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Annual Report
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“You can come out of study abroad with a critical lens; you can really develop some of those multicultural belief systems that we want for future teachers. But how can we take what we know about what’s happening around [students’] experiences of culture shock and help them use those experiences in their practice later as teachers?”

Peggy Shannon-Baker
Educational Studies doctoral student and Graduate School Dean’s Fellow
Read more on page 18
Does the type of metal used to make a musical instrument affect the sound it produces? If you ask a physicist and a musician, you may get different answers. A physicist would tell you that an instrument’s material does not matter, because it is the shape of an instrument that determines sound. Yet musicians disagree. They believe that if you have two identically shaped instruments, but one was made of silver and the other gold, the instruments would produce different sounds. “As musicians, we’re so weird about changing even the little bits of material,” says Cleo Leung, recent graduate of the doctoral flute program. “Everyone’s so certain there’s a different sound.”

Traditionally, flutes are made from silver, gold or platinum. However, Cleo uses a headjoint made of tantalum (a rare, hard bluish-gray metal). She says that by switching out this one part of her instrument, she gets more power and a “good, solid meaty sound.” Cleo’s tantalum headjoint was designed by her advisor, Dr. Bradley Garner. A professor in the College-Conservatory of Music, Dr. Garner works with a flute-maker to produce headjoints, often using atypical metals like tantalum, niobium and tungsten.

While there is a great deal of conventional wisdom regarding what metal should be used to best complement a given musical situation, very little research has been done on this topic. A few studies tested whether people could hear a difference between flutes of different metals—and the resulting data suggested that no, they could not. But Cleo sees a big problem with these studies’ methodologies: all flutes were played by people. “We all, as musicians, have an idea of what a good sound should sound like, so maybe everybody’s shooting for a similar sound,” she says.

To fit into a case, a flute breaks down into three parts. The top part, which has the mouthpiece hole and lip plate, is known as the head joint. The body and foot joint hold the keys used to produce the various notes.

Cleo conducted her experiment in the lab of engineering professor Dr. Ephraim Gutmark. She needed the lab’s recording equipment to gather her data. “They normally use [the lab] for jet propulsion engines,” Cleo says. “Actually, they had a jet engine set up in the back while I was working. We just walled it off with acoustic tiles and built a fort around my set up and the microphones. That was a lot of fun.” Cleo tested seven headjoints total, each with a different metal composition or made by a different company. She tested a basic Yamaha silver headjoint, a silver headjoint made by Dr. Garner’s headjoint company (Garner Headjoints), a silver headjoint with a gold riser around the mouth hole, a 14 karat gold headjoint, and headjoints made of tantalum, niobium and tungsten.

After collecting and graphing the data for each headjoint, Cleo analyzed her findings. “I definitely was able to see differences between the headjoints of different metals, just in terms of the way the harmonics were behaving,” she says. “Clearly there’s something to what the musicians are saying; there are differences between each headjoint.”

Cleo intends to continue her investigation into headjoints by conducting a playability study with Dr. Garner’s headjoints. “One of [Dr. Garner’s] claims—that I definitely believe—is that it’s easier to play in tune on any note with his headjoints than with other headjoints,” she says. She plans to conduct a blind study, drawing from students who would fit the headjoint market profile—upper-level undergraduate and graduate students who are pursuing a performance career. Personally, Cleo knows she finds Garner’s headjoints easier to play on, but that knowledge isn’t enough. “As musicians, we need to embrace the less fuzzy, more hard-science part of [music],” says Cleo. “There’s plenty we intellectually know, just from years of playing around, but there’s not enough I feel that’s really codified.”

Does the Metal Make the Flute?
Being a scientist is like being a puzzle solver. You’re trying to figure out how things work. You’re looking for clues and trying to design experiments so that you can get the information you want. It’s very fun in that way; it’s like you’re playing this game all the time, trying to learn more about some question you think is important.

– Dr. Ishi Buffam, Assistant Professor, Biological Sciences and Geography

UC is home to a plethora of puzzle solvers; every department is full of them. Whether they study perceptions of time, seek a cure for epilepsy or investigate resilience in urban youth, researchers at UC are filled with a burning desire to learn more about the way the world works—and improve it. For the fifth year in a row, UC has been named as one of the top green colleges by the Princeton Review, and cutting edge research from across the university contributes to this ranking. This dedication to being a green, sustainable campus has led to some exciting new research paths for graduate students and professors.

One of the many avenues for green research at UC centers on water. Professors and graduate students across department lines are working to discover theoretical and practical solutions to some of the world’s water issues. Amy Townsend-Small, professor of geology, is researching the impacts of hydraulic fracturing on water quality. Hongxing Liu, professor of geography, and Qiusheng Wu, a geography doctoral student, are at work tracking drought patterns across the United States. The environmental engineering program boasts a number of researchers who investigate issues regarding environmental hydrology and water quality. One such researcher is doctoral student Xiaodi Duan, who is developing a process to break down pharmaceuticals and other contaminants in drinking water.

Ishi Buffam, assistant professor of biological sciences and geography, and Mark Mitchell, biological sciences doctoral student, have been kind enough to share the details of their research on water runoff from green roofs. Their preliminary findings have already garnered the attention of green roof designers, and the final results could help refine the way green roofs are implemented in cities.
Green Roof Research: Watershed in the City

Dr. Ishi Buffam, Biological Sciences & Geography
Mark Mitchell, Biological Sciences, PhD

Looking out over the Cincinnati skyline, you see a beautiful mix of modern and traditional architecture. Often, the majority of that view is ruled by stone, metal and concrete. Yet some of the roofs bear vibrant pockets of verdant foliage. These green roofs offer numerous environmental benefits; however, the buildup of nutrients in green roofs could pose a risk to local aquatic ecosystems.

Two University of Cincinnati researchers seek to understand why this buildup occurs and what can be done to keep these excess nutrients out of local waterways.

Green infrastructure in urban spaces offers the chance to bring back elements of natural, vegetated ecosystems to a largely concrete landscape. “Vegetated spaces within the urban landscape are often created with the purpose of performing some ecosystem services, such as retaining water where it falls rather than having it run off the surface—like it would off a paved surface,” explained Dr. Ishi Buffam, an assistant professor in biological sciences and geography.

Dr. Buffam and Mark Mitchell, a doctoral student in biological sciences, are studying the runoff water from green roofs to discover what effect the plants from the green roof have on water quality. They are currently looking at the green roof located at the Civic Garden Center in Cincinnati, as well as a few other locations in the surrounding area. Mark joined this research project when he began his doctoral program in fall 2013. He still has a few years of fieldwork—which includes tasks like collecting and testing water samples—and analyzing data ahead of him before he’ll be ready to write his dissertation.

“I’m looking at green roofs as a kind of ecosystem. You can study a forested watershed to determine the nutrients that are coming off that watershed into the waterways; I’m looking at a green roof as a small watershed,” said Mark. “So [I’m asking] how the plants interact to affect nutrient runoff. We are measuring the nitrogen and phosphorous, in particular, coming off these green roofs.”

Currently, green roof designs include a layer of specifically selected plants, then a layer of soil substrate (man-made soil), and underneath it all, a layer of drainage material. The soil substrate is meant to absorb water, but it also has a specific mix of nutrients in it to sustain the plants. The nutrient mix in the soil substrate uses phosphorous and nitrogen, which when released at high levels into local waterways could contribute to out of control algal growth. Spikes in algal growth can cause reduced oxygen in local waterways and result in the deaths of other organisms—like fish and water plants—dependent on the oxygen in the system.

Studying the runoff from green roofs helps researchers like Dr. Buffam and Mark understand the nutrient cycling involved. They have noticed that during the summer months, the levels of nitrogen and phosphorous coming off the green roof are peaking. Dr. Buffam and Mark believe that the increase in temperature is causing the soil substrate to decompose at an increased rate, which releases extra nitrogen and phosphorous into water runoff.

“So the question is, what’s causing [this peak in nutrients]?” asked Mark. “Is it the microbes in the system, is it something to do with plant activity in the summer? There are all of these really interesting questions that have come out of this research from the Civic Garden Center roof, as well as some other plots at our field station.”

As the research continues, Mark and Dr. Buffam will move into working with more green roofs. There are two green roofs in Northern Kentucky that they have started to examine—in Sanitation District No. 1 as well as at Turkey Foot Middle School—to see if the patterns they’ve already recorded occur in other green roofs. Later, they’ll focus on lab studies that will attempt to isolate specific variables (like a different ratio of nitrogen and phosphorous in the soil substrate) to dig deeper into the search for what causes this excess release of nutrients.

“Being a scientist is like being a puzzle solver,” said Dr. Buffam. “You’re trying to figure out how things work. You’re looking for clues and trying to design experiments so that you can get the information you want. It’s very fun in that way; it’s like you’re playing this game all the time, trying to learn more about some question you think is important.”

Mark and Dr. Buffam agree that one of the most rewarding parts of working on a project like this is that the results are directly applicable. Dr. Buffam is already in contact with a few people in the green roof industry to share the preliminary research findings. He hopes that making some small changes to the way green roofs are constructed will result in large improvements in the water quality coming off the roofs.

A green-er design will hopefully prompt more businesses and organizations to implement this green technology, sparking a future of green-roof-filled skylines in cities everywhere. Thanks to researchers like Dr. Ishi Buffam and Mark Mitchell, this vision of the future is not only possible, but probable.
Every year, graduate students gather from the university’s 300+ degree programs to share their research and hone their presentation skills. The Graduate Poster Forum serves as a “dress rehearsal” for many students who are preparing to present at a regional or national conference.

As a professional development opportunity hosted by the UC Graduate School, the Graduate Poster Forum rewards exceptional poster design and outstanding oral communication. UC faculty members and local scientists volunteer to evaluate posters within their area of expertise, providing valuable feedback and a numerical score.

This year, over 130 students entered posters or, in the case of the Master of Fine Arts gallery, showed works of art. Award-winning posters covered a wide range of topics, from employees’ “online” work breaks to the 1940 Nazi propaganda film “Jud Süß” to a new approach for selectively targeting cancer cells.

2014 Award Winners

Arts & Humanities
Michelle Dietz, Germanic Languages & Literature, MA

Life Sciences & Medicine
Clifford Cookman, Molecular, Cellular & Biochemical Pharmacology, PhD
Moen Sen, Molecular & Developmental Biology, PhD

Physical Sciences & Engineering
Syed Abbas, Civil Engineering, PhD
Ayse Arslanargin, Physics, PhD
Anna Daigle, Chemistry, PhD

Social & Behavioral Sciences
Sung Doo Kim, Business Administration, PhD
Daniele Bologna, Psychology, PhD

Master of Fine Arts Gallery
Michelle Walker, Fine Arts, MFA

“Every day, people come up with new systems to help buildings recover from earthquakes in a better way. So how do you actually test the systems?” asks Syed.

“Before you put it in a building, you want to know how the system will behave. You cannot actually build a building every time you want to test it.”

At the 2014 Graduate Poster Forum, graduate student Syed Abbas presented his groundbreaking dissertation work: a structural engineering model that paves the way towards safer building structures in earthquake zones. This new technology provides an efficient, cost-effective method to test sophisticated building designs. Syed’s model, which he calls Advanced Hybrid Simulation (AHS), examines how a building’s frame as a whole reacts to the forces of an earthquake.

While current engineering models exist that can test how simple steel or concrete building frames will react in the event of an earthquake, researchers aren’t able to use them to test the complex structures (buildings containing large amounts of complex components, such as beam-column connections) that are found in most cities. However, Syed’s model is capable of doing just that. AHS builds upon the capabilities of existing Hybrid Simulation (HS) models to test more sophisticated structures found in real-world cities.

In order to fully understand the way AHS functions, it’s first necessary to look at the way current HS models work. HS models combine two types of testing: computer simulations and physical testing done by researchers in a laboratory. Simple components (such as beams and columns) can be tested through computer programs because their reactions to ap-
A small building frame, with beam-column connections highlighted. A single beam-column connection (in red) is selected for laboratory testing: a model of that connection is built and then subjected to the various forces and stresses created by earthquakes. Computer testing is used for all other beam-column connections (in green). The Advanced Hybrid Simulation model uses the data gathered from laboratory testing to predict how each beam-column connection will fare, taking into account its position within the framework of the building. Original diagram created by Syed Abbas.

Applied forces (like those of a simulated earthquake) are well understood. However, more complex components (such as beam-column connections) must be physically tested in the lab. These physical tests are necessary because their behavior under applied force is not well understood mathematically (due to factors like slippage, cracking and friction). When both types of tests have been run, the results are analyzed to form a comprehensive picture of how a building and all of its components would behave under the stresses associated with an earthquake.

While HS technology is useful, it does have its limitations. “Testing even a simple structure [such as one with few beam-column connections] far exceeds the testing capabilities of any structural engineering lab in the world” says Syed. “This has led to researchers using highly simplified models, compromising the accuracy of the results for more complex buildings.” In order to deal with these limitations and create a more accurate model for real-world buildings, Syed had to think outside of the scope of current HS models. He decided to modify parts of the testing process while keeping the framework of a traditional HS model.

Both computer testing and physical testing still occur during AHS, but their format changes. Rather than physically testing each individual complex component (such as a beam-column connection) that exists in a building, Syed’s model tests each type of component. Researchers would test one single beam-column connection, then use artificial intelligence to process its reactions to seismic activity. These results, combined with previously developed models, would be used to predict the reaction of all similar complex components (like beam-column connections) throughout the entire building. This process is repeated with each type of complex component until all of their reactions to seismic activity are understood. All results for the building’s complex components would then be combined with the results for computer-tested components (like beams and columns). This would provide a very realistic picture of how a building would react to an earthquake.

So why is this new technology so useful? AHS models provide the opportunity for researchers in both academia and industry to spend less time, money and lab equipment to test earthquake recovery systems. Those systems could be tested and improved before they are put into a building, meaning they are sure to be more effective in the face of an actual earthquake. With less physical tests involved, the use of AHS becomes applicable and useful for buildings found in real-world cities. If implemented in the future, this new model could be used to create safer, more resilient buildings on a shorter timeline.

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Dr. Scott K. Holland, faculty member in the College of Medicine, possesses an impressive list of professional accomplishments. He teaches as professor of radiology, pediatrics, bioengineering, neuroscience and physics within the otolaryngology & neuroscience department. He also fulfills two leadership roles as the director of the Pediatric Neuroimaging Research Consortium and as the director of research in patient services at the Cincinnati Children’s Hospital Research Foundation. Furthermore, his current research focuses on the applications of MRI brain imaging in pediatrics, particularly related to brain development and injury, and his discoveries in neuroimaging have resulted in numerous publications and breakthroughs in the field.

It speaks volumes, then, that this incredibly talented and accomplished professor has taken the time to use his knowledge and skills to cultivate the minds of tomorrow’s researchers. When asked what inspires him to devote so much time to student mentoring, Dr. Holland replied, “As a senior scientist, I know my field very well. Sometimes I am blinded by that knowledge and the interaction with graduate students un-blinds me. Teaching a subject to a new student causes the teacher to look at the topic in a new way too, and to recognize that some of the simple questions still are not answered. This kind of dialogue can lead to new discovery. I count on my students to challenge me at least as much as I challenge them.”

Yet the current and former students who nominated Dr. Holland say that his efforts in mentoring were much greater than just providing a challenge. They speak in glowing terms of his professionalism, his academic encouragement and his dedication to his students above all else. They speak of someone who supports and assists in their professional development with each student’s particular career goals in mind. Many of his former students hold positions within the University of Cincinnati hospital system and at other top universities across the country. These students attribute much of their success to Dr. Holland. Most importantly, current and former students alike speak of Dr. Holland as a man who goes out of his way to be a mentor on every level, relishing in the triumphs of his students and helping them work through their failures. This outpouring of support is the most telling proof of Dr. Holland’s effectiveness as a mentor.

Yingying Wang, a research fellow in cognitive neuroscience and developmental medicine at Boston Children’s Hospital, says that Dr. Holland went above and beyond the call of duty during his mentorship, providing more than scholarly support. “When the road to my Ph.D. seemed overwhelming, as it sometimes does,” she said, “Dr. Holland was always there to keep me focused on the right path. I am deeply grateful for his kindness and sense of humor.”

Rola Farah, a research fellow in the Communications Science Research Center at Cincinnati Children’s Hospital, testified that Dr. Holland “taught me the art of critique, fostered my creative thinking and coached my leadership and teamwork skills. His innate ability to recognize and leverage the strength of his students while leading the scientific community in the field of neuroscience and neuroimaging, creates the perfect example for his students and all of his graduates in their new scientific appointment.”

Dr. Holland’s students unequivocally state that he has been an integral part of their academic careers. His career successes, his students’ accomplishments and the stories of his exemplary efforts in molding the scholars of tomorrow combine to paint the picture of a mentor who has had a truly powerful impact on his mentees.
Dissertation completion fellowships support outstanding students during the last stage of their research. Finding means of support can be difficult for doctoral students who are close to finishing their dissertations, especially during tough economic times.

The Graduate School established the Dean’s Fellowship to make their search for funding a little easier. The fellowship provides students with $20,000 and a full tuition scholarship to help them complete their dissertations by the end of the 2014-15 academic year.

As a part of Dr. Yana Zavros’ lab, Amy and her fellow graduate students each work with some aspect of the protein Sonic Hedgehog (SHH), which is primarily studied in developmental biology. It’s very important in regulating lymph growth and development in the brain, but its role has also been investigated in many other systems.

“In the stomach, SHH is known to promote differentiation and maturation in cells,” says Amy. “It repairs tissue, and during certain infections, can help clear [the infection] or help initiate an immune response.”

Amy’s research looks specifically at the effects of SHH on gastric (stomach) ulcer repair. Her project deals with discovering how SHH can regulate ulcer repair and the mechanisms that are involved with that process. Amy explains, “The protein SHH can regulate that [ulcer repair], specifically when it is secreted into the circulation; it can promote repair. When it’s not present, you see inhibited repair and development of large ulcers that can lead to gastric cancer.”

Amy has recently published a chapter on her research regarding SHH regulation ulcer repair, and she is now focusing in the mechanisms involved in ulcer repair. During the 2014-15 academic year, she’ll continue her gastrointestinal experimentation using stem cell rich cultures transplanted into stomach tissue. Amy has determined that in mice, gastric organoids (organ-like structures made of stem cells) can help speed repair, so the next step is to refine the model and apply it to human tissue. If the model is successful, it could result in an entirely new way of treating ulcers.

Because the research is in such a preliminary stage, a real-world application for patients may take a while to develop and could come in a variety of forms. Amy speculatesthat one possible treatment could involve small biopsies taken from an individual, cultured, and then given back to that individual. These cultures, which could be given in a pill or inserted with a scope, could help speed repair in stomach tissue damaged by ulcers.

Amy would like to continue researching the GI tract after graduating as she pursues a postdoctoral fellowship—though she’s not sure where that will be. “I like how applicable this research is. You can see a direct translation into healthcare,” she said. “It’s really exciting and has a lot of potential to be very impactful.”

According to the Centers for Disease Control, close to 1 in 10 Americans will have an ulcer in their lifetime. These painful sores or holes in the stomach lining can take a while to heal once they are diagnosed and treated. Amy Engevik, a doctoral student in systems biology and physiology, is studying how the body heals ulcers in the hope of finding a way to speed this process. Her dissertation research on the gastro-intestinal (GI) tract has the potential to create a new protocol for ulcer care in adults.
Completing a medical degree and a research-heavy doctorate at the same time may seem like a daunting task to some, but to Steven Gilday, it seems like a dream. “This dual degree program avoids the disconnect between doctor and research or researcher and patient,” he says. “You get the best of both worlds.” Although Steven will have two years of medical school to go after he finishes his doctorate in 2015, he is already thinking ahead to his future dual career as a practicing doctor and active researcher.

The Medical Scientist Training Program at UC prepares students like Steven to be physician-scientists with simultaneous MD/PhD coursework. However, Steven’s pursuit of a degree in biomedical engineering during his Medical Scientist Training Program is uncommon. Most students choose a doctoral degree that is also housed within the College of Medicine. Steven’s choice gives him a unique skillset that integrates theoretical and applied knowledge from both engineering and medicine into patient care. Currently, he is working on exciting dissertation research that could lead to a novel approach to tendon healing.

During the 2014-15 academic year, Steven will continue his research in a functional tissue engineering lab that focuses on tendon and bone issues. The lab’s goal is to understand how tendons develop as the body grows, how these tendons heal once they’re injured, and ultimately how scientists could engineer a synthetic tendon to replace a damaged or injured tendon in a human patient. Steven’s research in particular deals with Indian Hedgehog (IHH)—a protein that is found in the human body and is a part of tendon development—and its ability to speed the healing process in tendons.

The interdisciplinary nature of his research requires Steven to collaborate with a variety of experts. “We have so many different people working on this project, and getting to work with all of these different areas is really unique,” says Steven. “I think most PhD students delve deep into a very specific area, and typically, they only get to work with people that are intimately familiar with that area. But I’ve been working with engineers, biologists, surgeons, statisticians, all of these different people. Those collaborations have been really interesting and fun.”

Working with this multi-disciplinary team, Steven has developed a bio-absorbable polymer scaffold (surgical implant) to deliver IHH. The polymer scaffold is infused with IHH and implanted into the damaged tendon, where it slowly degrades; the degradation of the scaffold is what releases the IHH. Steven implants the polymer scaffold into mice with damaged patellar tendons (the tendon that holds your knee cap to your tibia), and then he observes the mice as they heal, measuring how effectively the tendons heal in the presence or absence of IHH. While Steven’s research uses the patellar tendon as a model, it could be applied to any tendon in the body.

In the future, this kind of technology could become the standard method for dealing with tendon injuries for all patients. Presently, standard treatment options are to do physical therapy, which can last for months, or undergo surgery. But often, these options are not completely successful—and result in long-term problems, such as chronic pain and instability in the joint. This IHH-infused polymer scaffold implant provides the possibility for quicker, more effective tendon healing.

Steven’s professional successes will doubtless continue as he straddles the line between research and clinical work. Ultimately, he would like to see patients in a clinical setting while running a research lab. “You can have hands on exposure to your patients and are actively treating them, which allows you to have great insight into some of the things they’re dealing with,” he says. “You can take that and study it in the research lab. Any discoveries in the lab, you can take back and apply them to patient care.”

Due to their “best of both worlds” mindset, innovators like Steven will have the expertise and the opportunity to change the way the medical field handles patient care. Steven said that his MD/PhD program, and the subsequent research he’s done during his time in the program, allows everything “to translate back to the patient and human health in general. And that’s really what it’s all about.”
Peggy Shannon-Baker
Educational Studies, PhD

Cross-cultural interaction takes a variety of forms; it can be as small as a conversation with a co-worker or as large as stepping into another country for a long period of time. Peggy Shannon-Baker, a doctoral student in educational studies, is using her dissertation research to delve into the way culture shock is related to personal growth—particularly focusing on undergraduate study abroad programs for education students.

Peggy’s interest in the effects of study abroad programs on students stems from her own experiences studying abroad in Ireland and traveling with a group of education students to Tanzania and Kenya. “I really believe in the transformative power of study abroad programs. They force students to see how life is in other parts of the world,” she said. “[Students] have to recognize the importance of understanding other perspectives and bring it back and transform it into their practice.”

During her trip with the education students, Peggy realized that some of the things students were experiencing—like homesickness, disorientation, and isolation—were due to culture shock. This prompted Peggy to explore the concept of learning life-changing lessons while in difficult or uncomfortable situations. “We learn the most difficult things we want to find the middle ground with culture shock.”

During the 2014-15 academic year, Peggy will work on teasing out the nuances of culture shock that can lead to truly transformative learning. For her research, Peggy draws from course data, observations made during study abroad trips, arts-based data (art created by research participants that is used as data) and interviews conducted before and after trips. This combination of data types is what’s called a mixed-method study, where quantitative and qualitative approaches are deliberately mixed into a single study.

Not many mixed-method studies are done with culture shock, but Peggy hopes that this collection of different types of data will highlight something new or different about the nature of culture shock and its effects on students—especially those students who will become teachers. “You can come out of study abroad with a critical lens; you can really develop some of those multicultural belief systems that people want for future teachers,” explained Peggy. “But how can we take what we know about what’s happening around students’ experiences of culture shock and help them use those experiences in their practice later as teachers?”

Because she’s working with UC International, the results of Peggy’s research will go towards improving study abroad trips for all students. “I’m using exactly what I am learning; the research and the application go hand-in-hand,” she said.

Nicole Lyon
History, PhD

What would you do if you woke up tomorrow, and there were no more calendars—or the ones that were left were completely foreign to you? The concept of time has always been interesting to researchers, but people’s perception of time is a component of history that has remained largely untouched by academia. Nicole Lyon, a doctoral student in European history, is addressing that oversight. Her dissertation explores the ways people experienced and perceived a year (as a unit of time) in early modern Germany through the use of cultural historical resources like calendars, sermons, pamphlets and poems.

While Nicole has always been acutely aware of the passing of time, an epiphany on campus inspired her to make it the focus of her research. “I was walking past the Tangeman building on campus and the clock chimed three o’clock, even though my cell-phone said it was only 2:50. For some reason, I found this quite jarring—there were no more calendars—or the ones that were left were completely foreign to you? The concept of time has always been interesting to researchers, but people’s perception of time is a component of history that has remained largely untouched by academia. Nicole Lyon, a doctoral student in European history, is addressing that oversight. Her dissertation explores the ways people experienced and perceived a year (as a unit of time) in early modern Germany through the use of cultural historical resources like calendars, sermons, pamphlets and poems.

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In 2010, in the storeroom of the Chora Museum in Greece, Emily Egan puzzled over groups of pottery shards unearthed at the Palace of Nestor. In each hand she held similar fragments from two different rooms. Cylindrical in shape, they were thought to be part of a lid, according to the excavation report. In one magical moment, she fit the two pieces together, flipped them over, and beheld the rear end of a wheel-made bull figure—the first ever to be found in the western region of Greece.

Located near the west coast of mainland Greece, the Palace of Nestor at Pylos (Pē-los) was discovered in 1939 by famed UC archeologist Carl Blegen and excavated from 1952 to 1956. Emily has studied the palace since her first semester as a doctoral student. Drawing from her expertise in art history, archeology and Bronze Age iconography, Emily is conducting an extensive analysis of the palace’s art and style, which has yielded answers to some of Blegen’s unresolved questions.

For her dissertation, Emily is reanalyzing “the corpus of stuff” found in the throne room at Pylos: the ceramics, metal finds, architecture, floor painting, stone objects and built features (ex. the hearth). She is examining “what collectively these artifacts say about [the] function [of the throne room] and to what extent they possibly represent something totally different than what we expected.” Of particular interest to her are the markings on one of the floor tiles cited in an excavation report. After re-cleaning the tile herself, Emily made another important discovery: where Blegen saw an enigmatic mark on the tile that might designate a place for dignitaries to stand, Emily found an artist’s grid—and a mistake in the gridlines that the artist had caught and redrawn. “To me, this signals ‘we fix mistakes,’” she said. According to Emily, these grids are significant not only because they are the first examples of artist grids used in floor painting on the Greek mainland, but also because they demonstrate intention. Previously, scholars attributed the unique (and unexplained) design features at Pylos to the sloppy and careless craftsmanship of their artists. However, Emily has amassed evidence to the contrary.

At other Mycenaean palaces, floor tiles were designed to represent either an all-stone or all-carpet surface. However, after a detailed analysis of both floor and wall motifs at Pylos, Emily found pieces of floor tiles with the same intricate patterns commonly used in textiles. She concludes, “The artists are actually cleverly utilizing plaster to create a surface that supersedes reality” and that the floor was intentionally crafted to reflect a deliberate hybrid of both stone and carpet. And, addressing the persistent debate about who uses the throne room and for what purpose, Emily’s evidence points to an exciting answer: “I think the space was actively meant to showcase the supernatural or divine powers of the person who was seated in the throne.”

After graduation, Emily will continue to analyze the surrounding rooms and wall paintings at Pylos with the goal of creating a synthesized picture of the prehistoric palace. She will continue “to look at art as a way to understand how ancient societies understood themselves.”
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The Yates Scholars Program

The mission of the Yates Scholars Program at the University of Cincinnati is to enrich the educational environment for all graduate students by supporting the recruitment and retention of members of underrepresented groups who have high potential for academic success in graduate programs at UC.

The Yates Scholars Program began in 1966 as the Graduate Intern Program in the UC Institute for Research and Training in Higher Education with a mission to identify, admit, support and mentor promising individuals of African-American and Appalachian heritage entering UC graduate programs. In 1978, the program became part of the Division of Graduate Studies and Research and was renamed the Graduate Minority Fellows and Scholars Program. The following year, the program expanded to include students from other minority groups.

In 1995, the program was renamed to honor Dr. Albert C. Yates, the first African-American person to serve as vice president and university dean for Graduate Studies and Research at the University of Cincinnati. Dr. Yates joined UC as a professor of chemistry in 1974. He served as the vice president and university dean for Graduate Studies and Research from 1976 to 1980. Following his departure from UC, Dr. Yates served as provost for Washington State University in Pullman. In 1990, he was appointed to the president of Colorado State University, a position he held until his retirement from academia in 2003. His lengthy career demonstrates his strong leadership in academia and his commitment to improving education.

Every year, UC graduate programs—from communication sciences and disorders to economics to choral conducting—nominate incoming students for the prestigious Yates Scholars Program. For fall 2014, the Graduate School welcomes eight new Yates Scholars. New and continuing scholars receive a stipend and a tuition scholarship. In addition, each student is paired with a faculty member from his/her program, who will act as a guide to the program and the university. Barbara Zoretic, inducted into the Yates Scholars Program in 2012, is one of the many UC students who upholds and exemplifies the Yates Scholars Program’s vision of academic excellence.

1 In fall 2012, UC transitioned from quarters to semesters. This leads to a significant inequality in the reporting period used for our 2013 reports and it affected some numbers given here.
Barbara Zoretic was one of only 12 students inducted into the Yates Scholars Program for the 2012-13 academic year. New and continuing Yates Scholars receive a stipend and a full tuition scholarship. In addition, each student is paired with a faculty member from his/her program, who will act as a guide to the program and the university.

The moment Barbara Zoretic stepped into the physical therapy doctoral program (DPT) at UC, she knew she would take a unique approach to her time here. Barbara’s parents emigrated from Argentina, but she spent her childhood traveling back and forth between Argentina and the U.S. Barbara’s background helped her bring a new point of view to the program. “I got here and told them I wanted to do service abroad and that I’d love to get something started,” she said. “My goal getting into PT was to work with mind, body and spirit.” This attitude, combined with her cultural and academic backgrounds, has translated into Barbara becoming both a top physical therapy student and a dedicated public servant.

In December 2013, Barbara and some of her fellow DPT students travelled to Cancun, Mexico through the Palace Foundation—a nonprofit organization focused on helping residents of Mexican cities overcome challenging health issues.

Barbara and her fellow students spent a week in Cancun working with patients of various ages and physical therapy needs. The group worked in many different locations, including a pediatric home for children with disabilities, a home for the elderly, and even at the hotel where they were staying.

At the pediatric home, in addition to working directly with the children, the students were able to assist the home’s physical therapists with modifying some of the exercises and equipment. “It was great because we were able to see that they didn’t have a certain supply and could ask, ‘how do we modify it?’ They don’t have these great walkers for kids,” said Barbara. “But we could modify [what they did have] and teach them how to properly walk with a child with cerebral palsy.”

Barbara’s favorite part of the trip was the time she and the other students got to spend at a home for the elderly grandparents run by Franciscan nuns. The sisters, who care for “abuelitos” who have been left at the home, were in such need that they asked the students to help with basic caregiving tasks like feeding the patients and cleaning them, which was unexpected. “It was heart-breaking, but it was amazing to be able to help them out and just spend quality time with them,” said Barbara. “They sit there all day long, and the best thing we could do for them, aside from helping a little bit with the physical therapy, was education for the nuns.”

While the DPT students weren’t planning on returning to the home for the elderly, the need for training was so great that they spent their free day teaching the nuns new techniques for caring for patients. They taught the nuns how to do things like lifting patients and even washing dishes—techniques that save both the patients and the nuns more injury. As the students taught, they realized that the patients weren’t the only ones suffering; some of the nuns had their own ailments that made their jobs even more difficult.

“One had a torn ACL [a ligament in the knee] for six years. She had been walking on it, kneeling on it, and she wasn’t able to go see a doctor about it to get it repaired,” explained Barbara. “That just wasn’t in the cards for her. But we were able to say, ‘You have this important ligament damaged, but this is what you can do to strengthen and maintain it.’” The DPT students were able to provide much more than just one day of relief for the people they worked with; they were able to provide training. “Physical therapy is very much about going back and seeing your PT routinely, so how much can you really do in one day?” said Barbara. “But the knowledge we were able to provide was amazing.”

Barbara’s dedication to using her talents to serve people in the world will continue: she plans to finish her degree during the 2014-15 academic year and then begin her professional career. No matter where she ends up, Barbara intends to work with patients and make a difference in their lives. “That has been my love; I’ve always loved it,” said Barbara. “I’ve kind of kept my sanity through grad school by going down [to Mexico] and making a difference.”
UC students know why Forbes Magazine named University of Cincinnati as one of the world’s most beautiful college campuses.

UC’s Uptown Campus, located mere minutes from downtown Cincinnati, boasts stunning architecture, dynamic sculptures and lush green spaces.
The GSUM/SUMR-UC summer research program provides the opportunity for an undergraduate student from any U.S. baccalaureate program to collaborate with a UC graduate student on a project. The ten week long program includes research on a plethora of subjects—such as creative writing, criminal justice, music and neuroscience—and a presentation of that work at the end of the summer.

Isaiah Rolle, a fifth year doctoral student in the neuroscience program at UC, is a part of a lab that focuses its efforts on epilepsy research. He and Sam Imfeld, an undergraduate student in UC's biological sciences program, collaborated on an exciting project during the summer of 2013 that they hope will later lead to a cure for epilepsy. As Sam put it, she and Isaiah were a “happy accident” as a research partnership. They weren’t even supposed to be working together, but a last minute drop by Isaiah’s initial undergraduate partner allowed Sam to be part of the epilepsy research that proved to be so interesting.

“We look at dentate granule cells in the brain. Granule cells are some of the few cells in your brain that are born every day as an adult,” Isaiah explained. “Most people think that the cells you are born with, those are the ones you die with. But you actually have some new ones that are for memory, so those are the ones that we study. And we think that they’re causing seizures. Our lab has pretty much proven that they can cause seizures.”

Sam and Isaiah started their research by doing DNA analysis to decide which animals they would use for the experiment (they used mice), then injected them with a toxin that causes their granule cells to become abnormal. These abnormal cells should cause the animal to develop seizures. Normally, the mice used in this experiment are immune to diphtheria toxin, a bacteria Sam and Isaiah used to target abnormal granule cells.

Sam said, “We manipulate them to have diphtheria toxin receptors in the [abnormal] cells that are in the hippocampus. We inject the diphtheria toxin, which should kill those abnormal cells and the seizures should not develop.”
The amazing thing about this process is that it actually worked. When Sam and Isaiah inserted EEG transmitters into the brains of their subjects, they were able to measure and compare data through video and microscope analysis. They could examine which cells died and which did not. The exciting part about their results is the fact that the only cells being killed were the one that Isaiah and Sam made abnormal to cause seizures.

“There are only a very few of them that are abnormal to begin with to cause epilepsy. About 5% of abnormal cells are enough to cause seizures in the animal. There aren’t that many cells that need to be disrupted to cause seizures and these kinds of abnormal cells are in humans,” explains Isaiah.

Even though the two researchers had excellent results from their experiment, this treatment cannot yet be considered a cure for epilepsy. Much more research needs to be done, but this work does significantly add knowledge in determining that dentate granule cells can cause epilepsy.

When asked about the GSUM/SUMR-UC research program in general, both Isaiah and Sam gave glowing commendations. The mentor/mentee focus of the program impressed both of them, as well as the fact that they were able to improve upon necessary skills for their futures. Both Isaiah and Sam said they would recommend the program to other students.

Isaiah’s favorite part about the program was having help with this project while he simultaneously worked on his dissertation and other work he needed to complete in order to graduate. “It’s good to work with someone else,” he said. “It’s not like she’s working for me. We’re partners in what we do.” Sam is an undergraduate biology student, so this experience has helped shape her idea of her career path. “It gave me a lot of insight on what grad school would be like. I was thinking about getting my master’s, but now I’m pretty serious about considering my PhD.”

Isaiah has finished his doctoral work, and started medical school at the Ohio State University of Osteopathic Medicine in July 2014. He aspires to one day run a research lab while simultaneously practicing medicine. As for Sam, her experience with summer research continued. As a part of the Women in Science and Engineering program called REWU (Research Experience for Women Undergraduates), Sam spent the summer of 2014 working in Dr. T. Douglas Mast’s lab doing liver cancer research. She plans to graduate December 2014 and hopes to move on to a graduate program where she can pursue a doctoral degree in the sciences.

“Super Twister” by artist Alice Aycock. A new addition to the UC Medical Campus, “Super Twister” was installed April 2014 by the College of Medicine’s CARE/Crawley Building. The sculpture represents the whirlwind of intellectual inquiry and scientific innovation prevalent throughout UC’s research environment.
Becoming an excellent teacher is a difficult task in general. There are countless hours of preparation, hands-on experiences and professional development involved in the process. Teaching assistants (TAs) face the unique challenge of teaching students while they are still students and developing academics themselves. Melissa Dejonckheere and Michelle Walker have become excellent teachers by going above and beyond the call of duty to help their students engage in the learning process. Melissa and Michelle connect with their students because they genuinely want to see their students grow. Neither of them is afraid to try new teaching methods, even if that means failing from time to time; they are fully invested in finding the best teaching method for each of the students in their classrooms.

"I’m not the person who has all of the knowledge and is going to give it to you. We are going to create an understanding together, share our experiences and learn from each other," said Melissa when asked to share her perspective on teaching. "I’m very much the person that is OK when I’m wrong, or when I don’t know the answer. I can say that I’ve never thought about something before. I don’t like to be the expert; I like to have this shared responsibility in learning.”

Melissa’s confidence in her teaching abilities has grown throughout the last two years. She said that the more time she spent in the classroom, the more she figured out what worked for her students. This knowledge encourages her to try new things. Fast forward to now, and you will find little to no PowerPoints in Melissa’s classroom and many hands-on activities. “My students tend to do a lot better when we’re doing activities and we’re involved in learning rather than just listening to me talk,” said Melissa about her classroom. “It’s participatory, it’s collaborative, it’s a lot of group work, and it’s constructive.”

Melissa’s teaching philosophy developed hand-in-hand with her research. She uses her hands-on experiences in the classroom to research student learning more deeply, and then uses her research to inform her teaching practices. A doctoral student in educational studies, Melissa is just beginning her dissertation research, which is focused specifically on understanding the cultural and contextual factors that lead to resilience in urban youth. She is using a youth participatory action research framework that creates space for the participants to be co-researchers in the project. The kids who participate will be responsible for collecting
and analyzing some of the data; they get to have a say in how their words are portrayed.

The participatory nature of Melissa’s research topic runs parallel with the way she likes to run her classroom. She’s interested in getting students more involved in the classroom by letting them have more say in the curriculum. At the beginning of each semester, she gives her students space to come up with their own ways to be assessed on participation. It allows them to have a stake in the classroom, which encourages students to come to class prepared and willing to engage in activities.

Melissa’s favorite part about teaching is the relationships she forms with her students. She made a large effort to get to know her students, spending time each day talking to them about what was going on in their lives. It helped her create a community feeling in the classroom, which encouraged a more open atmosphere. One class of students started with her in fall semester and came back for another class in the spring. “It was really fun to see them progress and see them work,” said Melissa.

Melissa isn’t the only teaching assistant who cultivated a close relationship with her students over the past year. Michelle Walker, a Master of Fine Arts student, described her students in a drawing fundamentals class as more than just freshman. “They’re not just my students, they’re my kids, you know?” says Michelle. “We kind of grew up together.”

A first-time teaching assistant in fall 2013, Michelle said that her teaching philosophy stems from the varying academic and professional experiences she’s had throughout the years. She spent time working in industrial drafting before getting her bachelor’s degree in mechanical engineering. Michelle also received a degree in interior design and owned her own business before coming to UC. Her experiences in each of these fields, along with raising her daughters, have helped her become the student and teacher she is today. Michelle said that she wants her students to understand that learning is more than just doing the assignments for the sake of a good grade. “Don’t just do for now, do for the future,” Michelle tells her students. “Do what will help you grow.”

This nurturing mentality is part of the reason Michelle was able to connect with her students so well. It was also because of the open dialogue she created with them. Much like Melissa, Michelle knows that she isn’t the perfect teacher. She had room to grow as an educator, and the only way for her to do that was to practice.

“There was one time that I did a demo, and it was a really bad demo,” Michelle admitted. “So the next class, I said, ‘OK, guys, we’re going to do this again.’ I think they liked that honesty.” Michelle’s ability to admit her own mistakes helped her create a classroom atmosphere that focused on acceptance and learning. She showed students that it’s OK to make a mistake or struggle as they learn. The classroom became a safe place for learning, something that is essential to encourage students to take risks and develop their skills. Michelle’s rapport with her students is even more apparent now that they’ve left her classroom. Her students still come to see her and say hello sometimes. Michelle smiled as she said, “When they see me, they just gather around me. It’s wonderful.”

Over the past year, Michelle and Melissa have spent their time in the classroom growing as teachers as they impacted the lives of their students in meaningful ways. Their dedication to making the learning process dynamic and engaging is what makes both of them such excellent teachers.
Bob started his work in the Graduate School as the associate dean in 2007 and led a number of initiatives that have shaped our graduate education at the University of Cincinnati.

Bob earned his doctorate from the University of Cincinnati (CCM, 1983), and was the head of the Division of Composition, Musicology, and Theory at the College-Conservatory of Music for 12 years (1995-2007). As a scholar, he authored and lectured extensively; titles of his papers and presentations range from “The Composer as Pacifist: Benjamin Britten’s War Requiem” to “Temporal Discontinuity: the Most Radical Element in the Music of Charles Ives” to “The Number and Nature of Journal Articles by Women in Music Theory.”

As both an instructor and an administrator, Bob had a lasting impact on the people he interacted with. Dean Peter Landgren—who was instructed during his early undergraduate years at CCM by Bob—stated, “Dr. Zierolf infused in me, and decades of students, the understanding of how music is constructed, yet his instruction was not simply the why’s and how’s of music—his direction went deeper. The willing students could take that knowledge and increased level of understanding to inform musical interpretation, balance, color and nuance. Therefore, Dr. Zierolf influenced every note that I played in my 29-year career.”

Bob started his work in the Graduate School as the associate dean in 2007 and led a number of initiatives that have shaped our graduate education at the University of Cincinnati. Some of the most memorable initiatives include the following:

- Graduate Summer Undergrad Mentorship (GSUM)/ Summer Undergrad Mentored Research (SUMR-UC) program.
  These paired programs are a 10-week, fully supported research opportunity for rising juniors and seniors sponsored by the Graduate School. Undergraduates work one-on-one under the mentorship of UC graduate students in an intensive research or scholarly project, to the mutual benefit of both graduate and undergraduate groups.

- UC2019 Strategy for Excellence in Doctoral Education.
  In 2010, the Graduate School started the comprehensive evaluation of all PhD programs with the goal of enhancing areas of strength and vision while also identifying areas of concern. When Bob ascended to the position of dean in 2011, he became the primary point person for this major initiative.

- Semester conversion.
  Bob was the quality control person, as well as the route through which every graduate course and every graduate program approval came through for the conversion from quarters to semesters. He oversaw approval at the level of the University Graduate Council, the University Academic Committee and finally at the office of the provost for 441 graduate programs and over 4,000 graduate courses.

- Adjusting the scholarship model.
  Funding for graduate students has always been incredibly competitive. Recently, the university moved tuition scholarships for graduate students to a new model, where programs were given set number of scholarship “slots.” This allows programs to award scholarships based purely on applicant merit, rather than varying tuition costs.

Recognizing Decades of Service

It is with great respect and appreciation that we congratulate Dr. Robert Zierolf on his retirement from the University of Cincinnati after 37 years as a faculty member. He is leaving the position of vice provost and dean of the Graduate School, which he has held since 2011. As Bob looks forward to a new future for himself, it seems only appropriate that we look back at the legacy he leaves behind at the University of Cincinnati.

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Even after becoming vice provost and dean of the Graduate School in 2011, Bob continued his pattern of working closely with graduate students, including Christina Haan, a doctoral student in organ performance. “When Dr. Zierolf stepped in as my advisor, he was already Graduate School dean, but he generously agreed to meet with me,” said Christina. “He discussed my thesis document (which was musical, historical, and scientific) with ease, and my degree was quickly finished. I will always have great gratitude and respect for Dr. Zierolf.”

Dr. Zierolf’s work with graduate students made them feel valued as a part of UC and also as a part of the academic community. “When I was selected to join a practicum at the United Nations in 2012, I received a very enthusiastic message from Dr. Zierolf, congratulating me,” said Ayça Mazman, President of the Graduate Student Governance Association and doctoral student in philosophy. “I know several students who published papers, presented in national conferences, did groundbreaking research and created significant inventions—they too received support and praise from Dr. Zierolf. Dr. Zierolf made sure that no big victory went unnoticed.”

So in the end, it was Bob’s character as well as his academic talents that contribute to his success. “I think what Bob will be remembered most for is how approachable, generous, and helpful he was to people. He is entirely selfless,” said Associate Dean Margaret Hanson. “He sought and considered ideas and solutions from everyone, he trusted and encouraged people to use their own ingenuity and skill to do their jobs, he gave credit for others’ contributions (possibly erring on the side of over-crediting others) and he was extremely professional while being warm and genuine. Because of this, Bob brought out the best in his staff, created a trusted and respected image of the Graduate School, and forged a strong, positive relationship with the university’s graduate programs, their directors and the graduate faculty.”

Bob, thank you for your years of service; all of us in the Graduate School wish you a fulfilling and outstanding retirement. Good luck in all of your future endeavors.

Dear Friends of the Graduate School,

I stepped into the role of leading graduate education at our university this past summer, upon the retirement of Bob Zierolf. I encourage you to read the farewell tribute to Bob that precedes this letter, so you can appreciate what big shoes I am attempting to fill. For me, there is no higher purpose at a university than training the professionals and experts that will shape our future. The mission of the Graduate School is therefore simple: to help students follow their passion.

The glory of our comprehensive university is the breadth of what is studied by our faculty and students and the amount of motivation and talent that they bring to this purpose every day. This Annual Report highlights some of that for you, while introducing some of our accomplished faculty members and graduate students. The people largely absent from these pages are those who dedicate an amazing amount of time to oversee our graduate education programs. Outside of the Graduate School office, these unsung heroes are the faculty members and program coordinator staff that run graduate programs, as well as the faculty members who serve as associate deans or directors of graduate studies for each college. Just as important, the dedicated staff of the Graduate School is small but mighty, and I thank my lucky stars every day that they are part of the legacy I inherited from Bob Zierolf.

Our graduate programs and student body continue to grow. Our university has seen large expansions in distance learning as a mode of teaching our students seeking master’s degrees, and in the programs that cross between the classic disciplines to give our students a more broad preparation for the modern workplace. The emphasis on interdisciplinary approaches is gaining momentum with several grass-root efforts to develop innovative programs that will attract new faculty and students. It is clear that the face of graduate education is changing and it is exciting to see the University of Cincinnati lead those changes. I am looking forward to working with students, faculty and administrators as we head towards this exciting future.

I hope that you will see both the Graduate School office and myself as a resource now and in the coming semesters. Stop by and visit our Graduate School offices in Van Wormer Hall, or follow our news on social media sites as we develop and implement opportunities for graduate students and faculty.

Like us on Facebook at http://on.fb.me/GradSchool_UC
Follow us on Twitter at http://twitter.com/GradSchool_UC

Chip Montrose
Vice-Provost
Dean of the Graduate School
2014 Dissertation Listing

The Graduate School is proud of the diverse academic endeavors completed by its master’s and doctoral students during the 2013-2014 academic year. All University of Cincinnati master’s theses and doctoral dissertations can be found online at http://etd.ohiolink.edu.

The following listing of doctoral dissertations represents the quality, vitality and diversity of graduate research and scholarship at UC.

College of Allied Health Sciences

**Farah, Rola**  
PhD, Summer 2013  
Functional and Structural Abnormalities Underlying Left Ear vs. Right Ear Advantage in Dichotic Listening; an fMRI and DTI Study  
Advisor: Robert Keith, PhD

**Hasselbeck, Emily**  
PhD, Summer 2013  
Children Story-Retell Under Three Cuing Conditions  
Advisor: Nancy Creaghead, PhD

**Hobak, Amy**  
PhD, Spring 2014  
Investigating Early Writing through Two Frameworks: Quantitative Intervention Research and Qualitative Cultural-Historical Analysis  
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Radhakrishnan, Kirthi
PhD, Fall 2013
Relationship between Loss of Ephchogenicity and Caviation Emissions from Echogenic Liposomes Injected by Spectral Doppler Ultrasound
Advisor: Christy Holland, PhD

Rai, Durgesh
PhD, Summer 2013
Quantification of Fractal Systems using Small Angle Scattering
Advisor: Gregory Beaucage, PhD

Rawashdeh, Mohammad
PhD, Spring 2014
A Relational Framework for Clustering and Cluster Validity and the Generalization of the Silhouette Measure
Advisor: Anca Ralescu, PhD

Sandwall, Peter
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Spatial Discrepancy with Violet Diode Laser-Induced Fluorescence of Water-Equivalent Radio-Fluorogenic Gels
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Sarkar, Saurabh
PhD, Summer 2013
Feature Selection with Missing Data
Advisor: Hongdao Huang, PhD

Sharma, Balaji
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Real-time Monitoring and Estimation of Spatio-Temporal Processes Using Co-operative Multi-Agent Systems for Improved Situational Awareness
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Siegel, David
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Prognostics and Health Assessment of a Multi-Regime System using a Residual Clustering Health Monitoring Approach
Advisor: Jay Lee, PhD

Srivivasan, Raghuram
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Monte Carlo-Alternate Approaches to Statistical Performance Estimation in VLSI Circuits
Advisor: Fred Beyette, PhD

St. John, Samuel
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Hierarchical Electrocartalyst Structure Control to Study Cathodic and Anodic Overpotential in Proton Exchange Membrane Fuel Cells
Advisor: Anastasios Angelopoulos, PhD

Subhajnan, Mohamed
PhD, Fall 2013
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Sun, Guoshua
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Active Control of Impact Acoustic Noise
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Sutton, Jonathan T
PhD, Spring 2014
Tissue Bioreactors during Ultrasound-Mediated Drug Delivery
Advisor: Christy Holland, PhD

Turek, Steven
PhD, Spring 2014
A Graph-Based Early Design Environment for Generating Cost Effective Mechanical Designs
Advisor: Henry Spitz, PhD

Villalba Gomez, Rodrigo
PhD, Fall 2013
Structure, Stability and Emissions of Lean Direct Injection Combustion, including a Novel Multi-Point LOx System for NOx Reduction
Advisor: Ephraim Gutmark, PhD, DSc

Wang, Fong
PhD, Fall 2013
Development of Janus Nanocomposites as a Multifunctional Nanomaterial for Cancer Therapy
Advisor: Donglu Shi, PhD

Wang, Yingying
PhD, Fall 2013
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Advisor: Scott Holland, PhD

Xie, Qing Yan
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K-Centers Dynamic Clustering Algorithms and Applications
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Yan, Liang
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Tailoring of the Activation Process of Carbonaceous Adsortents for Improving Adsorption Effectiveness
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Yan, Liang
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Real-time Probabilistic Contaminant Source Identification and Model-based Event Detection Algorithms
Advisor: Daninick Boccelli, PhD

Zheng, Mingyu
PhD, Fall 2013
Doped GaN Grown by Phase Shift Epitaxy, Fabrication and Characterization of GaN:Eu LED
Advisor: Andrew Steckl, PhD

Zhu, Cheng
PhD, Summer 2013
Efficient Network Based Approaches for Pattern Recognition and Knowledge Discovery from Large and Heterogeneous Datasets
Advisor: Kenneth Berman, PhD

Zebraouzi, Abderrahman
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Enhanced Biological Oxidation of Hydrophobic Compounds Under Dynamic Load in a Trickel Bed Air Bioreactor
Advisor: George Sorial, PhD

Advisor: Nancy Ratner, PhD

Advisor: Christopher Karp, MD

Advisor: Dharma Agrawal, DSc

Advisor: Vijay Vasudevan, PhD

Advisor: Hongdao Huang, PhD

Advisor: Nishan Weragama, PhD

Advisor: William Miller, PhD

Advisor: Dharma Agrawal, DSc

College of Medicine

Ball, David
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Fosn1 Is a Novel Regulator of EMT in Fibrosis and Cancer
Advisor: Tanya Kalinichenko, PhD

Bittencourt, Fabiola
PhD, Spring 2014
Examination of the Function of the Murine Cyto megalovirus Encoded G Protein-Coupled Receptor MRV in vivo
Advisor: William Miller, PhD

Bucelli, Stephanie
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Advisor: John Lorenz, PhD

Buchan, Heather
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Buck, Joseph
PhD, Summer 2013
The Role of Muscle Segment Homeobox Genes in Early Pregnancy Events
Advisor: Yane Zavos, PhD

Chang, Mei
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Marrow-Derived Mesenchymal Stem Cells for Regeneration of the Cardiogenic Differentiation of Induced Pluripotent Stem Cells
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Chung, Munho
PhD, Spring 2014
Ion Transport and the Gut Microbiota
Advisor: Richard Lang, PhD

Price, Eppert
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Autoregulation Mechanisms in Cigarette Smoke-Induced Inflammation and Pathology
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Fan, Jieqing
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Advisor: Richard Lang, PhD

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