

## SURE AWARDS MADE FOR SUMMER '05

Twenty-three Stonehill College students will work with fifteen faculty members on a variety of research projects over the coming summer of 2005. The scholars and their faculty mentors are the tenth 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.

**Elizabeth Chasse '07, Dan Corrigan '07, Heather Feldman '07, and Victoria Fisher '07** will work with **Craig A. Almeida**, Associate Professor of Biology and Director of the Biochemistry Program, on *The Effect of the mut-2 Gene on Recombination in Caenorhabditis elegans*. The free-living soil nematode *C. elegans* is a favorite model organism for molecular genetic analysis of a wide range of problems in biology. Chasse, Corrigan, and Feldman, all Biology majors, and Fisher, Biochemistry major, will assist Professor Almeida in further elucidating the as yet unknown function of the *mut-2* gene.

**David Barry '07 and Gabriela Mastrangelo '07** will work with **Karen L. Anderson**, Assistant Professor of Education, on *Instructional Materials Development: Building Bridges Between Mathematics and Literacy*. Spatial skills play a critical role in mathematic achievement. In early childhood, these spatial relations skills are best demonstrated through young children's problem solving experiences during block building. Found through previous research, young children utilize distinct strategies when constructing with blocks. Barry, a double major in Education and Fine Arts, and Mastrangelo, a double major in Early Childhood and Psychology, will assist Professor Anderson in investigating the intersection of literacy and block-play. The goal of the project is to create a series of story-block-building activities that accompany and therefore build off of story lines from literacy materials commonly found in early childhood classrooms.

**Stephanie Izzo '06** will work with **Russell Boisjoly**, Chair of Business Administration and Professor of Finance, on *A Longitudinal Study of the Uses of Working Capital and the Investment Ratio to Improve Corporate Free Cash Flow*. Izzo, a Finance major, will assist Professor Boisjoly in gathering financial statement data from both primary and secondary sources for the top 50 companies of the Fortune 500 for the period 1980 – 2004. The data will be analyzed for evidence of statistically significant probability distributions of various financial ratios and will determine whether cross sectional or longitudinal relationships exist to explain strategic differences in corporate behavior. This project will lead to a joint publication in an academic journal and a joint presentation at an academic meeting.

**Joanna Channell '07 and Kelly Edmonston '06** will work with **George Branigan**, Associate Professor of Education, on *Institutions, Immigrants and Inmates: Reform School Records in Providence, RI 1858-1875*. Professor Branigan has recently uncovered important documents in the Rhode Island Historical Society including the daily diary of the Superintendent of the Reform School in Providence (1858 – 1864). Channell, a double major in Elementary Education and Sociology, and Edmonston, a double major in Elementary Education and History, will assist Professor Branigan in first transcribing these manuscripts and publishing abstracts of these records in *Rhode Island Roots*. Secondly, they will cross-reference the children found on the reform school rosters with later records, such as census records, city directories, and Civil War enlistments, to discover what became of the children later in life. The outcomes of this project include a searchable CD made available to the historical research community, a series of published abstracts from the Superintendent's diary, and articles describing social reconstructions. This data will play a central role in the specific questions Channell and Edmonston will pose for their senior honors theses.

**Nick Bonomo '06, Lance Morin '07 and Michelle Paczosa '06** will work with **Roger M. Denome**, Associate Professor of Biology, on the *Analysis of Genetic Variation in Stonehill's Lady's Slipper Orchid Population*. Bonomo, Morin and Paczosa, all Biology majors, will assist Professor Denome in developing techniques to characterize genetic variation in the native pink lady's slipper orchid

(*Cypripedium acaule*). They will use these techniques to conduct population-level studies on the pink lady's slippers on Stonehill's campus. The data produced will help answer questions about reproductive success, population structure and evolution of members of the genus *Cypripedium*, which contains a number of endangered and threatened species.

**Jaclyn Morrill '06** will work with **Sharon Ramos Goyette**, Assistant Professor of Biology, on *The Effects of Hormones on Cognition and Academic Choice*. The sex steroids, estrogens, progestins, and androgens, have important effects on physical characteristics and in cognitive ability throughout the lifespan. Morrill, a double major in Biology and Psychology, will assist Professor Ramos Goyette in assessing whether sex steroids are related to specific cognitive tasks and whether it may be possible to develop a novel technique using mass spectrophotometry to measure neurosteroids. The results of this project will be presented at the Spring 2006 meeting of the Northeast Undergraduate Research Organization for Neuroscience (NEURON) conference and may also be published in the *Journal of Behavioral and Neuroscience Research*.

**Benjamin Bolduc '07** will work with **Marilena Hall**, Assistant Professor of Chemistry, on *The Use of ELISA and NMR to Characterize the Zn<sup>2+</sup> Binding of Peptides Selected by Phage Display*. Bolduc, Biochemistry major, will explore Zn<sup>2+</sup> coordination in enzyme active sites through the use of short peptide models. The goal of this project is to gain insight into the action of zinc metalloenzymes. Understanding the action of enzyme catalysis is crucial to protein engineering, a field in which the rational design of proteins can serve to develop reagents with practical uses.

**Meredith Tumulty '07** will work with **Craig S. Higgins**, Associate Professor of Health Care Administration, on *Music Therapy Makes a Difference*. Music therapy is an established health care profession that uses music to address physical, emotional, cognitive, and social needs of individuals of all ages, improving the quality of life for persons who are well and meeting the needs of children and adults with disabilities or illness. Tumulty, a Health Care Administration major, will assist Professor Higgins in summarizing existing research and literature with sources from the American Music Therapy Association, reviewing peer-reviewed journals, and discovering intervention/education strategies to enhance the value of music therapy to patients and families. The outcomes of this project will be to publish a final report providing the American Music Therapy Association with new information and also to increase student and faculty knowledge of clinical outcomes, standards of clinical practice and the impact of music therapy more broadly.

**Lisa Hastings '06, Kathryn Maloney '06, and Alyssa Voss '07** will work with **Patricia Leavy**, Assistant Professor of Sociology, on *Emergent Research Methods: Theoretical and Empirical Research*. Maloney, an Elementary Education and American Studies double major, Hastings, a Sociology and Gender Studies major, and Voss, a Sociology and Psychology double major, will assist Professor Leavy on a comprehensive emergent research methods handbook. Hastings will assist in the research for the sections on "emergent interview methods" and "emergent practices with computer technology." Maloney will assist in the research for the sections on "creative and performance-driven emergent methods" and "emergent practices in unobtrusive research." Voss will assist in the research for the sections on "emergent approaches: postcolonial, postmodern and feminist perspectives" and "emergent multi-method and hybrid approaches." In addition, all students will contribute to co-authored articles for publication.

**Ryan Schell '07** will work with **Greg Maniero**, Assistant Professor of Biology, on *The Kinetics of the Antibody Response by Northern Leopard Frogs (Rana pipiens)*. Schell, a Biology major, will aim to assist Professor Maniero in developing protocols to follow specific antibody production by the native frogs using reagents developed in previous research. The goal of the project will be to collect data suitable for presentation as a poster at an undergraduate research meeting and also, include data in a talk to an annual meeting of amphibian decline scientists that takes place in Arizona every fall.

**Alexander Cotter '06** will work with **Dieter Schoenecker**, Associate Professor of Philosophy, on *Kant's Concept of 'Love of Human Beings' as a Moral Endowment*. Cotter, a Mathematics major, will assist Professor Schoenecker in interpreting the relevant passages in the *Doctrine of Virtue*, a major work of Kant's, and also researching and reporting on the secondary literature about the meaning of 'love of human beings'. The goal of this project will be a paper to be submitted to the *Journal of the History of Philosophy* or *Kantian Review*.

**Stephanie Teixeira '06** will work with **Keri Iyall Smith**, Assistant Professor of Sociology, on *The Maya: A Case Study Analyzing Indigenous-State Relations*. Indigenous nations are entering the global culture, political, and economic marketplace. Analysis of these communities and their actions is essential in our globalizing economy. Teixeira, a double major in Communication and Sociology, will learn the comparative-historical research method and assist Professor Iyall Smith in examining the relationship between the state and the indigenous group and the relationship between the international governing structure and the indigenous group. The goal of this project is to submit a paper to the Southern Sociological Society's annual meeting or the American Sociological Association's annual meeting and further publish the paper in a refereed journal.

**Maura Cassell '07** will work with **Leon Tilley**, Associate Professor of Chemistry, on beta-Deuterium Isotope Effects and Percaudal Participation in Tertiary gamma-Silyl Systems with an Electron-withdrawing Substituent. Knowledge of the mechanisms of these processes can provide chemists with ability to control reaction outcomes so as to achieve a desired product that may have commercial or medicinal value. Cassell, a Chemistry major, will work to continue and complete a project Professor Tilley began with previous SURE scholars and will be responsible for conducting organic syntheses, characterizing compounds by spectroscopic techniques, and studying the reaction rates of these compounds to determine the influence of structure on reactivity.

**Amy Blanchette '06** will work with **Christopher Ward**, Assistant Professor of Psychology, exploring the effects of *Hypoxia on Memory*. Blanchette, a Psychology major, will assist Professor Ward with investigating the role of sleep and sleep disordered breathing on cognitive processes in rodent models. Obstructive sleep apnea is a common sleep disorder affecting more than 12 million Americans. This disorder causes temporary cessations of breathing repeated throughout the night. This lack of oxygen during the night affects regions of the brain important for learning and memory. This project plans to expose animals to intermittent hypoxia and test them in specific behavioral tasks. The data gathered will be prepared for submission to research conferences during the 2005-2006 academic year. The goal of the project would be an article submitted to a peer-reviewed journal with Amy as a co-author.

SURE Scholars will begin the program on May 31, 2005 for an eight or ten week period. They will engage in weekly meetings to discuss the progress of their projects and other topics of general interest, and will be paid a stipend for their full-time service. All SURE Scholars will present summaries of their summer's work at an all-campus poster session in the early fall.

Students and faculty members who wish to pursue a SURE research project for the summer of 2006 may contact the Office of Academic Development, Duffy 119, ext. 1069, for further information. The deadline for applications for the summer of 2006 is December 9, 2005.