

Alumni Association Dissertation Award Winners Spring 2009



Beau William Abar, Ph.D. Candidate in Human Development and Family Studies
(Adviser: Eric Loken)

Beau's dissertation, "More than the mean: examining heterogeneity using mixture models and person specific analysis," applies advanced methodologies to the study of human behavior, with a particular focus on student indoor tanning behavior. His goal is to provide research models aimed at accounting for heterogeneity that exists within populations, by employing mixture models and time series analysis of person-specific behavior. Beau has coauthored a total of sixteen articles, seven of which he is listed as first author; four are currently published, seven are in progress and five are under review. He has also presented at seven professional conferences since 2005. In 2008-2009, Beau received a Prevention and Methodology Training pre-doctoral fellowship from the National Institute on Drug Abuse.



Sunghee Choi, Ph.D. Candidate in Art Education
(Adviser: Mary Ann Stankiewicz)

Sunghee's dissertation is titled, "Making the negotiation between the narratives of museums and a visitor: empowering a visitor through her own narrative-making." Her research is an autoethnographic exploration into the experiences of visitors at three different types of museums--Carnegie Museum of Art, Carnegie Museum of Natural History, and Children's Museum of Pittsburgh: how they learn about works of art; how they create their own meaning about their experiences of museum-going; and what messages the museum presents to them. Sunghee has presented at a number of international conferences and workshops, most recently at the sixth NaMu (Making National Museums) workshop in Oslo, Norway where she provided a critical analysis of how museums construct national identity and how individual identity might be performed within each context.



Jessica Suzanne Hayes-Conroy, Ph.D. Candidate in Geography and Women's Studies
(Adviser: James McCarthy)

Jessica's dissertation, "Visceral Reactions: Alternative Food and Social Difference in American and Canadian Schools," centers on a critical examination of garden and cooking programs in two public schools in Nova Scotia and California. These programs are intended to teach students about healthy eating and sustainable agriculture, and have become popular in the U.S. and Canada because of increasing concern over childhood obesity. Her research explores how questions of difference, including those centered on gender, race, and class, are articulated in and through these programs, while also making an important contribution to the field of political ecology. Jessica has presented her work at ten interdisciplinary conferences regionally, nationally and internationally; she has also authored and coauthored four book chapters and eleven articles in peer-reviewed publications.



Matthew Paul Heinicke, Ph.D. Candidate in Biology
(Adviser: S. Blair Hedges)

The title of Matthew's dissertation is "Processes prompting evolutionary diversification of the terraranan frogs, a vertebrate mega-radiation." The focus of his research is to understand the evolution of the Terrarana, a 900-species group of tropical frogs, roughly one-sixth of all frog species. As one of the largest vertebrate groups, they are well-suited for studying many aspects of evolution, including biogeography and life history evolution. Because many of these frogs are among the most endangered in the world, resolving their evolutionary history may also help to understand why they might be so vulnerable. Matthew has six papers published and in press, including a senior author paper in Proceedings of the National Academy of Sciences (USA) that made the cover of that issue. He has given oral presentations about his research at three professional meetings, and has been awarded a University Graduate Fellowship, Hill Fellowship, and five Braddock fellowships at Penn State.

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Josephine Lau, Ph.D. Candidate in Architectural Engineering
(Adviser: William Bahnfleth)

The title of Josephine's dissertation is "Measurement and Modeling of Performance Characteristics of Low Mercury Vapor Pressure UVC Lamps for In-Duct UVGI Applications." Her research focuses on air cleaning technology, specifically, characterizing the performance of the lamps used in ultraviolet germicidal irradiation (UVGI) systems to control microbial contaminant levels in the moving airstreams found in heating, ventilating, and air-conditioning systems. Her publishing credits include six peer-reviewed journal papers, five peer-reviewed conference papers and one technical report. In 2007-08, Josephine received a grant-in-aid from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Her work has drawn the attention of Philips, the world's largest manufacturer of germicidal lamps, with whom she collaborated in presenting a seminar on lamp performance at the 2009 ASHRAE winter meeting and is preparing a joint publication.



Jonathan Peter Lelito, Ph.D. Candidate in Entomology
(Adviser: Thomas C. Baker)

Jon's research concerns the emerald ash borer, *Agilus planipennis* (EAB), an invasive pest insect that poses a serious threat to North American ash trees. His dissertation, "The mating systems of the emerald ash borer and related Buprestidae," examines the behavior of this beetle and other members of the genus *Agilus* to identify behaviors that could be exploited to create a more species-specific and effective trap for EAB than is currently available. Jon's research has earned him national recognition for its innovation, by shedding light on the highly visual aspects of mate-finding in this beetle. Jon has published three refereed scientific journal articles as senior author, and has three additional papers submitted to professional journals. In addition, he has given five oral presentations at professional meetings over the past two years.



Xiao Li, Ph.D. Candidate in Physics
(Adviser: David Weiss)

Xiao's dissertation is titled, "Toward a neutral atom quantum computer." His research is focused on an apparatus designed to trap neutral atoms in a 3D array in such a way that they can be individually imaged and controlled, so that each single atom constitutes a quantum bit, or qubit. Xiao's quantum computer experiment has trapped and imaged about 250 single atoms in a half-filled 3D optical lattice. They have shown that the imaging does not change the atom occupancy. These findings have been published in *Nature Physics*, and were the subject of a *Search and Discovery* article in *Physics Today*, both are highly regarded publications within the physics community. Xiao has been awarded a Duncan Fellowship, a Teaching Excellence Award, and a Braddock Fellowship at Penn State.



Melinda Elaine Lull, Ph.D. Candidate in Pharmacology (Hershey)
(Adviser: Kent E. Vrana)

Melinda's dissertation, "Systems biology of cocaine abuse," analyzes molecular changes in gene and protein expression in the brain as a result of cocaine use and abuse. Melinda's research hypothesizes that increased relapse liability, resulting from periods of enforced abstinence from cocaine, is accompanied by changes in mRNA and protein expression in the brain's reward pathway. The findings of her research may help to identify targets for the development of new treatments for cocaine abuse and relapse. Melinda has coauthored seven publications, four of which she is listed as first author. She has also been honored with a number of awards, most recently the prestigious Ruth L. Kirchstein Individual National Research Service Award Predoctoral Fellowship from the National Institute on Drug Abuse in 2007.



Ashley Marie Marshall, Ph.D. Candidate in English
(Adviser: Robert D. Hume)

Ashley's dissertation, "The Practice of Satire in England, 1650-1770," is an evaluation of satire as actually produced in the Restoration and eighteenth century. It is based on a survey of more material in this category than any scholar has ever attempted - three thousand works - and is notable for its historical contextualization both of satire and satire criticism. Recently awarded a prestigious American Council of Learned Societies Mellon Dissertation Fellowship, Ashley is currently recasting this thesis into book form. During her academic career, she also published nine articles in professional journals. In 2006-07, she earned the Graduate Student Award for Excellence in Research in the Humanities by Penn State's College of the Liberal Arts.

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Tanuj Motwani, Ph.D. Candidate in Food Science

(Adviser: R. C. Ananteswaran)

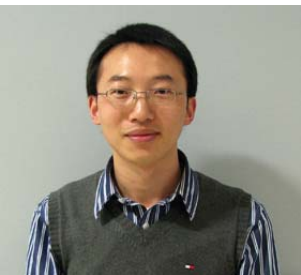
Tanuj's dissertation, "Impact of starch gelatinization and sugar addition on the dielectric response of starch-water systems," demonstrates that dielectric response of starch-water systems could be used to monitor starch gelatinization during food processing operations. His research may help in improving the quality, production efficiency and consumer acceptability of starch-based foods. A Penn State Graham Fellowship recipient, Tanuj has earned several awards during his academic career, most notably a prestigious Juran Doctoral Award from the Joseph M. Juran Foundation, a graduate fellowship from the Institute of Food Technologists (IFT), a McCarthy Teaching Award and five additional awards from College of Agricultural Sciences. He has also authored two articles and four professional presentations. In 2006, he was placed third in the Engineering category at Penn State's Graduate Exhibition.



Rajiv Ranganathan, Ph.D. Candidate in Kinesiology

(Adviser: Karl M. Newell)

Rajiv's dissertation, "Utilizing redundancy in motor learning: effects on learning, retention and transfer," is a multi-experiment project examining the role of redundancy in motor learning. In particular, his research seeks to compare the effectiveness of learning a motor skill through the repeated use of a single movement pattern versus learning the skill by practicing a variety of different movement patterns. The outcome of his dissertation may have implications not only for the learning of motor skills during development but also for the design of effective rehabilitation strategies. A University Graduate Fellowship recipient, Rajiv was awarded a Kligman Graduate Fellowship from the College of Health and Human Development in 2008-09. He has also published two book chapters and five journal articles, four of which he is listed as first author, and presented at eight national conferences.



Jinjie Shi, Ph.D. Candidate in Engineering Science and Mechanics

(Adviser: Tony Jun Huang)

Jinjie's dissertation is titled, "Surface acoustic waves-based nano-electro-mechanical-system (NEMS)." His thesis focuses on creating a new class of nano-electro-mechanical-systems and nanophotonic devices using acoustic waves. One of his findings "Acoustic tweezers" may benefit numerous biological studies such as cell microarrays, tissue engineering, and regenerative medicine. Jinjie has published four first-author journal papers in 2008 and has ten more manuscripts in the submission process. He holds three patents (two more pending patents), and has presented nine papers at top conference proceedings in his field. Jinjie's work has been highlighted in both public media, such as Wired Science and Nanotech Web, and professional publications, including an article in Applied Physics Letters that made the cover of that issue. Jinjie won the grand prize at Penn State's 2008 ESM Today Graduate Research Symposium, and recently received the Sabih and Guler Hayek Graduate Scholarship.



Sonja Elayne Siennick, Ph.D. Candidate in Sociology

(Adviser: D. Wayne Osgood)

Sonja's research focuses on the interplay between criminal behavior and individual development, attainment and stratification processes, and family relations. Her dissertation, "Three Essays on Criminals' Indebtedness," examines how relationship norms and obligations may keep parents giving financial support to young adult offspring who commit crimes even though they often have conflicted emotional relationships with those offspring and even though those offspring tend to overspend regardless of what financial resources they are given. Sonja has published two articles in Criminology, the top journal in her field. In addition, she is lead author or coauthor of six other publications and she has made many presentations to professional conferences. A University Graduate Fellowship recipient, Sonja has earned a number of awards during her academic career, most recently the College of the Liberal Arts Award for Research Excellence in the Social Sciences in 2008.