Spring 2009 FRAP Awards

The following faculty members received funding awards in spring 2009 through the College’s Faculty Research Award Program (FRAP), which supports the research activities of all regular full- and part-time, tenured and tenure-track Amherst College faculty members. Since 2000, FRAP has been endowed by the H. Axel Schupf ’57 Fund for Intellectual Life.

SMALL GRANT AWARDS
Small grants are for $6,000 or less.

Professor Tekla Harms
Department of Geology
Title: The Big Sky Orogen of Southwest Montana

The present North American continent was built from half a dozen smaller, vastly more ancient, pre-existing continental blocks that were differentiated from the mantle over the first 1.5 Ga of earth history and were stabilized by around 2.5 Ga. These proto-continental blocks fused together into the North American continent by collisions, each producing an intervening deformation belt, all of which occurred between 1.9 and 1.65 Ga during what must have been a singular time of continental growth. One such deformation belt, dubbed the “Big Sky orogen,” lies across southwest Montana and involved the oldest rocks preserved in the Tobacco Root Mountains. Professor Harms’ research seeks to determine the regional extent, internal architecture, and geologic history of the Big Sky orogen by examining ancient rock suites in mountain ranges surrounding the Tobacco Root range, in order to investigate the fundamental process by which the North American continent was created and the possibly unique events of the 1.9 to 1.65 Ga amalgamation era.

Professor Nasser Hussain
Department of Law, Jurisprudence, and Social Thought
Title: Law, History, and Irregular War

Professor Hussain’s book is about the nexus of law and war. While much of the scholarship on the subject presumes that the principal relation of law to war is one of constraint, and thus largely focuses on international courts and conventions, he begins with the premise that law functions not just to constrain war but also to shape it, demarcating it as a permissible form of violent conflict distinct from other forms of violent conflict, such as insurgency or terrorism. As such, he explores the role of law in defining war, designating categories of the enemy, and designing the environment of conflict. Such a theoretical perspective is elucidated in the book through a historical lens. The topics explored by Professor Hussain range from a British colonial program of “air policing” in the 1920s in Iraq to contemporary practice of counterinsurgency by US forces in Afghanistan. Throughout he asks how old and new forms of war are shaped by and in turn pose new challenges for the law and politics of war.

Professor Christopher Kingston
Department of Economics
Title: In Peril on the Sea: Institutional Change in Eighteenth-Century Marine Insurance

During the Age of Sail, trade was hazardous, both due to the inherent dangers of the sea, and especially, during wartime, because of the danger of capture by enemy vessels and privateers. Managing these risks was crucial during the eighteenth-century expansion of trade, but marine insurance transactions were plagued by a variety of information asymmetries and agency problems, including the potential for various kinds of fraud. Merchants employed a variety of institutions—sets of formal and informal rules, forms of contract, and organizations—to enable them to carry out marine insurance transactions and thereby spread
Professor Kingston is working on a book that uses a blend of game theory and archival research to probe the incentives of merchants and underwriters, the various kinds of marine insurance institutions that developed, and how these institutions changed over time. The award will enable him to conduct research in historical archives in Britain and America.

**Professor Nishi Shah**  
Department of Philosophy  
Title: Euthyphro's Question

The question that Plato posed in The Euthyphro, whether things are valuable because we value them or whether we value them because they are valuable, is the most fundamental question in ethics. When philosophers today attempt to answer this question, they proceed on the assumption that they can ask the question without thereby committing themselves to an answer to it; otherwise, no non-question-begging answer to the question is possible. In his current work, Professor Shah attempts to show that this assumption is false. Plato’s question contains its own answer. Previously, Professor Shah has argued on the basis of very general phenomena that whenever we attribute a belief or an intention, we commit ourselves to an evaluative judgment. In his current work, he argues that this result can be generalized to cover attributions of all mental states. In order to attribute any mental state at all, including the state of valuing something, one must commit oneself to an evaluative judgment. This entails, surprisingly, that the currently dominant subjectivist theories of value cannot be coherently formulated. The judgment that things are valuable because we value them, the core commitment of all subjectivist theories, presupposes that there are things that are valuable independently of our valuing them.

**Professor John Paul Baird**  
Department of Psychology  
Title: Role of Parabrachial Nucleus Neuropeptides in Feeding

Behavioral studies show unequivocally that integration of gastrointestinal (GI) signals with gustatory signals is fundamental to feeding regulation. One important brain site for this integration is the parabrachial nucleus of the pons (PBN). The PBN receives overlapping projections from separate GI- and taste-associated regions of the nucleus of the solitary tract (NST), the primary sensory nucleus for the GI tract and for taste, and there is physiological evidence for taste and GI convergence within PBN. However, the PBN is a heterogeneous nucleus with widespread reciprocal projections with forebrain sites implicated in feeding behavior, and it is unclear where and how taste and GI signals interact within PBN. Professor Baird’s recent work has shown that hypothalamic peptides modify taste and GI sensitive behavior. The current application seeks to complete a series of electrophysiological projects to explore how these hypothalamic peptides act within the PBN to modify neural coding of gastric and gustatory signals in this nucleus.

**LARGE GRANT AWARDS**  
Large grants are for more than $6,000 and up to 30,000.

**Professor Ethan Clotfelter**  
Department of Biology  
Title: Steroidogenesis in Male Fish Exposed to Environmental Phytoestrogens

Many plants contain compounds called phytoestrogens that act like estrogens in the bodies of animals. The potential for phytoestrogen contamination of waterways exists in places where large quantities of plant material are processed, such as wood pulp mills, agricultural fields, and sewage treatment plants. This contamination has the potential to disrupt the endocrine system of aquatic vertebrates, which can
Professor Rick Lopez
Department of History
Title: Science, Nationalism, and Aesthetics in the Shaping of Mexico’s Environmental Imagination

Environmental studies of Latin America often measure countries such as Mexico by the degree to which their environmental policies have reflected those of the United States, France, England, or Germany, and almost inevitably they find their environmental policies to be lacking. Similarly, international organizations impose proposals developed in relation to the United States and Europe, and then convey dismay and confusion when these policies exacerbate rather than ameliorate the environmental crisis and the social and political problems that accompany ecological degradation. Such approaches neither account for the development of Latin American attitudes toward the environment, nor do they address how these attitudes have related to policy decisions. The research and writing Professor Lopez will conduct during the grant period traces the development of Mexican attitudes toward nature and nation, and, in doing so, will offer a foundation for the future elaboration of effective environmental policy. By drawing upon approaches developed within cultural history, history of science, environmental history, and art history, his work will pay particular attention to the changing relationship between national identity and perceptions of the plants, fauna, and natural settings that exist within the territory claimed by the state. The results will be published as two articles and a book.

Professor Jill Miller
Department of Biology
Title: Species-level Relationships in Old World Lycium (Solanaceae) Using Multiple Nuclear COSII Markers

Professor Miller’s project is centered on the development of a set of novel genetic markers to examine evolutionary relationships among species in the plant genus Lycium (Solanaceae), a close relative of several economically important crop species such as tomato, potato, and tobacco. This work will contribute broadly to the research community via the development of multiple, unlinked nuclear markers which represent a valuable resource for those interested in fine scale relationships, especially given the current challenge of identifying genetic markers suitable for resolving relationships at the species and population levels. In recent years, the genus Lycium has emerged as an excellent natural system for understanding the evolution of sex and sexual systems, speciation and hybridization, and the molecular evolutionary genetics of mating system genes. This research will provide an important foundation for our current and future evolutionary studies in this group of plants. Amherst College undergraduates are central to this research and will receive intensive training and participate in all of its aspects.
**Professor Dominic Poccia**  
Department of Biology  
Title: Nuclear Envelope Formation: Mechanisms of Chromosomal Enclosure

At each cell division, a double membrane forms to enclose the chromosomes and form a nucleus. Most of this membrane derives from enclosure by the large continuous endoplasmic reticulum. Two models exist for the final closure of the gaps formed during this wrapping. One postulates the insertion of nuclear pores made of proteins; the second predicts the involvement of membrane vesicles that fuse to other membranes by producing large amounts of a fusigenic membrane lipid, DAG. Using antibodies and lipid probes, and confocal microscopy, Professor Poccia’s lab will try to detect the interaction of such vesicles with the gaps during late stages of mitosis as the nuclear envelope is formed which would support the second model. Additionally, inhibitors of DAG production will be used to determine their effects on enclosure.

**Professor Ron Rosbottom**  
Department of French and European Studies  
Title: City in Shadows: Imagining the Occupation of Paris, 1940-1944

How does the urban citizen adapt to situations that undermine his/her sense of stability and predictability? The German Occupation of Paris, which left the city’s built environment essentially untouched, provides a lens through which to analyze how the denizen accommodates to uncertainty, fear, and bodily distress. Studying the imagination under duress is especially fruitful in understanding how we form, then perceive our built environment. Professor Rosbottom’s project also re-examines the Occupation from a theoretical as well as historical point of view.