

Stonehill Undergraduate Research Experience (SURE) Summer 2013 Awards

Fifty Stonehill College students will work with thirty-two faculty members on a variety of research projects over the coming summer of 2013. The scholars and their faculty mentors are the eighteenth group to work under the Stonehill Undergraduate Research Experience (SURE) program, whose purpose is to provide students with an opportunity to perform significant, publishable research under the guidance of an experienced faculty researcher. The research experience will help to provide students with a competitive advantage in graduate and professional school applications and in post-college employment opportunities, as well as to provide assistance to faculty in research activities.

Jennifer Manganello '15 will work with **Elizabeth Belanger**, Assistant Professor of History, on *A Perfect Nuisance: Working Class Women in Civil War St. Louis*. During the summer of 1861, the population of St. Louis was made up of a mix of north and south Civil War sympathizers. Eventually, the city found itself under martial law imposed by the Union Provost Marshall. By studying complaints made to the Marshall regarding women viewed as nuisances, Manganello and Belanger hope to discover the roles of class, ethnicity, gender and racial characteristics of each neighborhood played in the removal of these women. Manganello will examine the citizen's complaints to the Marshall's office, concentrating on the neighborhood politics of the working class community. They hope to present their research at the New England American Studies Conference or the Popular Culture Association Conference.

Johnny Joseph '14, Kyle Ryan '14, and Alexander Tavares '15 will work with **Bronwyn Bleakley**, Assistant Professor of Biology, on *Mechanisms of Indirect Genetic Effects*. Using inbred strains of guppies (*Poecilia reticulata*), Professor Bleakley's group will describe how genes in both focal individuals and their social partners interact to generate collective behavior in social groups. Ryan and Tavares will test the hypothesis that differential gene expression in response to different social partners affects cooperative antipredator behavior in the guppies, potentially through effects on the lateral line sensitivity and schooling. Joseph will try to determine if hormones serve as a chemical cue influencing the behavior of focal individuals in relation to their social partners and vice versa. All three students are biology majors. The results of this summer's research will build upon the results of previous years' work and will be compiled and submitted for publication. In addition, Joseph and Ryan will serve as SURE leaders during the summer.

Brendan O'Connor '14, Samantha Smith '14 and Joanna Zecha '14 will work with **Linzy Brekke-Aloise**, Associate Professor of History, on *Quantifying Early American Consumer Culture: Wardrobes and Wealth in Three Massachusetts Counties, 1780-1840*. Building upon data collected during the summer of 2010, this summer's SURE project seeks to determine the types of wardrobes Americans were able to accumulate and how they changed over time during the period of 1783-1845. In addition, the group will see if these observations reveal details about the price structures, production, fashion and consumer purchasing power of the time. Smith and O'Connor, both history majors, will categorize objects listed in probate documents to build spreadsheets and databases and create graphs and then analyze this data. Zecha, an economics and sociology major, will analyze the data from an economics and statistical perspective. The students will also draft a conference paper to be submitted at the annual meeting of the American Historical Association and hope to publish it in the *Journal of the Early Republic*.

Andrea Duarte '15 will work with **Kirk Buckman**, Assistant Professor of Political Science, on *Exploring the Quality of Brazil's Democracy*. This project will focus on the economic and political development of Brazil under the 1988 constitution. Focusing on the evolving role of the government's influence on the economy, Duarte and Buckman will develop a portrait of how the national macroeconomic policy may be redefining the nature of Brazilian constitutional democracy. Duarte, a French and German major, will read and summarize both Portuguese and Spanish texts, creating simple graphs of economic data and drafting essays. They hope to present their findings at the annual Northeastern Political Science Association conference.

Elyse Sutkus '14 will work with **Kirk Buckman**, Assistant Professor of Political Science, on *Economic Nationalism and Democratic Populism in Evo Morales's Bolivia*. This project will focus on the economic and political development of Bolivia under Evo Morales, the first democratically indigenous president. Focusing on economic policy changes and their response, Sutkus and Buckman hope to develop a clearer picture of Bolivia and Morales's leadership. Sutkus, a political science major, will read and summarize both English and Spanish texts, creating simple graphs of economic data and drafting essays. They hope to present their findings at the annual Northeastern Political Science Association conference.

Carolyn Moodie '15 will work with **Robert Carver**, Professor of Business Administration, on the 2nd edition of *Practical Data Analysis with JMP*. SAS Press invited Professor Carver to develop a revised edition of his authored text, *Practical Data Analysis with JMP*, an introductory statistics text book built around a highly interactive and visual software package (JMP). Moodie, a finance major, and Carver plan to re-write material and reshoot nearly all dialogues and screen images as necessitated by software changes since the first edition. The new work will also feature an increased emphasis on visualization, new chapters on data management and elements of data mining, chapter videos, integrated review chapters, and additional data sets relevant to business and global data. The ultimate goal of this project is to submit a completed manuscript to SAS Press early in the Fall term of 2013.

Victoria Young '14 will work with **Scott Cohen**, Associate Professor of English, on *Roads Less Traveled: Intersections of Tourism and Commercialism in Britain and Abroad*. The team will examine the writings of two modern British novelists, Jean Rhys and Vita Sackville-West to search for connections between the tourism industry in Europe and beyond, commercialism associated with the colonial power of Britain, and the complicated roles of gender and race in the modern period. Specifically, Young and Cohen will investigate critical reviews of the authors, study primary source materials relating to tourism and colonialism, and place their discoveries into conversation with critical theories about travel, commercialism, and feminism. Young, an English major, will draft a conference paper, submit a critical essay for publication and develop a short interactive eBook for use in the classroom.

Daniel Juergens '14 and **Hannah Michalak '14** will work with **Lincoln Craton**, Associate Professor of Psychology, on *Using Corpus Analysis to Explore Listener's Knowledge of Rock Harmony*. Through this project, the group hopes to advance understanding of harmony perception as it pertains to rock (or popular) music. They will continue research completed during the 2010-2011 academic year. Juergens and Michalak, both psychology majors, will conduct data analysis, interpret results and draft publishable APA style reports. They hope to use this data to publish one or more manuscripts.

Sean Scanlon '14 will work with **Nathaniel DesRosiers**, Assistant Professor of Religious Studies, on *Religious Competition in the Third Century CE: Christians, Jews and the Greco-Roman World*. Scanlon, a history and religious studies major, will assist Professor DesRosiers in editing, referencing, indexing and proofing a collection of articles from a variety of top scholars for publication in a single volume. The articles will explore the manners in which inter- and intra-communal competition and cooperation forged and characterized religious and philosophical groups in Late Antiquity. In addition, Professor DesRosiers and Scanlon will develop resources for a complementary website with links, bibliographic materials, and original writings.

Matthew Attaya '15 will work with **Corey Dolgon**, Professor of Sociology and Director of the Office of Community Based Learning on *Coaching for Change: The Impact of a Non-Profit Organization on Brockton Youth*. The Coaching for Change program in Brockton strives to help urban youth overcome hurdles in education and employment by providing them with learning and workforce skills. Students are attracted to the program through sports and athletic apprenticeships. Through interviews, focus groups, and surveys with Coaching for Change youth and parents, Dolgon and Attaya hope to determine the impact and effectiveness of the program on the youth it targets. Attaya, a sociology major, will spend the summer developing a bibliography on youth development programs and will collect and access data on the youth participants enrolled in the program. All of the research will be presented to Marquis Taylor, the director of the Coaching for Change program and Stonehill alum ('06).

Kasey Berardi '14, **Kristen Devoid '14** and **Melissa Linne '14** will work with **William Ewell** and **Robert Rodgers**, both assistant professors of Political Science, on *The Conservative Advantage in the American System of Government*. It is common to hear arguments that the American political system is biased in favor of one or the other political party. During the summer, the students and faculty will examine the validity of these arguments from many different angles in order to author a book on the topic. Berardi, a political science major, will research the legal regimes for congressional redistricting in the U.S. and will collect and analyze voting data from districts across the nation. Devoid, a sociology and history major will explore the historical circumstances of partisan bias. Linne, a political science major, will research the partisan differences in campaign donations.

Abby Bongaarts '15 and Emma Craig '15 will work with **Brian Glibkowski**, Assistant Professor of Business, on *Executive Storytelling*. The purpose of their research will be to examine if narrative theory can be used to understand the structure of strategy to extend effective strategy development and execution. Bongaarts, a history and German major, will develop a case study focusing on Navy SEALs and the role of context in determining strategic success. Craig, an English major, will focus on the development of business parables based on past research findings. The research extends previous SURE research conducted in 2010 and will be may be submitted to an academic publication or applicable conference.

Laura Dzgoeva '14 will work with **John Golden**, Associate Professor of Foreign Language, on *Translating Alexander Blok*. Dzgoeva, a psychology and sociology major and a native speaker of Russian, and Golden, who has been working on translation theory for several years, plan to translate several of Blok's poems into English. Blok's poems have been translated from Russian before but not always well and with glaring omissions. Therefore, the duo also plans to improve upon these previous translations, as well as provide first time translation for other poems. This includes sections of Blok's monumental work "Retribution." The outcome of their project will most likely be an inclusion in one of the online sites devoted to translations of Russian poetry. In addition, Dzgoeva will serve as SURE leader during the summer.

Carolyn Meklenburg '14 will work with **Sarah Gracombe**, Associate Professor of English, on *Reimagining the Book of Ruth 1800-1930*. By researching nineteenth-century Anglo-American novels, poems, stories, and religious commentaries depicting the Biblical figure of Ruth, Meklenburg, an English major, and Gracombe will investigate the diverse ways this figure has been reinterpreted. In particular, they will focus on why Ruth was so often used to explore ideas of conversion, assimilation, and national belonging in texts by and about Anglo-Jews. With Meklenburg's assistance, Gracombe hopes to write an article about their findings that will expand on her past work on the intersections of Victorian Englishness and Jewishness.

Jillian Bouchard '15, Alexa Caruso '15, and Stephen Leonard '14 will work with **Rachel Hirst**, Assistant Professor of Biology, on the detection, sequence analysis and antibiotic sensitivity of *Methylobacterium* species found in association with the fungus *Armillaria gallica*. This summer's group will build upon previous research conducted on the fungus. Last summer's SURE group was able to provide strong support that there is an association between the fungus and a bacteria called *Methylobacterium*. However, the method for visualizing the bacteria inside the fungus has proven somewhat problematic requiring the use of fluorescently labeled probes to target specific gene sequences. Caruso will be tasked with researching the synthesis of the probes and hybridization parameters. Bouchard will assist with preparing the bacterial genome for whole-genome sequencing and will be responsible for analyzing the data once the sequencing is complete. Leonard will determine the susceptibility of the bacteria to a number of antibiotics and then try to cure the fungal culture with appropriate antibiotic. The three biology majors hope to present their findings at the 2014 Eastern New England Biological Conference and to publish their research in a peer-reviewed journal.

Cara Seward '15, Anna Tallmadge '15 and Maggie Vella '14 will work with **Magdalena James-Pederson**, Associate Professor of Biology and Biochemistry, on learning more about essential genes in *Armillaria gallica*, a saprophytic fungus found in temperate forests. Seward, a biochemistry major, will measure the effect of benzyl alcohol and manganese ions on the gene expression of manganese peroxidase, a major wood-degrading enzymes secreted by the fungus. Vella, a biology major, will perform sequence analysis of manganese peroxidase genes and will determine if there are significant differences in the expression of the various members of this gene family. Tallmadge, a biology major, will assist in determining if the *Methylobacteria* infecting *A. gallica* carries plasmids, and if present, she will analyze their DNA sequence. The group hopes to present their findings at the 2014 Eastern New England Biological Conference and submit them for publication in a peer-reviewed journal.

Andrew Norkiewicz '14 will work with **John Lanci**, Professor of Religious Studies, on *EcoSpirituality: A Reader*. Lanci will be teaching a new Everglades Learning Community course, "EcoSpirituality", during the Fall 2013 semester. Together, Lanci and Norkiewicz, an English major, will create a reader to be used in this class. This reader will approach environmental studies from a religious and scientific perspective. By piloting this reader in the fall, they hope to involve the class in completing and revising the reader. Ultimately, the final version will be made available for use in other courses and may potentially be published.

Nisha Khubchandani '16 and **Ryan Morrison '15** will work with **Pamela Lombardi**, Assistant Professor of Chemistry on *Enantioselective Metal-Catalyzed Allylic Oxidations Using Novel Peptide and NHC Ligands*. Molecules are said to be chiral if they have a non-superimposable image. Reactions to produce these molecules often result in two mirror images, or enantiomers, which can be problematic if the biological activity of one is different the other. Therefore, producing one enantiomer is the preferred objective. This summer, the group will seek to improve the reactivity and enantioselectivity of allylic oxidation, or the synthesis of chiral allylic alcohols. Khubchandani and Morrison, both chemistry majors, will improve their organic chemistry techniques and lab skills while understanding the effects of these new ligands while improving their selectivity and reactivity.

Angela Moskawa '14 will work with **Juan Carlos Martin**, Associate Professor of Foreign Languages, on *Identity Crisis: Portrayals of the Posthuman in Spanish Narrative and Film*. This project strives to study the concept of posthumanity in Spanish narrative and film, focusing primarily on literary pieces and cinematic works written and produced during the past two decades. Apart from researching theories regarding the posthuman condition, Moskwa, a Spanish and English major, will examine medical journals dealing with cutting edge prosthetics to explore hybridity and its impact on challenging views of humanity. They will present their findings at the Carolina Conference on Romance Languages and collaborate on an article for *Hispanofila*.

Emily O'Connell '14 will work with **Wanjiru Mbure**, Assistant Professor of Communication, on *Babysitters Online: An Exploration of Attitudes, Uses and Gratifications of Mommy Blogs among College Students*. O'Connell, a communication major, and Mbure will focus on exploring attitudes, patterns of use, and gratifications from mommy blogs among college student babysitters. A mommy blogger is defined as a woman whose blog content is predominantly about her family. The research conducted during the summer of 2013 will dive deeper into how college students use mommy blogs and explore how cultural expectations of motherhood shape attitudes and use of these blogs. The immediate outcome of the project is two research papers. One will be submitted to the journal *New Media and Society* for publication consideration and the other will be submitted for presentation at the 2014 Eastern Communication Association (ECA) conference in Providence, RI.

Gabby Hill '15 will work with **John McCoy**, Professor of Psychology and Neuroscience, on *Basal Forebrain Regulation of Cortical Arousal and Cortical Gamma Band Oscillations*. Hill, a neuroscience major, will work on a research project examining the electrical activity of single subcortical and cortical neurons during sleep, wakefulness and the alert state associated with enhanced cognitive performance. Her work will help determine how excitation or inhibition of specific subcortical neurons alters cortical activity in normal conditions, and will also model how alterations in the activity of these subcortical neurons is associated with sleep disorders and other disorders of cortical function, such as schizophrenia. The end result of this research will be presented at the SURE Poster Conference and the New England Undergraduate Research on Neuroscience (NEURON) conference.

Kathryn Smid '14 will work with **John McCoy**, Professor of Psychology and Neuroscience, on *Auditory Hallucinations and Schizophrenia*. The subjects of this research are schizophrenics with a history of auditory hallucinations along with 20 control patients matched on all relevant demographic variables (age, sex, parental, and socioeconomic status). Smid, a neuroscience major, and McCoy will monitor both event related potentials and neuropsychological tests to assess the cognitive ability to process self and other voices. The resulting work will be presented as a poster at the New England Undergraduate Research on Neuroscience (NEURON) conference.

Paige Wood '15 will work with **John McCoy**, Professor of Psychology and Neuroscience, on *Modeling Schizophrenia in Mice Using Viral Vector Mediated Cell Specific Knockdown of Glutamic Acid Decarboxylase*. Postmortem findings in the brains of schizophrenia patients indicate a reduction of glutamic acid decarboxylase (GAD67), an enzyme that synthesizes gamma-aminobutyric acid (GABA), a major inhibitory neurotransmitter in the brain. Wood, a neuroscience major, will use RNA interference as well as Cre-Lox combination to mimic changes observed in the cerebral cortex of schizophrenic patients. The resulting work will be presented as a poster at the New England Undergraduate Research on Neuroscience (NEURON) conference.

Lauren Mahncke '14 will work with **Edward McGushin**, Associate Professor of Philosophy, on *Deconstruction and the Courage of the Truth*. The team's research will explore the consequences of a dispute between two of the twentieth century's most influential philosophers: Jacques Derrida and Michel Foucault. The heated exchange between Derrida and Foucault is focused on the nature of language, the relationship between theory and history, and the question of meaning. Mahncke will review the secondary literature on their dispute – this will include providing written reports on selected key works. She will also play an active role in advancing the research by serving as a critical dialogue partner to McGushin with the aim of helping to hone arguments and ideas. The team will work on two papers dealing with this dispute. One will be presented at a symposium in the fall sponsored by the Philosophy Department at Boston College. The other will be submitted for inclusion at the annual meeting of the Society of Phenomenology and Existential Philosophy.

Paul Fazio '14 will work with **Sean Mulholland**, Associate Professor of Economics, on *Private Unions, Public Unions, and Income Inequality*. Income inequality at the household level has increased over the past few decades due to a variety of factors. In this project, Fazio and Mulholland will seek to determine whether the decline in private union membership or the growth in public union membership played a greater role. Fazio, an economics major, will gather and analyze annual data on private and public union membership and changes in collective bargaining rights at the state level. The team hopes to present their findings at the Eastern Economic Association or the Association of Private Enterprise Education Meetings. They plan to submit their findings to an economic journal.

Amisha Divadkar '15 will work with **Monique Myers**, Associate Professor of Communication, on *A Cross Cultural Comparison of the Roles and Status of Women and Girls in India and China*. Their research will aim to compare and contrast the troubling and crippling customs, practices and norms that serve to marginalize women's roles and status in the two most populace countries today, India and China. Through extensive literary research, Divadkar, a communication major, hopes to uncover, critique and raise awareness about the oppression and abuse of women and girls worldwide. The results of this research project will be presented at a professional conference in the 2013-2014 academic year as well as potential publication to a scholarly journal.

Philip Gasbarro '14 will work with **Brendan O'Sullivan**, Associate Professor of Philosophy, on *Science vs. the Soul: Can the Mind Fit into the Natural World?* According to the philosophical theory of compatibilism, humans are agents who act on the basis of beliefs and desires as well as biological entities whose actions are caused physiological states. During this summer, Gasbarro, a philosophy major, and O'Sullivan will assess the work of John Heil, a known compatibilist, and speak to its viability. They will each draft papers on the subject and will submit them to the Northern New England Philosophy Society for consideration for its annual conference.

Danielle Garceau '15 will work with **Irvin Pan**, Assistant Professor of Biology, on the *Identification and Characterization of Cold-Tolerant Crop Plants for Four-Season Harvesting*. Historically, farmers in cold weather climates have utilized a range of techniques to allow them to grow and harvest fruit and vegetables year round, even in the coldest months of the winter. Garceau, a biology major, will use some of these methods to grow cold-tolerant crops, study the genetics of these plants, and develop ways of measuring the crops' productivity. Their goal is to identify crops and growing techniques that will help extend the growing period for the Farm at Stonehill. They also plan to submit a grant proposal to the American Society of Plant Biologists Education Foundation and present their findings at the Eastern New England Biological Conference.

Jane Farrell '14 and **Sarah Pearson '14** will work with **Christopher Poirier**, Associate Professor of Psychology, on *The Effects of Social Categorization and Motivation on the Own-Age Bias in Face Recognition Memory*. In his previous research and during his participation in past SURE programs, Poirier has found support for the hypothesis that people are better able to recognize faces of people their own age. During this summer, the research group will test how other variables may affect recognition. Farrell and Pearson, both psychology majors, will design experiments that will determine if social categorization and motivation affect people's ability to recognize faces. They hope to prepare submissions for a conference.

Melissa Drury '15, Hannah Fitch '15 and Taylor Williams '15 will work with **Cheryl Schnitzer**, Associate Professor of Chemistry, on *Artificial Photosynthesis*. This research will focus on the light harvesting antenna complex (LH2) system of photosynthesis and the dynamics of energy transfer among components of the complex. To do this, they will probe the complex and control the process using a laser light. Fitch, a chemical engineering major, and Williams, a biochemistry major, and Drury, a mechanical engineering major, will operate the laser system and analyze the data extracted. The team hopes to present their work at Frontiers in Optics/Laser Science or the Division of Atomic, Molecular and Optical Physics.

Myron Inglis '14 will work with Professor **Jennifer Swanson** of the Business Administration Department on *An Exploration of the Relationship between Microfinance and Government Policies*. Through their research, they will attempt to determine what role the government plays in supporting microfinance. They will explore this relationship by creating a theoretical model detailing the relationship between macroeconomic government policies and microfinance lending and will apply it to the MicroLoan Foundation and its operations in Malawi. Inglis, an international business and economics major, will assist in every step of the research and will co-author an article for the Northeast Decision Sciences Institute annual conference, and will be submitted for publication in *the International Leadership Journal* or the *Journal of Microfinance*.

Allyson MacInnis '15 will work with **Leon Tilley**, Associate Professor of Chemistry will work on *Strained Ring Systems from Electron-Withdrawing Promoted Silyl Bridging: Routes to Tetrahedranes and Medicinally Important Cyclopropanes*. The research team will build upon previous findings toward their ultimate goal, which is the synthesis of tetrahedrane. During past research, it was discovered that CF₃-cyclopropanes could be synthesized and produced. The CF₃ cyclopropyl moiety is important in many pharmaceuticals. During this summer, the group will further explore this important reaction while continuing to research the preparation of tetrahedrane. MacInnis, a chemistry major, will improve her laboratory techniques and knowledge of instrumentation. She will also be responsible for the conduction of synthetic organic reactions, performing kinetic measurements and studying the products of solvolysis reactions. The group hopes to present their findings at the American Chemical Society national meeting and publish them in a chemical journal.

Brendan Monahan '15 will work with **James Wadsworth**, Associate Professor of History on *A Circle of Hands: A Cross-Cultural Trade in America before the European Invasion*. The research will focus on the hypothesis that the indigenous populations of the Americas constructed a functioning and viable hemispheric economic system that experienced alternating periods of intense contact and fragmentation with the rise and fall of political, cultural and economic centers. *A Circle of Hands* challenges long standing Eurocentric views of pre-contact America by placing Native Americans in the center of their own historical and economic world seeking to understand their patterns of cross-cultural exchange on their own terms. Because the research for this study is ample, Monahan, a history major, will focus on a smaller piece of the study during this summer. Monahan will examine the ceremonies of exchange upon which trade was based. A paper detailing their research will be written and presented at the New England Historical Association bi-annual conference.

Kelli Brodbeck '14 and Christopher Wetzel, Associate Professor of Sociology, will work on *Campo Culture: Power, Legitimacy, and Identity Construction among the Stonehill College Police*. The project builds on previous research that Brodbeck, a sociology major, conducted during the Spring 2012 semester. By conducting field research and interviews with the Stonehill College Police department and police chiefs from nearby college campuses, Wetzel and Brodbeck will analyze how officers develop their professional identities. Their work will play an important role in Brodbeck's senior honors thesis and they also hope to present their findings at the Eastern Sociological Society annual meeting.