1. Name (Last, First): Breton, Timothy  
Program/Dept.: Zoology  
Dissertation Chair/Advisor: Dr. David Berlinsky  
Abstract:  
Although the United States is a major seafood consumer, we grow only a fraction of what we consume, and the U.S. trade deficit in seafood ranks second behind oil at $9 billion annually. Most fisheries are overexploited, and future aquaculture growth is essential to meet global needs. One major problem, however, is reproductive failure that limits production of high quality eggs, and our understanding of egg development is incomplete. My study aims to identify genes during egg development in Atlantic cod (Gadus morhua), to both increase our understanding of reproduction and provide aquaculture with genetic tools to improve egg quality.

2. Name (Last, First): Frank, Donya  
Program/Dept.: Ocean Engineering  
Dissertation Chair/Advisor: Dr. Diane Foster  
Abstract:  
Comprehensive characterization of small-scale sediment transport will reduce the effects of natural disasters, improve ocean circulation and weather prediction models. My research aims to resolve fundamental hypotheses on coastal sediment transport by experimentally determining the mechanisms that initiate sediment motion. With state-of-the-art instruments, including new electronic grains developed during my PhD, I resolved the fluid velocities at the bed and collected the first direct measurements of sediment motion. I will use these data to validate theoretical formulations and synthesize the results to propose an accurate incipient motion threshold to improve our predictive capabilities of sediment transport phenomena, e.g. beach erosion.

3. Name (Last, First): Gao, Jia  
Program/Dept.: Economics  
Dissertation Chair/Advisor: Reagan Baughman  
Abstract:  
Among all OECD countries, United States has a relatively low child well-being. For example, the U.S. infant mortality rate ranks 27th among OECD countries and nearly doubles the rate in countries like Japan. Child well-being, measured by health status, school performance, and cognitive and non-cognitive skills, is an important predictor of future health, education, and labor market outcomes. Therefore, improving the child well-being is an important goal for U.S. This dissertation evaluates the effects of three determinants of child well-being. Understanding the impacts of the existing policies and the mechanisms of these impacts has tremendous implications for designing effective policies.

4. Name (Last, First): Green, Lindsay  
Program/Dept.: Plant Biology  
Dissertation Chair/Advisor: Dr. Christopher Neefus  
Abstract: 
Fish farming has the potential to provide protein to the growing world population but has been criticized for adding excess nutrients to the environment and using low value wild fish to feed farmed fish. Integrated multi-trophic aquaculture (IMTA) represents an environmentally sustainable method of aquaculture by using secondary crops (seaweeds) to remove the waste products of primary crops (fish). My research focuses on determining growing conditions and methods to ensure reliable supply of the red seaweed Porphyra (nori) to aquaculture facilities to create IMTA systems. My results will increase the sustainability of fish farming by decreasing its environmental impact.

5. Name (Last, First): Jeleniewski, Stacy
   Program/Dept.: Psychology
   Dissertation Chair/Advisor: Dr. Ellen Cohn
   Abstract:
   The United States has the highest rate of incarcerated juveniles worldwide. While their behaviors are harmful to society, incarceration is also harmful as well as ineffective and costly. For society and these juveniles, it is important to understand the factors that lead juveniles to engage in rule-violating behaviors. One important determinant of adolescent behavior is the influence of authority figures such as parents and police. The current dissertation studies use a multi-methodological approach to examine the role that adolescents’ perceptions of authority figures play in adolescents’ engagement in rule-violating behavior. This dissertation will increase knowledge and inform preventative efforts.

6. Name (Last, First): Jeschke, Kristen
   Program/Dept.: History
   Dissertation Chair/Advisor: J. William Harris
   Abstract:
   Historians have studied the incursion of a welfare state, as well as the empowerment offered to women in Shaker communities. None, however, have bridged these two concerns, despite efforts to trace the roots of the welfare state through nineteenth-century institutional placements. Shakers’ care for indigent children in the nineteenth century reflects changes in welfare objectives, as well as the codification of family and contract law. Finally, scholars have frequently attributed Shaker women’s empowerment to the rejection of the patriarchal family. None have convincingly demonstrated the fulfillment of the Society’s women through the recreation of motherhood made possible by welfare placements.

7. Name (Last, First): Morena, Matthew
   Program/Dept.: Integrated Applied Mathematics
   Dissertation Chair/Advisor: Dr. Kevin Short
   Abstract:
   Mathematical chaos is typically very difficult to study and yet has been detected now in nearly every physical science. Chaotic behavior is often manifested in the interactions between physical systems, such as in weather systems and in the motion of a pendulum. My research investigates how two interacting chaotic systems may be controlled onto stable, periodic orbits, known as cupolets, whose periodic behavior is subsequently maintained by their continued interaction, a state referred to as cupolet entanglement. By identifying several
physical interactions that can lead to cupolet entanglement, my investigation will demonstrate new interplay between chaos and physical systems.

8. Name (Last, First): Nedyalkov, Ivaylo  
Program/Dept.: Mechanical Engineering  
Dissertation Chair/Advisor: Dr. Martin Wosnik  
Abstract:  
In many instances, fluid flows (such as air and water flows), are closely related to energy usage or generation. Thus, minor improvements at a fundamental level can be equivalent to major savings of energy and money. With the growing demand for renewable energy for example, it is crucial to efficiently utilize the enormous resources of tides and waves. A major problem in the design of marine machinery in general is the necessity to operate devices (equally) well in flows with changing direction. My dissertation on development of bi-directional hydrofoils will address this issue and can potentially save millions of dollars.

9. Name (Last, First): Peone, Tricia  
Program/Dept.: History  
Dissertation Chair/Advisor: Cynthia Van Zandt  
Abstract:  
In the sixteenth and seventeenth centuries people employed a category for explaining their world that we no longer recognize. This category—the preternatural—existed in the intermediary space between natural and supernatural causes. Preternature encompassed unusual phenomena such as earthquakes, comets, dreams, and witchcraft. This dissertation suggests that this category played an important role in early modern culture and shaped views on the New World. Understanding when and why preternature ceased to be a valid explanation for events is crucial to the history of scientific knowledge because it helps us to understand the evolution of modern science.

10. Name (Last, First): Treat, Claire  
Program/Dept.: NRESS: Environmental Science  
Dissertation Chair/Advisor: Dr. Wilfred Wollheim  
Abstract:  
Air temperatures in arctic and boreal regions increased over the past four decades and will continue in the future. These northern regions store large amounts of carbon in soils that may be released to the atmosphere with warmer temperatures. I use an experimental approach to study how much and why carbon is lost from permafrost soils with warmer temperatures, and how longer growing seasons and warmer temperatures affect carbon and nitrogen cycling within soils. My research helps understand whether carbon emissions from northern soils will be large or small, and how much permafrost thaw will contribute to climate change.

11. Name (Last, First): Trudeau, Jennifer  
Program/Dept.: Economics  
Dissertation Chair/Advisor: Dr. Karen Smith Conway  
Abstract:  
Low birth weight and prematurity, especially among black infants, and unplanned
pregnancies are persistent problems in infant health. Government policies promoting infant health and academic research attempting to identify its origins fall short of resolving these concerns. Moreover, although unplanned and teenage pregnancies have declined, the reasons are largely unknown. To advance the goal of eliminating unplanned pregnancies and racial disparities in health, I identify three new factors affecting reproductive behaviors and infant health outcomes: sunshine, the television show “16 and Pregnant,” and a combination of state insurance mandates that likely increase contraception availability to young women.

12. Name (Last, First): Veysey, Jessica
Program/Dept.: NRESS: Environmental Studies
Dissertation Chair/Advisor: Dr. Kimberly Babbitt
Abstract:
Wetlands are an immensely valuable resource, but current policies fail to prevent continuing wetland destruction. Through two complementary projects, I use ecological and social research to identify the factors fueling wetland loss and wetland-policy effectiveness in New England. My research answers the needs of policymakers, policy-users, and academics for location-specific data linking ecological and social effectiveness with particular policy formulations. I will use my results to craft recommendations that help management institutions better balance resource development and the biological needs of wetland communities. I will advance environmental-management theory by demonstrating specific mechanisms through which local controls influence regional management efforts.

13. Name (Last, First): Wales-Freedman, Eden
Program/Dept.: English (Literature)
Dissertation Chair/Advisor: Diane Freedman
Abstract:
Theorists emphasize the necessity of writing about—or “witnessing”—trauma to overcome it. To this critical conversation, I add my research into how readers may productively respond to testimonial literature. Although theorists evaluate how and why traumatized speakers witness, few consider the role of the reader—an oversight that must be addressed for professional and ethical reasons. First, attending to traumatic-reception fills a gap in the field, advancing the work of the entire academy. Second, helping readers respond to trauma facilitates engagement, encouraging them not to compound victimization (through objectifying, negating, or usurping responses) but to work through trauma collectively.