the Potential for Stream Bank Erosion

Dante Peluso, Electrical Engineering, '16
(Mentor: Reena Dahle, Electrical, Mechanical, & Computer Engineering)
The Use of 3D Printing to Design an Increased Bandwidth Microstrip Patch Antenna

Maddie-Blair Wright, Biology, '16 (Mentor: Aaron Haselton, Biology)
Challenging Invasion: An Investigation of the Success of the Invasive Paper Wasp, *Polistes dominulus*, and Its Native Counterpart, *Polistes fuscatus*, in Different Habitats within the Mohonk Preserve

Ryan Baker-Urzua, Environmental Geochemical Science (Biology), '16 (Mentor: Eric Keeling, Biology) Effects of Prescribed Fire on Ecophysiology, Germination, and Relative Abundance of Chestnut Oak Seedlings at Mohonk Preserve, NY

Paulina Lustgarten, Sociology, '16 (Mentor: Scott LeVine, Geography)
Establishing Preference Structures for Automated Vehicles' Novel Traffic-Operations Regimes

Meredith Eldridge, Biology/Psychology/Creative Writing, '16 (Mentor: Spencer Mass, Biology)
Comparative Kinematics of Gait, Breathing and Feeding in Ambystomoid Salamanders

Josh Johnikutty, Biology (Cell/Molecular)/Chemistry, '17 (Mentor: Spencer Mass, Biology)
Further Investigation of the Actin Cytoskeleton of Regenerating Planaria Exposed to Xenoestrogens

Christian Zoeger Boggiano, Mechanical Engineering (Business), '17 (Mentor: Jared W. Nelson, Electrical, Mechanical, & Computer Engineering)
Use of Digital Image Correlation to Reduce Material Testing Requirements for Carbon Fiber Reinforced Plastic Qualification

Megan Doty, Graphic Design BFA, French BA, '16 (Mentor: Amy Papaelias, Art Department)
Designing Digital Scholarship: Print and Web Design Explorations for a Special Issue of *Visible Language Journal*

Bryan Krebs, Biology Concentration Organismal/Environmental, '15
(Mentor: David C. Richardson, Biology)
Ecological Communities in the Sky Lakes: Zooplankton Diversity, Size and Ingestion Rates

Ari Pignatelli, Mechanical Engineering, '17 (Mentor: Kevin T. Shanley, Electrical, Mechanical, & Computer Engineering)
Numerical Analysis of Air Infiltration/Exfiltration through Automated Sliding Doors on a Commercial Low-Rise Building during a Single Door Opening Event

Olivia Seirup, Mathematics (minor: Deaf Studies), '16 (Mentor: Francis Valiquette, Department of Mathematics)
Two-Dimensional Discrete Euclidean Invariant Variational Problems

Fall 2015 AYURE Award Recipients

Elizabeth Mallinson, Theatre Arts: Design and Technology, '16

(Mentor: Ken Goldstein, Theatre Arts)

Projection Design for William Shakespeare's Julius Caesar

Dana Weintraub, Theatre Arts/English Literature, '16

(Mentor: Ken Goldstein, Theatre Arts)

Scenic Design and Research for William Shakespeare's Julius Caesar

Maddie-Blair Wright, Biology, '16

(Mentor: Aaron Haselton, Biology)

A Comparative Investigation of Thermal Stress Resistance in the Invasive Paper Wasp, *Polistes dominulus*, and its Native Counterpart, *Polistes fuscatus*

Chevonne McInnis, Physics, '16

(Mentor: Catherine Herne, Physics and Astronomy)

Measuring Rotation Rates of Optically Rotating Asymmetrical Absorbing Objects

Ann O'Brien, Physics/Mathematics, '16

(Mentor: Catherine Herne, Physics and Astronomy)

Manipulating Birefringent Crystals with Polarization Singularity Modes

Christina Johnson, Biology, '16, **Alvin Mathew**, Biology, '16

(Mentor: Spencer Mass, Biology)

Developing Planarian Blastemal Cell Culture Techniques for Confocal Imaging

Renato Lúcio de Carvalho, Chemistry, '16, **Isadora Maria Vicente da Silva**, Chemistry, '16,

John Hoffman, Biochemistry, '16

(Mentors: Maureen Morrow, Biology, Preeti Dhar, Chemistry)

Phytochemical and Antimicrobial Evaluation of *Heracleum maximum* Extracts

Bethany O'Hara, Biology, '17

(Mentors: Maureen Morrow, Biology, Frantz Folmer-Andersen, Chemistry)

Purification and Characterization of an Antifungal Metabolite

Jessica Mortensen, Anthropology/Biochemistry, '17

(Mentor: Kenneth Nystrom, Anthropology)

Dietary Reconstruction of the Impact of Romanization at the site of Nadin, Croatia

Rachel Marra, Physics/Astronomy, '16

(Mentor: Anca Radulescu, Mathematics)

A Systems Model of Brain Dynamics in Compulsive Behavior

Ari Pignatelli, Mechanical Engineering, '17

(Mentor: Anca Radulescu, Mathematics)

Dynamic Behavior for Networks of Coupled Complex Logistic Maps

Fall 2015 AYURE Award Recipients continued...

Angela Chen, '15, **Matthew Farragher**, '16, both Environmental Geochemical Science
(Mentor: David Richardson, Biology)
Water Chemistry and Zooplankton Dynamics across the Sky Lakes

Kyle F. Law, Psychology/Economics, '16
(Mentor: Corwin Senko, Psychology)
Math Magic Study

Gabrielle Buck, EGS/Mathematics, '16
(Mentor: Ekaterina Shemyakova, Mathematics)
Orbits of Darboux Transformations of Type I

Simon Li, Economics/Mathematics, '17
(Mentor: Ekaterina Shemyakova, Mathematics)
Darboux Transformations and Berezinians

Abigail Fagan, Chemistry, 17
(Mentor: Pamela St. John, Chemistry)
Fluorescence Detection of Xenoestrogens Using HPLC

Nicholas Golom, Biology, '16
(Mentor: Jason Valens, Biology)
Comparison of Metagenomic Representations of Biofilm Populations with Confocal Visualization using Species-specific Fluorescent DNA Probes

Krista Arena, Theatre Arts, '16
(Mentor: Andrea Varga, Theatre Arts)
Costume Design & Illustrations for *A View from the Bridge* by Arthur Miller: A production of the Theatre Arts Department

Rachel Amelia Rienecker, Theatre Arts, '17
(Mentor: Andrea Varga, Theatre Arts)
Costume Design & Illustrations for *The Great Gatsby*: A Blackbox production of the Theatre Arts Department

Julie Planke, Psychology, '16
(Mentor: Sarah Shuwairi, Psychology)
Developmental Differences in Oculomotor Activity toward Possible and Impossible Figures

David Weddle, History, '16
(Mentor: Heinz Insu Fenkl, English)
Korean History for Babos (Babo is the Korean word for “dummy”)

Spring 2016 AYURE Award Recipients

Joseph Dunstan, Chemistry, '17

(Mentor: Frantz Folmer-Anderson, Chemistry)

Investigation of Molecular Recognition by Novel Macrocycles

Elizabeth Levy, Psychology/Sociology, '17

(Mentor: Glenn Geher, Psychology)

Behavioral Correlates of Neanderthal Genetic Overlap

Tobin Mathew, Biology/Physics, '17

(Mentor: Spencer Mass, Biology)

Comparative Kinematics of Gait in Ambystomoid Salamanders

Jaclyn Greco, Secondary Education, '18

(Mentor: Kate McCoy, Educational Studies)

Understanding the Impact of Charter Schools: A Preliminary Study

Steven Roberts, Contemporary Music Studies, '17

(Mentor: Alex Peh, Music)

Karl Heinz Stockhausen's Tierkreis Arranged for Piano Duet

Student Travel Award Recipients

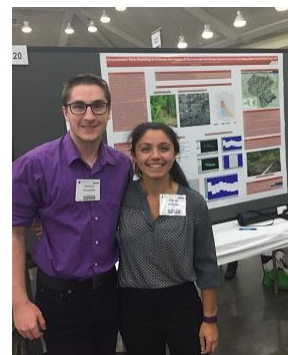
Recipients of the Undergraduate Research Experience Travel Award (URETA)

-conference travel funding provided to students who participated in AYURE or SURE

Michael Facelle, Computer Engineering, '15, traveled to Montreal, Canada, to present his research at the CASI Aeronautics Conference and AGM.

Bryan Krebs, '15, and **Valerie Stanson**, '15, both Biology, traveled to Baltimore, MD, over the summer to present their research at the Ecological Society of America conference.

Ann O'Brien, Physics, '16, traveled to San Jose, CA to present her research at the Frontiers in Optics/Laser Science conference.



Sarah Sansone '16, and **Sawyer McFadden** '18, both EGS, presented the results of their research at the Geological Society of America conference in Baltimore, MD. (Pictured above)

Megan Doty, Graphic Design, '16, presented the results of her research at the Undergraduate Network for Research in the Humanities meeting in Davidson, NC.

Rachel Marra, Astronomy/Physics, '16, presented her research at the Synaptic Days Conference in Durham, NC.

Meredith Eldridge, Biology, '16, traveled to the Society for Integrative & Comparative Biology (SICB) conference in Portland, OR, to present her research.

Krista Arena, Theatre Arts/History, '16, **Rachel Rienecker**, Theatre Arts/Music, '17, **Dana Weintraub**, Theatre Arts/English Literature, '16, and **Elizabeth Mallinson**, Theatre Arts: Design/Tech and Digital Media Production, '16, presented their research/costume design at the United States Institute for Theatre Technology (USITT) Salt Lake City, UT.

Student Travel Award Recipients

Recipients of the Student Travel Award (STA)

-conference travel funding provided to students who have not participated in AYURE or SURE

Sophia Apkarian, Sociology, '15, traveled to NYC to present her research at the Left Forum.

Theresa Orr, Piano/Music Therapy, '17, **Connor Milton**, Music, '15, **Adam Gloc**, Piano/Composition, '15, and **Danielle Strassman**, Piano '15 presented their research at the Anatolia College Music Performance Program in Thessaloniki, Greece.

Caitlin Kennedy '16, and **Joanna Herron** '16, both Mathematics, presented their research at the Joint Mathematics Meeting in Seattle, WA.

Amy Glazer, Biology, '16, traveled to Portland, OR, to present her research at the Society for Integrative & Comparative Biology (SICB) conference.

Jaclyn Swiderski, English/Linguistics, '16, presented the results of her research at the 2016 Sigma Tau Delta Convention in Minneapolis, MN.

Sara Shameem, '15, and **Brooke Banfi**, '15, both Communications, traveled to Baltimore, MD, to present their research at the Eastern Communications Association 6th Annual Undergraduate Scholars Conference.

NCUR

RSCA is proud to announce that seven New Paltz students have been accepted to present the results of their faculty mentored research projects at the 30th anniversary of the **National Conference on Undergraduate Research (NCUR)** held **April 7-9, 2016** at the University of North Carolina Asheville. Acceptance to NCUR is competitive and once again New Paltz students had a 100 percent acceptance rate!



Anthony Albanese, Sociology/Religious Studies, '16
(mentor: Judith Halasz, Sociology)
Opiate or Stimulant: Examining the Role of Religiosity in Social Movements

Jared Flagler, Geography, '16
(mentor: Huicheng Chien, Geography)
Combining Air Temperature and Streamflow to Estimate Stream Water Temperature

Bethany O'Hara, Biology, '17
(mentors: Maureen Morrow, Biology, and Frantz Folmer -Andersen, Chemistry)
Purification and Characterization of an Antifungal Metabolite

Jessica Mortensen, Anthropology/Biochemistry, '17
(mentor: Kenneth Nystrom, Anthropology)
Dietary Reconstruction of the Impact of Romanization at the site of Nadin, Croatia

Rachel Marra, Physics/Astronomy, '16
(mentor: Anca Radulescu, Mathematics)
A Systems Model of Brain Dynamics in Compulsive Behavior

Kyle F. Law, Psychology/Economics, '16
(mentor: Corwin Senko, Psychology)
Math Magic Study

Jaclyn Greco, Secondary Education, '18
(mentor: Kate McCoy, Educational Studies)
Understanding the Impact of Charter Schools: A Preliminary Study

SURC

Seven New Paltz students, listed below, presented the results of their faculty mentored research projects at the second annual **SUNY Undergraduate Research Conference (SURC)** at SUNY Cobleskill. The conference was held on April 15, 2016. <http://blog.cobleskill.edu/SURC/surc.html>



Ari Pignatelli, Mechanical Engineering, '17

(mentor: Anca Radulescu, Mathematics)

Real and Complex Behavior for Networks of Coupled Logistic Maps

Sam Lacovara, Women's, Gender, and Sexuality Studies, '16

(mentor: Jessica Pabón, Women's, Gender, and Sexuality Studies)

Gender as Affect: Feeling the Radical Potential for Queer Survival Beyond Binaries

Julie Planke, Psychology, '16

(mentor: Sarah Shuwairi, Psychology)

Differences in Transitional Saccades in 4-month-olds When Viewing Pairs of Possible and Impossible Objects

Jessica Mortensen, Anthropology/Biochemistry, '17

(mentor: Ken Nystrom, Anthropology)

Iron Age Croatia: Reconstruction of Diet

Coreyann Spence '16, and **Madalena Spero** '16, both Psychology

(mentor: Maryalice Citera, Psychology)

Generational Differences in Emotional Word Use

Elizabeth Wittman, Sociology, '16

(mentor: Roberto Velez-Velez, Sociology)

DREAMed: Undocumented Youth in the Art of the latest Immigration Reform Movement

