Integrative Graduate Education Research and Traineeship Program: Cognitive Science Program Wins an NSF IGERT Grant

Working under the NSF IGERT grant, Dr. Fred Dyer (Zoology), Frank Bartlett (Zoology), and Monica Castelhano (Psychology) join faculty and graduate students in the Cognitive Science Program who study sequential decision-making. Story on page 4.
DEAN’S MESSAGE

We are pleased to introduce in this edition of The Graduate Post a newly funded grant by the National Science Foundation under its Integrative Graduate Education Research and Traineeship program (IGERT) in Cognitive Science to Professors Fred Dyer (Zoology), John Henderson (Psychology), Tom Getty (Zoology), Fernanda Ferreira (Psychology), and Sridhar Mahadevan (Computer Science and Engineering). This is Michigan State University’s first IGERT grant and is in an area of long-standing interdisciplinary research strength.

The IGERT program was initiated by NSF in 1997 with the goal of encouraging major changes in graduate education in sciences and engineering. It was developed to “meet the challenges of educating U.S. Ph.D. scientists, engineers, and educators with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become in their own careers the leaders and creative agents for change.” Within NSF, the IGERT program involves the Directorates for Biological Sciences; Computer and Information Science and Engineering; Education and Human Resources; Engineering; Geosciences; Math and Physical Sciences; Social, Behavioral, and Economic Sciences; the Office of Polar Programs; and the Office of International Science and Engineering. You can learn more about the IGERT program and IGERT awards by visiting their website at http://www.nsf.gov/igert.

The MSU IGERT in Cognitive Science focuses on the core research theme of sequential decision-making, that is, how to combine information from the environment and information from memory to make optimal decisions in the present moment. The faculty and graduate students study decision-making using animals, humans, and “intelligent” machines. Read more about this fascinating research and the participating MSU faculty and graduate students on page 4. And, congratulations to the faculty for a successful grant award that recognizes systematic and substantive collaborative efforts!

The second major feature of this edition of The Graduate Post focuses on the three MSU medical schools that train doctors for both human and animal patients. The College of Veterinary Medicine has the only teaching hospital on the MSU campus and graduates more than 100 individuals annually with a Doctor of Veterinary Medicine. Both the College of Human Medicine and the College of Osteopathic Medicine focus on community-based training for physicians. Both Human and Osteopathic Medicine focus on the education of physicians to treat the “whole person” using his/her history, as well as the family and social environment in which the individual lives. Read more about the education and training of MSU professional students in “The Heart of a Practice” on page 8. Rounding out MSU’s professional programs in health are the College of Nursing and the clinical psychology program, which will be described in future editions of The Graduate Post.

A new regular feature of The Graduate Post beginning with this issue is a Capital Campaign Update. MSU kicked off its Capital Campaign on September 20, 2002. A $1.2 billion dollar campaign goal was announced, the largest in the University’s history. The Graduate School has a campaign goal that is focused exclusively on graduate fellowships. Our new Development Officer, Barbara Ball-McClure is introduced in this issue of The Graduate Post.

Kevin Johnston in the Teaching Assistant Program offers observations on interdisciplinary teaching on page 12. Kevin explores the MSU integrative studies programs and their approaches to teaching undergraduates and also to training graduate teaching assistants.

As with all of our issues of The Graduate Post, we also provide a listing of all of our graduate students who received funding from the Graduate School during the spring and summer of 2002 for travel or research enhancement. Congratulations to these students for their academic achievements!

Karen Klomparens
Dean of the Graduate School
Correction
In the Spring 2002 issue of The Graduate Post, the following clarifications should be added to the article on graduate student conferences. The TROPOS conference in the Department of Romance and Classical Languages stemmed from an idea by 1998-1999 editor of the Tropos journal, Jason Klodt, and graduate student Alyssa Holan. With the support of RCL Chair Lawrence Porter, graduate students and editors of the 1999-2000 Tropos journal, Michelle Wilson and Jayne Niemann, initiated the first TROPOS conference. Candace Bosse, Alyssa Holan and Dan Nappo helped with the first conference and organized the second conference. Jessica Sturm, Stacey Makowiak, Angelica Silva, and Sandra Fernandez helped finish the second conference and are organizing this fall’s third annual TROPOS conference.
MSU’s Cognitive Science Program Wins IGERT Grant from NSF

In the fall of 2001, the National Science Foundation awarded Michigan State University’s Cognitive Science Program the prestigious Integrative Graduate Education and Research Traineeship (IGERT) grant. The Cognitive Science Program, another of MSU’s nationally-recognized programs on the cutting edge of interdisciplinary studies, is one of only about 20 programs from all disciplines and universities across the country that received an IGERT grant this year.

Worth $2.5 million over five years, the IGERT grant is part of a recent NSF initiative to support multi-disciplinary education in the sciences and engineering and thus to prepare graduate students for the changing workplace of the future. According to the National Science Foundation (http://nsf.gov/igert), “The (IGERT) program is intended to catalyze a cultural change in graduate education, for students, faculty, and universities, by establishing new, innovative models for graduate education in a fertile environment for collaborative research that transcends traditional disciplinary boundaries.” This grant is dedicated entirely to graduate student training. It funds graduate student stipends, equipment, research, and travel, thereby freeing graduate students to focus on their scholarship and professional development.

The study of sequential decision-making, how to combine information from the environment and information from memory to make desirable decisions in the present moment, is a core research theme for the faculty and graduate students associated with the IGERT grant at MSU. Such decisions by humans, animals, and intelligent machines rely on a series of earlier, related choices which help them select the present course of action. How does this decision-making process work, particularly when the outcome is uncertain? Integrating their research on humans, animals, and intelligent machines, faculty and graduate students from the various disciplines involved in the IGERT grant use this general focus as a framework for their individual studies about the nature of decision-making. This framework sets up an environment in which each project holds implications for and provides new approaches to the others.

To facilitate the open exchange of ideas under the project’s framework, principal investigators and graduate students meet regularly in open discussions. Each week, students and faculty from a different lab give a short presentation about their work, discoveries, and any problems that have arisen. Coming together in this organized fashion allows for direct feedback from the researchers in other disciplines as well as collaborative brainstorming and problem-solving. Dan Gajewski, a second-year graduate student in Psychology, points out, “Each discipline tends to develop its own way of talking about and thinking through problems that overlap with other disciplines. One benefit of coming together is that we have the opportunity to learn the language and processes of other disciplines. This, in turn, opens us up to looking at our projects in ways that we otherwise might not. Working together with people in different fields allows for a fresh give-and-take of ideas and offers new ways of approaching research questions.”

Dr. John Henderson, Director of the Cognitive Science Program, explains that work under the IGERT grant takes place on several different levels. “On one level, we are each in our own labs doing our own research under the project framework. On another level, we study questions in our labs that are motivated directly by what’s going on in the other IGERT labs. We generate questions and ideas with each other as an outgrowth of the interaction of the various fields. Then, we come back together to share our results. This kind of give and take leads to new approaches and insights. Finally, there’s a third level where people from different departments share lab space and work together in the same physical environment. The IGERT grant makes such close collaboration possible.”

The history of MSU’s IGERT grant is closely connected to the history of the Cognitive Science Program, which started at MSU approximately five years ago. According to Dr. Henderson, numerous people on campus were interested in interdisciplinary work related to information processing in machines, humans, and other animals, but there was no formal
recognition or mechanism for bringing these scholars from various departments together. This made it difficult to connect with potential collaborators. Beginning with a short symposium, the interest in working across disciplines developed into the creation of a new program. With the support of the Provost’s Office and Deans from the College of Arts and Letters, the College of Social Science, the College of Natural Science, The College of Engineering, and the College of Communication Arts and Sciences, the graduate program in Cognitive Science allowed for cohesion among the interested faculty and immediately led to research collaborations.

One such collaboration among Psychology, Computer Science, and Zoology faculty resulted in a Knowledge and Distributive Intelligence (KDI) Grant from the National Science Foundation, a grant which laid the groundwork for the current IGERT grant. Working under the KDI grant, researchers in the Cognitive Science Program studied sequential decision-making and realized that such interdisciplinary collaboration would provide a good framework for graduate student training. The IGERT grant proposal grew from this realization. Five principal investigators set up the research plan: Dr. Fred Dyer (Zoology), Dr. Fernanda Ferreira (Psychology/Linguistics), Dr. Tom Getty (Zoology), Dr. John Henderson (Psychology), and Dr. Sridhar Mahadevan (Computer Science and Engineering).

In addition to the principal researchers, the grant allows for participation by the more than 30 other faculty members in the Cognitive Science Program.

Within each discipline, a variety of labs conduct research on sequential decision-making. The results are then brought to the larger group. Some psychology graduate students working under the IGERT grant focus on gaze control in humans—how do people move their eyes appropriately to pick up information needed for the tasks in which they are engaged? Every complex task or activity requires that a person directs his or her eyes to certain locations; people do so automatically, many times per second. The visual information is rapidly processed in the brain and used to make complex decisions such that the person looks at the right place at the right time. People aren’t consciously aware of these sequential decisions, but they are happening all the time. For example, when a woman walks into a room, she knows she is in an office and that she should look for an object like a telephone on the desk, and not on the floor or chair. In a split second, using visual information and memory, she has already made a number of decisions about where to direct her eyes in the scene. This process becomes more complicated in activities such as driving, yet the same visual control system makes it possible.

In the lab, researchers measure a person’s gaze patterns in milliseconds using visual eye-tracking technology. Computers can map out where people look in a given situation and then can provide data for understanding how gaze control works. One graduate student, Monica Castelhano, studies how much visual information a person can remember and use in the long term from a single glimpse. If a person looks briefly at something and then looks away, how much information will that person remember later? In the lab, she presents subjects with photos of different scenes and asks them to do different things like identify objects or search for one specific object. One group is told to memorize and another is not. The eye-tracker shows where people look when trying to memorize, compared to where people look when searching for a target object. Castelhano has found scene context can be used to quickly direct the eyes to the search object. In addition, Castelhano has found that both groups remember objects similarly, provided they looked at those objects originally. This occurs even though only one group is actually trying to memorize, an important finding for understanding the nature of visual memory. It also suggests that incidental visual processing results in strong memory representations.

In a related project, psychology graduate student Dan Gajewski examines visual control in the short term. Dan presents subjects with two scenes and asks if they are similar or different. He then tracks their eye movement to see where the subjects look as they compare the pictures. Dan finds that the subjects don’t notice the difference until they look directly at the differing area in the scene’s two versions. This finding calls into question the belief that people see the entire scene at once. Instead, the visual map has more or less detail based on where the person’s attentional focus lies. Not only does this provide information about why and how people hold different things in their memory; it also points to the way in which attention and gaze are controlled sequentially as they interact with the visual world.

Under principal investigator Dr. Fred Dyer, Professor of Zoology, IGERT graduate students in zoology focus on the

When reading or listening to sentences, people re-order ambiguous words or structures. “If we can learn how humans do this, we can apply that knowledge to advancements in computer technologies.”

--Dr. Fernanda Ferreira, Professor of Psychology and Linguistics
sequential decisions that bees make while navigating to and from the hive in their search for food. How do honeybees use landmarks to pinpoint food? How do they use visual attention to best find the food and return to it later? While bees may use a circuitous route to find food, they are able to take a direct path back to the hive. How do they know how to do this? To explore questions like these, the researchers have set up a one-way system of small tubes leading to and from a tented area containing a food source. A surveillance camera traces the movement patterns of the bees as they zero in on the food. Next, a software program translates the images into diagrams which the researchers then use to determine how the bees find their way. They control for smell and other outside factors so that the bees use only the visual cues around them. Once the bees learn where the food hole is, the researchers add certain complications, such as changing the food hole or shifting the navigating landmarks around the food hole. Using the charts, they can study patterns of how long it takes a bee to realize the change, how it learns the food’s new location, how important a role landmarks play, and which landmarks a bee chooses. One goal of these experiments is to create computational models which can accurately replicate bee behavior and visual cognition. Such models can lend insight into how bees and humans decide what visual cues are important and how their brains advance toward optimal navigation.

Zoology doctoral student Frank Bartlett is one of the graduate students working on the bee project under the IGERT grant. He emphasizes the importance of coming together with the other fields in such formats as the weekly IGERT meetings. “All of my research questions have been motivated or affected by the people in different fields. I may not have come up with some of my ideas otherwise. Working under the IGERT grant is very helpful for integrating with other disciplines and understanding the angles from which other fields see similar issues.” The nature of this training grant has also given him a more versatile education that he will take with him outside MSU. “Usually, during the thesis or dissertation, a person learns the techniques specific to that project. Unless you were going to continue to work with bees in your career, you’d have to start all over learning techniques for a new area of study. With the IGERT grant, you can learn a lot of different research techniques to take with you outside MSU. Working with the other cognitive science fields, I have learned how to learn and ask different types of research questions, as well as come up with new procedures more easily. It allows me to be more flexible in my approaches and facilitates the kind of learning I will continue throughout my career.”

The IGERT researchers in Computer Science and Engineering connect their own studies of intelligent machines (robots) with the evidence gained from humans and animals. For example, when a robot moves around or looks around, it faces the same kind of gaze control issues with its artificial vision system that humans would when directing attention to the right place at the right time. Memory and cognition allow humans to quickly focus on the needed information; they know not to waste time looking for people on the ceiling, for instance. Learning how people and animals do this can

To understand how bees use visual cues to remember where to find a food source, Frank Bartlett manipulates different landmarks in a tented area and graphs bees’ flight patterns.
translate into creating new systems for intelligent machines; likewise, work on artificial intelligence can provide insight into human and animal visual control.

Graduate students in Computer Science and Engineering, working with Dr. Aude Oliva, Assistant Professor in Psychology and Computer Science, use data generated by humans and animals to create algorithms that match the ideas discovered in these other disciplines. With such information, they then try to understand underlying factors of visual attention and to simulate the same process in a computer. According to Silviu Minut, a doctoral student in computer science and one of the original graduate students who worked on the KDI grant, “People know from prior knowledge how to look for a specific object and then make decisions based on that stimulus. They have an operational map based on memory that helps them to learn, for example, how best to drive from one place to another. Can we build this kind of memory to seek out and recognize an object in a cluttered environment (such as a lab), in as few steps (visual fixations) as possible?” Silviu worked on this question for his Master’s thesis and was able to “train” a computer to build this kind of memory such that its visual fixations decreased as it learned to recognize and seek out a specific object. The IGERT grant allows for continuation of this work. “We can’t guarantee that human/animal gaze control and artificial vision systems work in the same way, but enough parallels exist that all three areas benefit from conversations with each other.”

The IGERT group in Psycholinguistics examines the decisions adults continually make as they use language in real time—how to choose the right vocabulary words, how to recall the grammar and syntax, how to speak appropriately based on perceptions of audience and situation, etc. As adults, people already have a memory base that assists in these decisions, but even when spoken input is clear, ambiguities exist which necessitate decision-making on the part of the listener. For example, a listener might “fix” an incorrect or ambiguous sentence by backtracking and remaking its structure and meaning.

One area of study involves disfluencies, sounds like “um” or “ah” that punctuate spoken sentences. Dr. Fernanda Ferreira, Professor of Psychology and Linguistics, explains, “Listeners have a familiarity with these interruptions; they expect the ‘ums’ and pauses and incorporate them into the meaning of the sentence. We’ve found that listeners know a disfluency will precede a heavy or long phrase or clause; these interruptions become an informational cue for a person’s language system. In the past, others have seen disfluencies as junk that listeners filter out. We see them as information that listeners use to make better sense of the sentence’s meaning. The sequential decision-making approach has helped us to see this process in a new way.”

In the lab, subjects listen to sentences which contain instructions about how to move objects in the immediate environment. People’s eye movements are monitored with an eyetracker while they listen and manipulate objects. In other experiments, people read sentences while their eye movements are monitored. This allows the researchers to see what letters and words the subjects look at, how long, and if they look backward to fix an “off” sentence. “Such word ordering and decision making,” explains Dr. Ferreira, “is a challenge no machine can do. If we can learn how humans do these things, we can apply that knowledge not only to our continuing study of human behavior but also to advancements in computer technologies.”

The collaborative learning that takes place under MSU’s IGERT grant continually benefits graduate student research. As Monica Castelhano explains, “The collaborations and new ideas that can result are amazing. You might go to a conference or your department might host a speaker but the
The Heart of a Practice: MSU’s Medical Professional Students Benefit From Broad-Based Programs

In the continuing effort to prepare future doctors to assume professional roles within the medical community, Michigan State University is making good the promise of broad-based education. The Colleges of Human Medicine, Osteopathic Medicine and Veterinary Medicine have each successfully created an approach to medical practice that emphasizes the need for physicians to combine clinical work with an expansive disciplinary connection.

Graduate School Dean Karen Klomparens says, “MSU is unique in that we have three medical colleges on our campus that train doctors for the practice of medicine. In addition, we have a College of Nursing and a clinical Psychology program that rounds out our health care education portfolio. MSU is proud of each of these programs that provide a unique approach to the education of medical professionals.”

Through the medical professional program in the College of Veterinary Medicine (CVM), students are provided with a healthy dose of clinical science, enhanced by a sense of professionalism and ethical responsibility. According to Associate Dean Janver Krehbiel, “our students have a strong basic science background, analytical skills, and communication skills in dealing with animals and owners of animals. They learn to develop clinical skills in order to examine and determine the cause of problems. And, they also learn the knowledge-base to identify and determine a solution to the problem.” This emphasis on integrated problem-solving teaching models is an important part of CVM’s educational model. Students are educated by a faculty of nationally board-certified specialists who are essential to the clinical phase of the program and who also teach fundamental veterinary science in the pre-clinical phase. Most of the faculty are veterinarians, many of whom also have Ph.D.s. In addition, there is a significant number of basic scientists who provide a research perspective to the educational experience. This very broad expertise in the faculty contributes positively to both the clinical and pre-clinical phases of the program.

The professional program in the College of Veterinary Medicine at Michigan State University includes two and one-half years of pre-clinical science and one and half years of applied clinical experience. The first five semesters focus on basic veterinary science, along with a unique capstone course called Veterinary Integrative Problem-Solving (VIPS), which integrates the information provided in each respective semester. “For example, in the first semester students take a broad course in animal science as it relates to veterinary medicine, gross anatomy, microscopic anatomy, immunology, radiology, and a course in animal handling.” Krehbiel adds that “the VIPS course has problem-solving sessions that focus on a given animal health problem as it relates to the anatomy, immunology and health management issues of a single animal or a group.” The problem-based sessions are highly interactive and students work with a facilitator to define learning issues, develop differential diagnoses and collectively define treatment alternatives. “The fundamental key to interactive problem-solving is defining and understanding the problem, gathering sufficient and accurate information to draw logical diagnostic conclusions. This is a student-led, step-by-step process, and facilitators serve as guides in the process rather than sources of information.” Krehbiel points out that interactive and problem-based learning is not unique to CVM/MSU but is present in a number of institutions throughout the United States and Canada.

The clinical phase of the MSU program is one and one-half years and provides the longest clinical phase exposure of any of the veterinary schools in the US and Canada. The one and one-half year of clinical study is broken into 23 three-week blocks. There are 10 required core experiences and 10 elective experiences and 3 three-week vacations. Most of this clinical education occurs in the veterinary teaching hospital on the MSU campus. However, students may take up to 25% of their electives in off-campus experiences. Most students choose clinical practice settings, working with veterinarians who treat primarily small animals, food animals or horses. In addition, CVM helps students gain non-traditional practice experience working in places such as the Armed Forces Institute of Pathology in Washington, DC, or the Centers for Disease Control in Atlanta, or working with foreign animal diseases on Plum Island off the shore of Long Island New York. Students may also acquire experience with zoo and wildlife species at zoos in many of the larger cities throughout the United States.

International programs are also encouraged and study abroad blocks are available in veterinary schools in Thailand, Germany, France, and India. These experiences give students an exposure to global animal health problems and foreign diseases that are not present in the United States.

While students do not specialize in a given species or discipline, they may elect to emphasize areas of special interest such as equine medicine, dairy herd health or small animal veterinary practice.

For veterinary student Tiffany Summers, the program’s dedication to well-rounded medical training is a significant part of the program’s draw. She explains, “Some schools will track you; if you’re interested in small animal medicine, then during your clinical rotation you are trained solely in small
animal medicine. MSU gives its veterinary students an opportunity to take a variety of courses so that you can still hone your skills in your area while being given a broad background in other subjects.” Summers hails from Nevada, a state in which there are no veterinary schools, and she has found that the extensive preparation in clinical rotations and communication skills is also an important part of the program’s attraction for out-of-state students.

Interested in small animal medicine, Summers came to MSU with a background in primates and wanted a program that would build on her skills in that area while developing her new focus. She notes that the guest speakers that have come to CVM to present their work have all consistently stated that communication skills in a veterinarian are critical. “Because I eventually want to own a clinic this element of the curriculum is of extreme importance to my studies,” she says.

In addition, students are given course-work in business and financial planning to prepare them for the administrative aspect of veterinary practice. “People going into veterinary medicine are in the field because they love animals and medical science. These business courses give us a footing in the trend toward giving veterinarians the business aspect of veterinary medicine and helps the field to evolve,” says Summers.

The dedication of the CVM faculty creates camaraderie with the students that helps to make the atmosphere caring yet intensive. Faculty frequently work with students outside of scheduled class time to ensure the success of student training. “They go above and beyond trying to make sure that we understand the concepts behind our training,” says Summers.

One of the experiences that she points to, as an example, is the program’s strong emphasis on students’ need for well-rounded instruction in surgery. During the last two semesters prior to clinical rotations, students work on models to learn surgery techniques. Professors and teaching assistants monitor the work, answer questions, and give hands-on training in the area. They teach students how to hold instruments, handle tissue, and monitor their patients. Working in teams of three, students take turns as anesthetist, assistant surgeon and surgeon. They perform orthopedic surgery, soft-tissue surgery, and recovery surgeries such as neuters and spays. This practice makes the transition to clinical clerkship smoother and gives students a unique competency in their work. According to Summers, “this gives us a preview into surgery and makes us confident in our skills.”

While most CVM students go on to clinical practice, the majority of them will be service providers, care givers, or small animal veterinarians. Approximately twenty-five percent of these students will be providing health care services to food animal species, such as cattle and poultry, while others may choose to work primarily with horses. “Those students who want to specialize within clinical practice require specialty training and may choose a post-DVM residency. For example, they may study internal medicine, orthopedic surgery, ophthalmology, or dermatology; or, they may choose a specialization in a basic science such as pathology, microbiology or pharmacology,” Krehbiel says. This diversity of career options makes for committed students who have a broad spectrum of opportunities within the veterinary medical profession.
According to the U.S. News and World Report, the Michigan State University College of Osteopathic Medicine (MSUCOM) is the number one ranked osteopathic college in the country with regard to primary care education. The College, established to meet the health care needs of the people of Michigan, was the first state-supported osteopathic college in the nation. Started at MSU in 1979, the College trains a diverse group of medical professional students, primarily from Michigan, but also from throughout the United States.

According to Dr. William Falls, Associate Dean/Student Services, MSUCOM’s approach to training physicians is built on students receiving a strong basic science and clinical knowledge base as well as the necessity of getting to know the whole person. He says, for example, “When a patient walks into your office with a medical problem, you don’t just look at the problem, but what is the cause of the problem. Therefore, an osteopathic physician asks patients whether others in their family have had similar problems. What is their life situation at home? What are living conditions like? They look at the whole person and how he/she is interacting in his/her environment.” In addition to this approach, students are taught to use their hands to diagnose pathological changes in body structure and function, and then to use their hands again to restore normal structure and function using manipulative techniques. The ability to view a medical problem from a clinical and environmental perspective is at the heart of an MSUCOM student’s training. The program also gives students opportunities to learn by participating in clinical activities that support the local community.

More than half of MSUCOM students will practice primary care medicine/family practice, general internal medicine, or general pediatrics while others will enter other medical specialties. Diversity is important to the college and is reflected in the lives and experiences of students. The quest for further diversity in the student body has been enhanced by the employment of a minority recruiter who will seek out promising underrepresented minority candidates who would not normally be familiar with the possibility of a career in osteopathic medicine. “We are the first osteopathic college in the country to hire a minority recruiter. We are reaching out to minority populations both within Michigan and nationwide,” Dr. Falls says.

“With over twenty-one student organizations in the college, there are several opportunities for student interaction with issues that impact patient health,” he adds. The Community Integrative Medicine Student Association, (CIMSA) is one student organization that works tirelessly in the community by administering health screenings and promoting healthy life styles to community residents. This encouragement to perform service provides camaraderie among the students and faculty and promotes a collegial approach to medicine. For these reasons, MSUCOM students make a concerted effort to participate in one or more of the over twenty student organizations.

Students reinforce their clinical training in manual medicine with practical experiences in the community. For example, one evening per week, students run a clinic in osteopathic manipulative medicine. MSUCOM students originated the idea for such a clinic, and MSUCOM is the only osteopathic college in the country that offers its students this opportunity. Supervised by osteopathic physicians, the clinic reinforces classroom instruction by offering students the opportunity to practice their diagnostic and treatment skills. Dr. Falls notes that “community interaction through the student organizations and through participation in the student manipulative medicine clinic makes MSUCOM students more prepared to go into general practice.” The surrounding community has recognized the students’ public service efforts. Two years ago MSUCOM students received the prestigious Crystal Award for community service awarded annually by the City of East Lansing. “Our students were very fortunate to win that award because every year there are approximately thirty to forty individuals and groups nominated, all of whom are most deserving,” says Dr. Falls. This accolade is an affirmation of the emphasis that the college places on the role of physicians interacting with the community.

In addition, MSUCOM students work with the people of Lansing and East Lansing on a variety of projects. They build homes with Habitat for Humanity, do sports physicals for Special Olympics, and work with the International Bread Company to provide bread to the homeless shelters. The students, along with faculty, also staff Community Health Fairs such as the one on October 29, 2002, at the Cristo Rey Community Center, where their services included blood pressure screening and diabetic counseling. For those individuals in the community who cannot afford to see a physician, these health fairs provide an opportunity to have access to basic healthcare. According to Dr. Falls, “all of these community activities allow students to practice their skills and learn how to interact with people from different cultures, which we feel is very important. In addition, the more interactions the students have with the community and the more practice they receive, the better they’re going to be prepared when they become physicians.”
The College of Human Medicine (CHM) takes a multi-focused approach meant to prepare students for practice by allowing them to look at medicine as part of a larger picture, according to Associate Dean Ruth Hoppe, M.D. For many years medical schools have focused on a definition of the role of the medical professional that emphasized only hard science knowledge and basic clinical skills. The College of Human Medicine has expanded the definition of what a medical student needs to know to include not only biomedical science and skills, but also the sciences of behavior and the management of information and evidence. Further, the College includes a specific focus on the moral basis of becoming a medical professional.

At the forefront of these changes are questions regarding ways in which doctors may view their work with both their colleagues and their patients: What is needed in order to be responsive to society’s expectations for medicine? What are some of the underlying philosophic, moral and ethical processes that guide patient/physician behavior? What knowledge does a physician need in order to practice effectively? For Dr. Hoppe, CHM’s response to these questions has been to anticipate some of these changes in the field, and in some cases, to lead the charge. With a large and dedicated faculty, including MSU faculty and volunteer faculty from outside the University, CHM has a reputation for producing very talented primary care physicians. This reputation has, in part, been the result of national recognition for innovations in its approach to teaching its students. CHM pioneered the use of simulated patients in student training. It also is recognized nationally for its use of problem-based learning, as well as the incorporation of community and volunteer faculty in professional medical training. The curriculum includes courses on human development that focus on human behavior as it relates to health. In addition, there is a sequence in the course work that explores the social context of medicine, where students are asked to look at “the big picture of how health care is organized and financed.”

Two ways in which CHM has succeeded ahead of the curve are in the areas of information science and the development of a socially-based focus of knowledge. For the College of Human Medicine, these approaches are an important highlight of the development of a medical professional. It means understanding the value of the profession and the values and hopes of the doctor and patient. “We pay close attention to what we call a ‘virtues-based’ approach to professional development,” Dr. Hoppe says.

Competence, honesty, compassion, respect for others, professional responsibility and social responsibility define the faculty’s view of successful medical training. These guidelines underlie the issues that are paramount in a whole-patient perspective on medicine. They emphasize the responsibility of the doctor to the rules of the profession, the fulfillment of those responsibilities in a timely manner, and a concern for the patient’s welfare. In addition, the element of social responsibility illustrates issues that affect a student’s overview of patient concerns, such as the lack of adequate healthcare for a large segment of the population and the need for physicians who act on behalf of that population. “Some students work with volunteer faculty to run a free clinic on Saturdays through Sparrow Hospital. It’s a superb way for early medical students to gain experience working with patients,” she says. This makes CHM an attractive prospective program for medical professional students with undergraduate backgrounds that include substantial social science training. This approach also guarantees that the diversity of student backgrounds will, in part, correlate with the ability to serve a wider variety of patients. For student Laura Friedhoff, her undergraduate degree in Anthropology brought a diverse background and wide pool of knowledge to the Rural Physician Program. Laura points to the College’s emphasis on attracting students from a variety of background areas—medical and nontraditional—as a major component of her choice to pursue her studies at MSU.

(See “Medical” · page 15)
Training MSU Undergraduates, Faculty, and Future Faculty for Interdisciplinary Teaching and Learning

Preface by

DEAN KAREN KLOMPARENS

Interdisciplinary teaching and learning are reasonably well-developed at the graduate education level. Programs like the NSF IGERT (see page 4 of this edition of The Graduate Post) reinforce the goal of cross-disciplinary approaches to encourage research at the nexus of disciplines. Conducting research in this way has profound implications for graduate education, particularly doctoral education as it is inextricably connected to research. And, courses like Veterinary Integrated Problem Solving (see page 8) are successfully used to help professional students integrate course-based knowledge across a given semester.

But what do we know about interdisciplinary teaching and learning at the undergraduate level? How are undergraduates exposed to this approach? What and how do they learn as undergraduates that might benefit them as future graduate students in programs like the IGERT in Cognitive Science or the College of Veterinary Medicine? Are we successful in these approaches? How do we know? And, related to professional development of graduate students, how do universities help graduate teaching assistants learn how to use an interdisciplinary approach successfully in an undergraduate classroom?

Kevin Johnston explores these and related issues in the article below.

KEVIN JOHNSTON
Curriculum Development Specialist and
Director, University TA Programs

I had a chance as a graduate student at a southern research university in the mid-1990s to teach undergraduate honors students in classes that were part of an “interdisciplinary” program. This program’s curriculum, tied together by such meta-themes as Culture, Gender, Environment and Society, etc., consisted of classes taught by instructors and faculty from a wide range of disciplines.

My lectures generally focused on historical notions of Southern masculinity and how those notions related to the occurrence of southern violence. Because southern squabbles can and do often start, end, and start again for completely different reasons, it is no wonder scholars of the South claim that there exists an “interdisciplinary” quality to southern violence. I thought my topic would fit perfectly within an interdisciplinary curriculum.

Unfortunately, although the topic fit, the way I taught it did not. In addition, after talking with students finishing the program at the end of the semester, I was not the only instructor who came to the experience with barely half of what I needed to teach a richly complex subject using an interdisciplinary approach. We more often than not ended up mercilessly bombarding our students with multi-disciplinary opinions on large issues, expecting them to be able to pull together, on their own, coherent meaning from extremely diverse sets of ideas and academic approaches.

After the experience I was left wondering if there was really anything interdisciplinary about the role I played in that program. I did not coordinate formally with any of the other presenters, didn’t really consider adequately how my historical perspective might mesh with an economist’s or a sociologist’s, and didn’t spend much time thinking about (or being educated to think about) the larger themes which fit into the course I taught.

My reflections on all this now, some eight years after the fact, lead me to conclude that my students did not experience interdisciplinary learning at all. Without my facilitating their understanding of how what I was saying “fit” in other contexts, I had left them to their own discipline-bound understandings (provided they had them) of the material I presented.

Fortunately, it appears that undergraduates’ chances to experience true interdisciplinary education have increased considerably over the last 15 years both at MSU and nationally. William Newell, reflecting ten years later on Kenneth Boulding’s 1986 compendium of interdisciplinary programs, noted that since the mid-1980s, interdisciplinary programs have more than doubled (Edwards vii). He concluded that what once might have appeared once as a passing fad has become an important feature of the modern academic landscape.

Though Boulding and Edwards both contend that their directories are not exhaustive, I think they have set an excellent evaluative standard for what constitutes true interdisciplinary education at the undergraduate level. Their criteria are, in short: 1) That course “interdisciplinarity” be an honest attempt at integration of material; 2) That it be organized explicitly as an interdisciplinary experience; 3) That it represents a conscious attempt to further interdisciplinary learning; 4) That interdisciplinary programs be institutionally recognized as such; and 5) That the structure be persistent (not a one-time experience) (Edwards ix).
Several MSU undergraduate programs meet most if not all of these interdisciplinary standards. In fact, some of their standards go beyond them, addressing and avoiding the problem I had created for myself when teaching southern history as just history in an integrated context. There exists in all three of the MSU integrative studies programs the organizational integrity and intention to foster true interdisciplinary learning for undergraduates.

When I asked Duncan Sibley, Director of the Center for Integrative Studies in General Sciences (CISGS), if he thought his program’s integrative studies in biological (ISB) and physical (ISP) sciences were truly interdisciplinary, he quickly replied that they were in both design and implementation. He added that one should also consider the quality of interdisciplinary studies to be a matter of a program’s disciplinary breadth as well as interdisciplinary depth.

When I asked Ken Waltzer, Director of MSU’s Center for Integrative Studies in the Arts and Humanities (CISAH), the same question, he responded that IAH offers many genuinely integrative and interdisciplinary courses. Waltzer also commented that MSU requires faculty interested in teaching in IAH to submit proposals of courses that both cross some interdisciplinary boundaries and differ from courses taught in the disciplinary departments in which their faculty appointments reside. He added that they must also draw to some extent on interdisciplinary materials.

The Director of MSU’s Center for Integrative Studies in the Social Sciences (ISS), Assefa Mehretu, agreed with Waltzer that “courses [in ISS] are conceived and designed as interdisciplinary courses.” Mehretu added, “And, with few exceptions, ISS faculty teach them in an integrative fashion.” Mehretu added that ISS faculty apply integrative pedagogy and choose texts that approach socioeconomic issues from an integrative perspective rather than a disciplinary perspective.

One of my concerns about my experience described earlier was that I’d received no real tutoring or training in making what I knew about history an “interdisciplinary” learning experience for my students. I asked the three Integrative Studies Directors if they trained their faculty to teach in an interdisciplinary context. They all agreed that they did not; however, they said that modern academic inquiry and cross-discipline sharing has already permanently changed teaching in higher education, expanding once discipline-bound approaches to include a wide range of intellectual and presentational styles.

“Some faculty are broader in scope than others,” Sibley remarked. “I think we all discuss physical science, biological science, social, and political aspects of a topic.” He added that his faculty spend more time on interdisciplinary issues and introduce multiple perspectives in the classroom more often than students would encounter in most introductory science courses. Echoing the national response to my questions about interdisciplinary training, Sibley went on to remark that the very nature of the academy has changed over the last decade and that MSU faculty have “naturally migrated” across classical intellectual boundaries. As importantly, they have the knowledge to teach interdisciplinary topics. “Integrative Studies is a wonderful forum for them to share what they have discovered,” he concluded. “Most ISP/ISB faculty need little if any assistance in mastering the interdisciplinary terrain.”

Mehretu mentioned that ISS did not have a special course for professors to teach integrative studies. He added, however, that required doctoral training in cognates has necessarily affected the way Ph.D.s consider their core subjects. “Many professors are also led into interdisciplinary reading and analysis in connection with their many years of teaching and research agendas,” Mehretu commented. He concluded our conversation by describing what William Newell has claimed is an extremely important, but often overlooked aspect of interdisciplinary training, that is, informal network sharing (Edwards vii, ix.). “In our case, we have an informal program for ISS professors (especially new ones) who teach ISS courses to share information on course designs, syllabi, readings, pedagogy, etc., with their more experienced colleagues through what we call the “Faculty Forum.”

Waltzer answered my query much the same way as his colleagues. CISAH does not specially train its faculty in part because disciplines have evolved to the point where interdisciplinary sharing is a normal part of professional growth. As a result, Waltzer sees that many of MSU’s faculty, particularly younger faculty, are “genuinely interested in interdisciplinary teaching.” He added that he would like to have faculty adopt similar interdisciplinary teaching goals across all the courses -- especially the goal of introducing students to multiple ways or modes of knowing or seeing characteristic of intellectual life in the colleges. “It is one thing to be interdisciplinary or teach in that manner,” Waltzer claimed. “[It’s] another to convey to students some of the process of bringing together the interdisciplinary sets of assumptions, questions, and approaches.”

In my role and experience with TA training, I believe serious work remains to be done on developing graduate students into more interdisciplinary-minded teachers (Boyer Commission; Rosenthal and Rodriguez; Davis). Before coming to MSU, my experience was that the making of most all the cross-discipline learning “connections” is left up to the students. By just tossing out new contexts in which students should understand information, we seem to believe we had fulfilled our disciplinary “duties.”

Disciplinary context is crucial to further students’ understandings of complex issues; it acts as a memory aid or a “situational cue,” prompting not only a student’s recall of information but also an ability to interpret it meaningfully (Bruning, et al.). But when programs offer topics within what seems to be interdisciplinary contexts, only to have these topics taught by graduate students and/or faculty steadfastly committed to their own disciplinary realms, students can miss the depth and breadth of the true interdisciplinary experience. My hope is that as interdisciplinary programs continue to
become more of the university curricular “norm” for undergraduates, we will begin to train more future faculty to not only think in an interdisciplinary manner, but teach that way too.

Fortunately, I can close this column with some good news about interdisciplinary teacher preparation by saying that MSU is beginning to train graduate students to teach beyond their disciplinary contexts. Waltzer and his colleagues in IAH are making admirable strides in that direction. They provide training for graduate assistants -- workshops, especially -- on how to teach about things that may be beyond their disciplinary training (e.g., how to read and teach images, how to read and teach poetry or drama, etc.).

Waltzer believes that graduate students working together bring to one another their own teaching experiences and desires, prompting another kind of interdisciplinary experience. “Graduate students who teach together in courses like IAH 201 also add to the interdisciplinary reality of CISAH,” he commented. “We have some graduate assistants interested in teaching in context; others interested in teaching texts; some adept at historical explanation; others adept at textual and inter-textual explication.” For Waltzer and his graduate teaching assistants, then, “interdisciplinary” can mean interaction as well as instruction. If a university at its core is a community of research and teaching scholars, and I think it should be, IAH graduate student teachers are getting an important interdisciplinary “head start” on their peers at other universities by working, learning, and teaching in interdisciplinary contexts.

Kevin Johnston can be reached at kmj@msu.edu

**SOURCES**

The Boyer Commission on Educating Undergraduates at the Research University: Reinventing Undergraduate Education, Section IV: Remove Barriers to Interdisciplinary Education. http://notes.cc.sunysb.edu/Pres/boyer.nsf/webform/IV.


In CHM, the first two years of a student’s experience is spent in lecture and small group classroom learning. During their third and fourth years, students train in hospitals and clinics to gain practical experience. The MSU community-based approach to medical training uses several satellite campuses in which students work during the latter part of their education. These include campuses in the Upper Peninsula, Saginaw, Grand Rapids, Kalamazoo and Lansing. Students spend each day taking patient histories, giving physical exams, and developing their general skills. Since 80% to 90% of successful diagnosis is contained in a patient’s history, this training is invaluable. Friedhoff explains, “We are able to engage a patient in conversation in a way that helps us make a diagnosis and that helps the patient feel heard. In addition, we’re trained in such a way that we think about the bio-psycho-social aspects of the diagnosis. With the biological aspect we look at what is going wrong inside the mechanics of their physiology, and with the psycho-social element we look at their life and their mind.” In addition, students in the Upper Peninsula campus are dispatched for an eight-week experience in rural family practice outside the hospital environment. This component of medical education is unique to both CHM and the Rural Physician Program. For Friedhoff this has been one of the greatest benefits of her training. It affords an opportunity to interact through a more personal relationship with the member of the community in which a student is assigned.

According to Friedhoff, the process by which students choose a medical college affects what the student is searching for in a training experience. She notes that because the various medical programs each have their own “personality,” it was important to search for one in which her social science skills would be considered an asset to the program. CHM’s broad-based approach to teaching has made this possible.

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<td>Humans</td>
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<td>Thursday, January 23, 2003 6:00-8:30 PM</td>
<td>Tuesday, February 11, 2003 6:00-8:30 PM</td>
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<td>Room 104, Kellogg Center</td>
<td>Conference 62, Kellogg Center</td>
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<tr>
<td>Robert J. Ceru, M.Sc.</td>
<td>David E. Wright, Ph.D.</td>
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<td>Terry A. May, Ph.D.</td>
<td>David E. Wright, Ph.D.</td>
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Dr. Ferreira notes that the IGERT grant facilitates leadership training for graduate students. “Because the graduate students supervise the undergraduate students working with them, they gain knowledge that will help them run their own labs once they leave MSU. Also, because they have access to resources, they get experience writing proposals and requests for travel money. This helps prepare them for future grant and proposal writing in their careers.”

The IGERT grant will also help MSU’s Cognitive Science Program develop in the future. “This is really just the beginning,” states Dr. Henderson. “From this base we can now expand as a pre-eminent cognitive science program, leading to more funding, additional graduate students, and better research. We are very excited about the possibilities that lay ahead.”

Graduate School Dean Karen Klomparens is also excited about the IGERT grant. “The interdisciplinary nature of the educational process that is the foundation for an IGERT grant is the future of much of doctoral education in the sciences and engineering, broadly defined. I am proud of our faculty and graduate students who participate in the IGERT. I’m sure they will have many interesting lessons to share at the end of five years, not only in the research areas, but also in terms of how research can be conducted successfully across disciplinary lines, language/terminology, and methods.”
WELCOME

Barbara Ball-McClure Joins Development Office

Barbara Ball-McClure has recently been appointed Director of Development for The Graduate School. Barbara will be replacing Cara Boeff, who has accepted the position of Associate Development Director for the College of Agriculture and Natural Resources.

Says Dean Karen Klomparens, “The Graduate School is pleased to welcome Barbara to our team. Her experience in fundraising and sincere interest in graduate education and graduate students will be a real advantage for us as we aim to increase fellowship funding.

An alumna who earned her B.S. from MSU in 1976, Barbara brings to her new position fundraising experience in the academic, business, and political sectors. She has been with Michigan State University for three years serving as a Development Officer, as the Development Director for the College of Osteopathic Medicine, and as a Special Gift Officer for University Development. Prior to coming “home” to MSU, Barbara held a wide variety of development positions including the following: Director of Development for the College of Arts and Sciences and Learning Resources and Technologies at Eastern Michigan University; Vice President of Mammoth Oak, Inc.; Director of Advancement for McPherson Hospital; and Director of Development for Sinai Hospital of Detroit. She also organized various fundraising projects for the National Republican Congressional Committee in Washington, D.C., and worked directly with Senator Bob Dole to secure major donor contributions.

“I look forward to working with Graduate School Dean Karen Klomparens, the staff of the Graduate School, and the Colleges within the University during the next few years to increase the graduate fellowship money available to our talented, knowledgeable and motivated graduate students. We need to have greater financial resources available in order to recruit the best and the brightest to our graduate programs throughout the University. I look forward to the challenge.”

East Lansing is truly home to Barbara as she and her husband Chris both grew up here; her parents still live in town as well. Barbara and Chris have three children: Sarah, Bryan, and Christine. In addition to her development responsibilities, Barbara is pursuing a Master’s of Public Administration from Michigan State University. Welcome, Barbara!

CAPITAL CAMPAIGN UPDATE

On September 20, 2002, Michigan State University launched its Capital Campaign, the first since 1988, with a history-making fund-raising goal of $1.2 billion. The theme of the campaign is “Advancing Knowledge. Transforming Lives.” Vice President for University Development Charles Webb states, “This campaign builds on our excellence to set the tone for MSU in the next decade and well into the future. It is a collaborative and collegial effort representing all the colleges and administrative units with significant leadership from the deans.”

A major goal of the campaign is to increase MSU’s endowment from its current level of $810 million to more than $1 billion. Endowments are permanent funds invested to provide income for specified purposes, providing for a level of quality that state funding alone can’t offer, as well as insulating the university from inevitable economic cycles.

Along with the 13 graduate degree-granting Colleges, the Graduate School is participating in development activities to secure endowment funds for graduate fellowships. Our goal is to increase the number of University Distinguished Fellowships and Dissertation Completion Fellowships, as well as to provide funds for increased graduate student professional association/disciplinary meeting conference travel and research enhancement. ◆
TRAVEL GRANTS RECOGNITION

This regular feature highlights the graduate and professional students who have presented their research at state, regional, national and international disciplinary and professional society meetings during the Spring and Summer 2002 semesters. The list includes only those students who received funds from the Graduate School. There are certainly many other students who have traveled the globe to present their research.

Attending and presenting at disciplinary and professional conferences is an important part of professional development for graduate students. It is a key component in the development of a professional network that can provide contacts for collaborative research, future jobs and internships, and funding. And of course, it is a rigorous venue to try out ideas, present data and analysis, and gather helpful input for continuing research.

The Graduate School is proud to highlight the achievements of these students. As they gain professionally and personally from these experiences, they also represent MSU to the wider community of scholars in the state, region, nation, and world. We congratulate these students on their accomplishments!

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

NEVEN, DAVID  
Agricultural Economics  
Noordwijk, Netherlands  
International Food and Agribusiness Management Association  
Modal Choice in International Alliances Between Producers of Horticultural Products

GOROSTIAGA, KARINA  
Agricultural Engineering  
Anaheim, CA  
Institute of Food Technologists Annual Meeting and Food Expo  
Supercritical Fluid Extraction of Quercetin from Onion Skins

LAI, KATHY  
Anaheim, CA  
Institute of Food Technologists Annual Meeting  
Tapas Twists

RIDDLE, STEPHEN M.  
Kyoto, Japan  
Biosensors 2002, The Seventh World Congress on Biosensors  
Commercialization of a Conductimetric Biosensor

HAN, JIYOU  
Baltimore, MD  
35th Annual Meeting of the Society for the Study of Reproduction  
Effects of Gestational and Lactational Exposure to 17a-ethynylestradiol on Ovulation and Egg Fertilization Ability in Mice

MARTINEZ, MICHELLE  
Berkeley, CA  
International Symposium for Trace Elements in Man and Animals  
Impact of Pharmacological Zinc and Phytase on Liver Metallothionein Concentration and mRNA Abundance in the Young Pig

RINICKER, MIKE  
Berkeley, CA  
International Symposium for Trace Elements in Man and Animals  
Comparison of Organic vs. Inorganic Sources of Zinc Supplementation on Zinc Retention in Young Pigs

ROWNTREE, JASON  
Berkeley, CA  
International Symposium for Trace Elements in Man and Animals  
Influence of Breed on Selenium-Glutathione Peroxidase Activity in Cattle

UNGERFELD, EMILIO  
Aberdeen, Scotland  
Beyond Antimicrobials—the Future of Gut Microbiology  
Effects of Combinations of 3-Butenoic Acid and Two Inhibitors of Methanogenesis on in Vitro Ruminal Fermentation

BARTHOLOMEW, PAMELA  
Durban, S. Africa  
Association for International Agricultural and Extension Education Conference  
An Anthropological and Human Rights Based Approach to International Extension: Implications for Sustainability

KONSTANTINIDIS, KONSTANTINOS T.  
Crop & Soil Sciences  
Halkidiki, Greece  
2002 Bouyoukos Conference  
Characterization of Copper-Resistant Bacteria from a Contaminated Superfund Site

HEREAU, HOLLY  
Entomology  
Leiden, Netherlands  
Fourth International Conference on the Biology of Butterflies  
Heterospecific Preferences of Male papilio canadensis are Extended Only to Yellow, Not Dark Morph papilio glauces Females in Field Tethering Studies

DANFORD, TAMEKA  
Fisheries & Wildlife  
Portland, OR  
17th Annual National Career Fair and Training Conference for Minorities in Agriculture Natural Resources and Related Sciences  
Utilization of an Ecological Classification System for Predicting Amphibian Occurrence and Abundance

AMIN, SAMIR  
Food Science and Human Nutrition  
Quebec City, Quebec, Canada  
2002 Joint American Dairy Science Association/American Society of Animal Science Annual Meeting  
Water Solubility and Mechanical Properties of Heat Cured Whey Protein Isolate—Based Edible Films: A Comparison to Commercial Collagen and Natural Casing

SUNTHANONT, KORADA  
Anaheim, CA  
Institute of Food Technology  
Purification of Limonoids from Sweet Orange (Citrus sinensis) by Semi-Preparative HPLC

WHITE, ERIC M.  
Forestry  
Champaign, IL  
Central Hardwoods Conference  
Diversifying Farm Income Through Woodlot Management: Characteristics of Farmer-Owned NIPF Land in Illinois

OSBORN, CHAD  
Horticulture  
Toronto, Canada  
International Society of Horticulture Science  
Resistance to Black Root Rot among wild clones of Strawberry, Fragaria virginiana and F. chiloensis

KANAVOURAS, ANTONIS  
Packaging  
Montreal, Quebec, Canada  
American Oil Chemists 2002 Annual Meeting  
Application of DHS-TD and SPME to the Analysis of Olive Oil Flavor

* Limited funding is available from The Graduate School for travel to present research. Departments and colleges are expected to cost-share. Find out more on our website: http://grad.msu.edu/funding.htm or call 517.355.0301, or visit 318 Linton Hall.

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TRA VEL GRANTS RECOGNITION

Compounds

LIMJAROEN, PAWEENA
Anaheim, CA
Institute of Food Science Technology
Antimicrobial, Mechanical and Barrier Properties of Polyvinylidene Chloride Food Packaging Films Containing Sorbic Acid, Potassium Sorbate or Nisin

XIONG, LI
Anaheim, CA
2002 Institute of Food Technologists Annual Meeting
Differentiation of Adhesives Used in Plastic Food Wrap by Using Sensory Evaluation Testing and Electronic Nose

WILES, CRAIG
Lake George, NY
Northeast Recreation Research Symposium
Michigan’s Agricultural Heritage: Using Historical Data to Develop Authentic Heritage Attractions

ESTRADA-VALLE, JUAN M.
Amsterdam, The Netherlands
Fifth International Conference on Chain Management in Agribusiness and the Food Industry
Impacts of U.S. Food Safety Standards on Guatemalan Horticulture Supply Chains

HUGGINS, MELISE D.
Honolulu, HI and Cleveland, MS
1) International Social Science Meetings  2) Community Development Society Annual Meetings
Volunteer Participation in Urban Neighborhood Organizations: The Interaction of Individual, Neighborhood and Contextual Characteristics

MATA, JAGANNADHA RAO
Victoria Falls, Zimbabwe
International Symposium on Environmental Politics
Probability for Effectiveness of Public Information Disclosure as Pollution Control Tool in Korea

COLLEGE OF BUSINESS

SONMEZ, ELIF
San Juan, Puerto Rico
Annual Meeting of the Academy of International Business
The Impact of Income and Real Exchange Rate on the Competitiveness of Turkey

COLLEGE OF ARTS AND LETTERS

DUFF, KERRY
Toronto, Canada
Popular Culture/American Culture Associations Conference
Biographies of Scale: The Memoirs and Lives of Nineteenth-Century Midgets

IBIRIONKE, OLABODE
San Diego, CA
African Literature Association
Matador: Womanism and Postcoloniality in Ngugi’s Petals of Blood and Chamoiseau’s Texaco

OLASE, ILDOKO
Riverside, CA and Iowa City, IA
1) (Dis)junctions Conference  2) The University of Iowa 17th Annual Art History Graduate Student Symposium
1) Fallen Fate: Women in Tess of the d’Urbervilles and the Pre-Raphaelite Painting  2) Women’s Morality and the Painter’s Role in the Paintings of the Pre-Raphaelites

HAY, AMY M.
Kansas City, MO
75th Annual Meeting for the American Association for the History of Medicine Conference

M’BAYO, TAMBA
San Jose, CA
8th Stanford-Berkeley Law and Colonialism Symposium
Indigenous Interpreters in the Making of Colonial Senegal: Duda Seck (Bu El Moglad), 1826-1880, A Preliminary Survey

PRACTICE, CHRISTINA
San Diego, CA
African Literature Association
Disempering Whiteness

SENE, Ibra
Dakar, Senegal
West African Research Association’s Interdisciplinary Symposium on Field Research in Africa
Writing the History of 19th and 20th c. Senegambia with Colonial Archives

BRUBAKER, CATHRYN
Washington, DC
The American Council on the Teaching of Foreign Languages Conference
Learning German With No Strings Attached

CHANG, HISANG-HUA
Madison, WI
23rd Annual Symposium on Research in Child Language Disorders
Child Acquisition of the Aspect Marker -le in Mandarin Chinese

LIOU, YU- FEN
Tucson, AZ
North American Conference on Chinese Linguistics
On Chinese Temporal Clauses

YONEZAWA, MIDORI
Lexington, KY
55th Annual Kentucky Foreign Language Conference
The Influence of Devoicing on Japanese Dialect Identification

CHOE, MIJUNG
Bolivia and Puerto Rico
National Conservatory of Music and the Hemispheric Center at the University of Puerto Rico
Perform at the National Conservatory of Music in LaPaz, Bolivia and perform a concert in Puerto Rico

CORCHADO, NELSON
Greensboro, NC
International Tuba and Euphonium Competition
Tuba Quartet performance

DROBNACK, KENNETH
New York and NC
2002 International Tuba and Euphonium Conference
Tuba Quartet performance

ENABNIT, BRIAN
Greensboro, NC
2002 International Tuba and Euphonium Conference
Tuba Quartet performance

HINTZ, SARAH J.
Northfield, MN
College Music Society Great lakes Chapter Annual Conference
Taking a Fresh Look at the Jazz Vocal Ensemble

KANG, JI-EUN
Terni, Italy
25th Cassagrande International Piano Competition
Piano performance
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<td>Examining Community College Students’ Lives, Experiences, and Reasons for Enrolling</td>
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<tr>
<th><strong>BASMAQDJAN, KEVIN G.</strong></th>
<th>Chemical Engineering &amp; Materials Science</th>
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<tr>
<td>Cv</td>
<td>New Orleans, LA</td>
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<td>American Educational Research Association</td>
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<td>Constructing Generalized and Local Milieux in the Virtual Classroom</td>
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<th><strong>COLLEGE OF ENGINEERING</strong></th>
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<tr>
<td>Zeng, Liang</td>
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<td>104th Annual Meeting &amp; Exposition of The American Ceramic Society</td>
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<tr>
<td>The Interfacial Microstructure of Joining Single Crystal and Poly-crystalline Alumina</td>
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</table>
TRAVEL GRANTS RECOGNITION

MANISH, MEHTA  COMPUTER SCIENCE AND ENGINEERING
Magdeburg, Germany  Summer University, Speech Recognition, Otto-Von-Guericke-University
Magdeburg  Speech Recognition

CHEN, HEPING  ELECTRICAL AND COMPUTER ENGINEERING
Washington, DC  IEEE International Conference on Robotics and Automation
Automated Robot Trajectory Planning for Spray Painting of Free-Form Surfaces in Automotive Manufacturing

ELHAIJ, IMAD  Washington, DC  IEEE International Conference on Robotics and Automation
Transparency and Synchronization in Supermedia Enhanced Internet-Based Teleoperation

OH, JONG CHAN  San Antonio, TX  2002 IEEE Antennas and Propagation Symposium and URSI National Radio Science Meeting
Natural Resonance Representation of the Transient Field Reflected by a Conductor-backed Lossy Layer

SUNG, SUSAN  Indianapolis, IN  APS March Meeting
Formation of Hetero Silicon-Carbon Nanostructures in an Inductively-Coupled Plasma

SUN, YU  Washington, DC  IEEE International Conference on Robotics and Automation
Interactive Model Identification for Nonholonomic Cart Pushing by a Mobile Manipulator

TORRES-CARRASQUILLO, PEDRO  San Juan, Puerto Rico  Seminar at the Polytechnic University of Puerto Rico
Language Identification Using Gaussian Mixture Modeling

WAHEED, KHURRAM  Scottsdale, AZ  International Institute for Electrical and Electronics Engineers Symposium on Circuits and Systems Society 2002 Conference
State Space Blind Source Recovery for Mixtures of Multiple Source Distributions

DING, XU  Milwaukee, WI  2002 SEM Annual Conference and Exposition
An Improved Signal Processing Algorithm for the Max-Min Scanning Method for Phase Determination

COLLEGE OF HUMAN MEDICINE

MUTTINENI, JYOTIINA  EPIDEMIOLOGY
Desert Springs, CA  Society for Perinatal Epidemiologic Research/Society for Epidemiologic Research
Fecundability and In-Utero Exposure to PCB and DDE

VASILIU, OANA  Czech Republic  The Second PCB Workshop: Recent Advances in the Environmental Toxicology and Health Effects of PCBs
Age at Menarche in Women Exposed to PCBs and DDE in Utero

XUE, FEI  Desert Springs, CA  Society for Perinatal Epidemiologic Research/Society for Epidemiologic Research
Maternal Fish Consumption in Relation to Preterm Delivery

COLLEGE OF NATURAL SCIENCE

PINO, MARIA F.  CELL AND MOLECULAR BIOLOGY
San Francisco, CA  American Diabetes Association Meeting
Increased c-Jun N-terminal Kinase (JNK) Activity in INS-1 Cells Chronically Exposed to Elevated Glucose Concentrations May Mediate the Repression of Insulin Promoter Activity

BULLEN, HEATHER  CHEMISTRY
Orlando, FL  223rd American Chemical Society National Meeting

CHRIST, RACHAEL  Orlando, FL  American Chemical Society Meeting
Engineering a Rhodopsin Protein Mimic

DAG, JINHUA  Orlando, FL  223rd American Chemical Society National Meeting
Catalytic Nanoparticles Formed by Reduction of Metal Ions in Multilayered Polyelectrolyte Films
TRA VEL GRANTS RECOGNITION

DISTLER, ANNE
Orlando, Florida
15th Annual American Society for Mass Spectrometry Conference on Mass Spectrometry and Allied Topics
UV MALDI MS Analysis of the Peptide and Lipid Components of Cytochrome c Oxidase from R. Sphaeroides

DUNN, JAMIE D.
Atlanta, GA
54th Annual American Academy of Forensic Sciences Conference
Molecular Level Information on the Aging of Dyes From Ink on Paper: What’s There and How Does It Change?

HUPERT, MATEUSZ
Philadelphia, PA
201st Electrochemical Society Meeting
Investigation of Aluminum Corrosion in Non-aqueous Solvent/Electrolyte Systems

KIM, BO YOUNG
Pittsburgh Conference
Layer-by-Layer Multilayered Poly Electrolyte Films Composed of Poly (amido amine) Dendrimer and Poly (acrylic acid)

RABAGO-SMITH, MONTSERRAT
Orlando, FL
American Chemical Society Meeting
Progress in the Enzymology of B-carotene 15,15’-Dioxygenase

STOTTER, JASON
New Orleans, LA
Optically Transparent Diamond Film Electrodes for Spectroelectrochemical Measurements

VASILEIOU, CHRYSOULA
Salt Lake City, UT
Interaction Between EpsC and EpsD in the Type II Secretion Apparatus of Vibrio cholerae

WITEK, MAKGORZATA
Montreal, Quebec, Canada
Duality Theory of Function Spaces with Matrix Weights

HYMAN, HARRY
New York, NY
102nd General Meeting of American Society of Microbiology
Interaction Between EpsC and EpsD in the Type II Secretion Apparatus of Vibrio cholerae

DORN, NATHAN
Tucson, AZ
Ecological Society of America Annual Meeting
Egg Predation by Crayfish Negatively Affects Sunfish (Lepomis) Reproductive Success

ZHENG, LEI
Nanjing, China
Evaluation of Algal Communities as Indicators of Wetland Bio-integrity and Human Disturbance

COLLEGE OF OSTEOPATHIC MEDICINE

HANSON, ROBERT
Salt Lake City, UT
Antimicrobial Resistance in Campylobacter, E. coli and Salmonella Isolated From Food Animals and Humans in Northern Thailand

COLLEGE OF SOCIAL SCIENCE

CORNELISON, JERED
Atlanta, GA
Comparative Radiography of the Lateral Hyoid: A New Method for Human Identification

MOON, BYONGOOK
Anaheim, CA
The Reasons for Choosing a Career in Policing Among South Korean Police Officers

ZHANG, YAN
Anaheim, CA
Blacking Prison

BASE, ONUR
Sydney, Australia
Estimation of Censored Medical Cost

OZBEY, PINAR
San Juan, Puerto Rico
The Impact of Income and Real Exchange Rate on the Competitiveness of Turkey

PEMA, ELDA
Chicago, IL
Academic Publications - Their Reward, Life-Cycle Profile, and Depreciation Over Time: Evidence for Academic Economics in Midwestern Universities
TRAVEL GRANTS / RESEARCH ENHANCEMENT AWARDS

PETROVA, IVA  
Ekao, Sweden  
Emerging Market Economies and European Integration  
Moral Hazard and Capital Flows in Transition Economies

ADAM, BRENDAN  
Psychology  
Within-Person Variability in Personality: Implications for Well-Being

BARNEY, AUDREY  
Journalism  
Hi-Fashion Magazine: Heaven-Inspired Fashion for Today’s Christian Woman

BERGSTROM, KARI  
Anthropology  
Women and Land in the Maradi Region of Niger Republic

BONDAR, LIUDMILA  
Music  
Nikolai Medtner “Every Day Work of the Pianist and Composer”

BOURDON, NATALIE J.  
Anthropology  
Fulbright Group Project in Tanzania

RESEARCH ENHANCEMENT AWARDS

This new feature of the Graduate Post highlights the graduate and professional students who received Research Enhancement Awards during the Spring and Summer 2002 semesters. The funds for these awards are provided by the Office of the Vice President for Research and Graduate Studies and are administered by the Graduate School. This funding mechanism is competitive and serves to enrich the research and scholarly activities of excellent graduate and professional students. Often the awards are used to attend extramural workshops and short courses to complement the strengths of the students’ programs.

The Graduate School is proud to recognize the achievements of these Research Enhancement Award winners!

BARBER, MATTHEW  
Pathobiology  
Role of Leptin-Induced Central and Neuroendocrine Changes

BRUBAKER, CATIE  
Linguistics and Languages  
Learning German with No Strings Attached: Wireless Laptop Computers in Second Year German

CAMPBELL, LESLIE  
English  
In Their Own Image: Representations of Black Middle Class Women in Literature and Film, 1916-1970

CARLETTA, DAVID MARK  
History  
Frances R. Grant and Pan-American Movement

CELE, NOKUTHULA P.  
History  
Neither AmaMpondo nor AmaZulu: Studying Community Building and the Construction of Social Identification in Kwa Macht Nqabeni Area, Southern Natal, South Africa, 1830’s-1972

KUENZI, MICHELLE T.  
Psychology  
Consolidation of New Democracies Conference  
Education, Civil Society, and Political Participation: Findings of a Five-Region Study

LAMBRIGHT, GINA  
Consolidation of New Democracies Conference  
Decentralization and Democratization in Uganda: Opportunities and Constraints

NISHIKAWA, MISA  
Savannah, GA  
Annual Conference of the Society for Personality and Social Psychology  
The Context Dependent Nature of Attitudes Toward Close Others

LIVINGSTON, JONATHAN  
Political Science  
New Orleans, LA  
Society of Research on Adolescence Biennial Meeting  
African American Fathers Experiences: Race Parenting and Socialization Messages

KUENZI, MICHELLE T.  
Sociology  
Uppsala, Sweden  
Consolidation of New Democracies Conference  
Education, Civil Society, and Political Participation: Findings of a Five-Region Study

RESEARCH ENHANCEMENT AWARDS

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RESEARCH ENHANCEMENT AWARDS

COHEN, EMILY B.
Zoology
Ecology of Postfledging White-throated Robins in a Matrix of Habitat Types

COLOMINA-GARRIGOS, MARIA
Spanish
Historiographic Revisionism of the Venezuelan Caudillo: Los cuatro reyes de la baraja by Francisco Herrera Luque

DETHLEFSEN, LES
Microbiology & Molecular Genetics
The Efficiency of the Translation Apparatus Differs Between Bacteria with Different Ecological Strategies

DORHOI, MONICA
Political Science
Federalism, Unitarism and Freedom of Information

DYGER, HOLLY
Anthropology
Negotiating the Family: Woman, Community, Region, Nation

ESHETE, TIBEBE
History
Marxism and Religion: The Paradox of Church Growth in Ethiopia

GOLDENBERG, MAYA
Philosophy
A Comparative Look at British and American Models of Health Care: Implications for Medical Ethics

GRANDON, JIMENA
Music
Federico Mompou: Canciones y Danzas

GRANT, JOHN W.
History
The Limitations of Free Black Communities: A Comparative Study of Richmond, Virginia and Monrovia Free Blacks, 1817-1865

HOLTHEUER, CAROLINA
Linguistics
Interpretation of Adjective and Verbal Phrases in English and Spanish Child Language

HOODLER, GREGORY
Communication
Inside the Black Box: Developing the Process of Conflict Diplomacy

HORMUTH, MICHAEL S.
Telecommunication
Keeper of the Snakes

HUNTER-OEHMKE, SHANA
CEPSE
A Survey of Training in Empirically Supported Interventions

IRWIN, BROBYN
Agricultural Economics
Opportunities and Obstacles for Small-Scale Previously Disadvantaged Producers of Organic Produce in South Africa: A Case Study Analysis

KISER, ELIZABETH
Fisheries and Wildlife
2001 Student Environmental Attitudes at Michigan State University

KNOLL, LESLEY
Fisheries and Wildlife
Understanding Zebra Mussel Impacts on Toxic Bluegreen Blooms, Vertical Distributions of Phytoplankton, and Microzooplankton

LADIA, MARY ANN J.
Anthropology
Emerging Infectious Diseases in Sociocultural Context: Malaria, Dengue and Tuberculosis in the Philippines

LALENDLE, LUUVYO
Educational Administration
The Meaning, Construction, and Practice of Leadership at Higher Education Institutions in South Africa

LEE, WHEI-MAY
Music
Mahler’s Use of the Clarinet in his Fourth and Ninth Symphonies

LOPEZ, ROBERTO
Horticulture
Temperature and Photoperiodic Effects on Growth and Flowering of Brassia, Degarmoara, Miltassia, and Zygoptetalum Orchids

MARTINEZ, GLADYS
Psychology
Orexin and the Sleep-Wake Cycle in Diurnal and Nocturnal Rodents

MARX, LAURA
Forestry
Site Limitations to Hemlock and Yellow Birch Regeneration

MCCARTHY, SARAH
Forestry
Soil Pathogen Mediated Tree Species Coexistence: A Mechanistic Approach to Janzen-Connell Processes

MENIKETTI, MARCO
Anthropology
Settlement Patterns, Environment, and Capitalism in a Colonial and Postcolonial Caribbean Context

MERRILL, THERESA R.
Music
4th International Symposium for Qualitative Music Therapy Research: Meanings, Foundations, Histories - Sharing Stories

MORGAN, LISA
Teacher Education
When the Doors Opened: The Impact of Economic and Sociopolitical Changes on Albanian English Language Teachers’ Personal and Professional Lives

MORZILLO, ANITA
Fisheries and Wildlife
Spatial and Temporal Threats to Black Bear Habitat in Big Thicket National Preserve, Texas

NOLAN, AMY
English
Appetite

OWENS, DELILA
CEPSE
Social Alienation, Parental Attachment, and Career Indecision in College Students: A Cross Cultural Study

PARISH, VIRGINIA
Political Science
Inner Workings, Policies, and Underlying Beliefs of Mission: Moving Mountains

POSTON, ROBIN
Accounting
The Effects of System Supported User Assessment of Knowledge Content on Electronic Knowledge Sharing

RESTAINO, ERNESTO
ANRECS
An Examination of the Regional Advisory Councils of Uruguay’s National Agricultural Research Institute (INIA)

RUSSELL, AARON
Fisheries and Wildlife
Co-management of Fisheries on Lake Malawi

SCHETTINI, ALLISON
Psychology
Adolescent Health Risk Behaviors: Adolescent Health Risk Behavior Parent and Peer Contributions and Health Outcomes

SEEFELT, NANCY E.
Zoology
Foraging Ecology and Predatory Impact of Breeding of Double-crested Cormorants in the Beaver Archipelago, Northern Lake Michigan
MISSION OF THE GRADUATE SCHOOL
To serve as an advocate for graduate education to the University and beyond and to enhance the quality of graduate education at MSU in all its diverse dimensions

The Graduate Post
Michigan State University
118 Linton Hall
East Lansing, MI  48824-1044

RESEARCH ENHANCEMENT AWARDS

SEIEFELT, NANCY E.
Anthropology
Non-metric Analyses for Ancestry Determination in Forensic Anthropology: A Test of Rhine’s (1990) Southwestern Mongoloid Ancestry Category

SEIGEL, GREGORY
Music
The Twentieth-Century Clarinet Music of Hungary

SERCE, SEDAT
Horticulture
Studies on Expression and Genetics of Day-Neutrality in Fragaria Xananassa and F. Virginiana

SONG, JOON-SEO
History
Defining Postwar Sovietness: Soviet Identities of the Workers in Magnitogorsk, 1945-1953

TERRA, LUCIA I.
Resource Development
The Role of Non-Profit Organizations in the Creation of Community-Based Tourism Development

VANWOERT, NICHOLAUS
Horticulture
A Comparative Assessment of Alternative Greenroof Systems

VASQUEZ, OMARA
Family and Child Ecology
The Voices of Institutional Juvenile Gang Members in Puerto Rico

VISTA, ARVIN B.
Agricultural Economics
Cost-Effective Solution to Nutrient Pollution Abatement in Taal Lake, Philippines: A Case Study

WAHLSTROM, TODD W.
American Studies
Reconstruction, New South and Modernism

WANG, XIAOFENG
Genetics
Identification and Characterization of Two Novel Cucumber Proteins, PC16 and PC1243, Which Interact with the Carboxy terminus of Poly-(A) Binding Protein: Possible Role in Translational Control

WAYTENA, JOHN
Music
Clarinet Performance and Instruction

YAVORNITZKY, VALERIE
Anthropology
Non-metric Analyses for Ancestry Determination in Forensic Anthropology: A Test of Rhine’s (1990) Southwestern Mongoloid Ancestry Category