

KSU UNDERGRADUATE

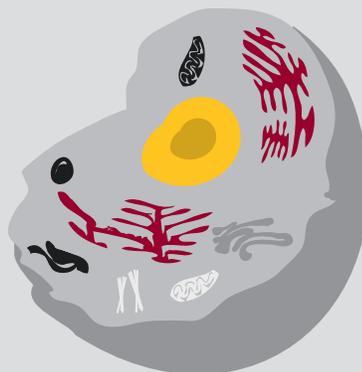
Research & Creative Activity

NEWSLETTER



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Summer program creates opportunity for 10 science and math students to work full-time with KSU faculty.

BREWING PASSION FOR RESEARCH

Rebecca Mattord, a passionate KSU student, publishes on the sustainability of beer manufacturing and talks with CETL about the experience.



Above:
Rebecca Mattord

Photo Credit:
Rebecca Mattord

Rebecca Mattord, a KSU Geography and Geographic Information Systems (GIS) student, graduated in Spring 2014 at the top of her class. While a student at Kennesaw, she was actively involved in prestigious research projects, internships, publications, and study abroad. She developed a close relationship with Dr. Nancy Hoalst-Pullen, an Associate Professor of Geography at KSU, who spearheaded the research project and mentored Mattord throughout her undergraduate career. Mattord, alongside Dr. Hoalst-Pullen, studied the geography of beer.

As a student in Dr. Hoalst-Pullen's class, Mattord was recruited for this project due to her experience in the beer industry. For five years she worked as head bartender, winning competitions and designing the first full beer and cocktail menu in the southeast. Mattord also achieved the title Level 1 Sommelier with the Court of Master Sommeliers. Her expertise in the alcohol

industry made her the perfect GIS student for the project.

Specifically, the research focused on the sustainability of beer manufacturing at regional craft breweries. Sustainability was measured in three areas. Socially, companies were regarded as sustainable if they fostered a positive working environment: if they provided options for employee training or gave back to their community. Economically, sources of energy and water, reuse of water, and FDA approval of water temperature were measured. And environmentally, use of local crops and water supply indicated a sustainability-conscious business.

To measure this, Mattord designed a survey and contacted breweries. She emailed and cold-called 94 regional craft breweries to inquire about their company's sustainability practices. When speaking with brewmasters and company owners, Mattord was able to explore new areas of the beer industry. Mattord told CETL that one of the best results of

the project was discovering interesting ways to be sustainable, such as recycling beer barrels and building tap handles from their wood.

She commented that she learned realistic means of sustainability. "Nothing is going to be 100% sustainable," Mattord told CETL. But, she clarified, if the company is actively trying to minimize waste, they are practicing sustainability.

After approximately a year devoted to research, the project culminated with a publication. Mattord co-authored a chapter titled "Sustainability Trends in the Regional Craft Beer Industry" in the book "The Geography of Beer." Within this chapter, Mattord created every graphic. The book also features a separate project by Mattord, a map titled "The Origins of Beer." This map

captures where each type of beer was first recorded to be created. Mattord worked on both of these projects while studying abroad in London.

Alongside her research expertise, Mattord also gained skills from working in two internships. With the Cobb County Department of Transportation, she digitized drainage easements. With the Marietta Treekeeper Association, she inventoried tree location, type, and possible risk, and created an interactive map. These two internships in conjunction with her research project showed Mattord her ability to succeed in a myriad of environments.

While many professionals in the GIS field either collect or illustrate data, Mattord's experiences allowed her to become proficient in both skill sets. She used her

GIS knowledge to collect accurate and reliable data, and subsequently makes the data approachable and visually pleasing. This duality of analytical and creative skills makes Mattord competitive in a working environment, but Mattord is not only motivated by this perk – she truly loves each aspect of the research project.

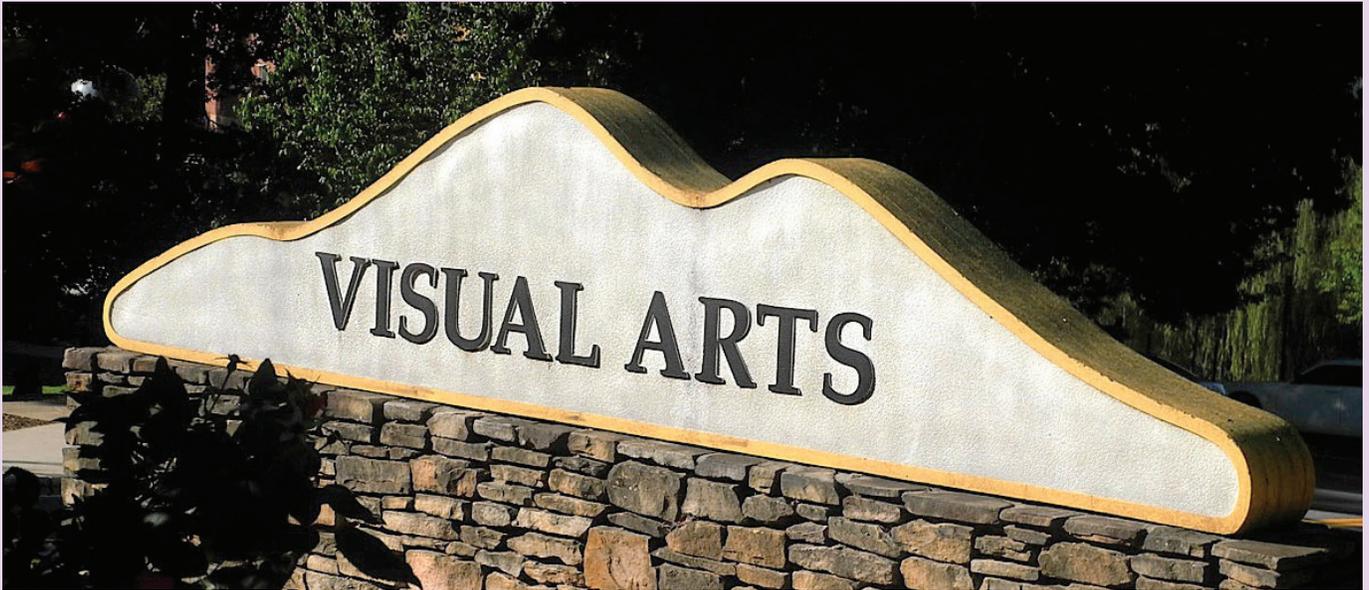
When Mattord interviewed at CETL, her passion shone through every word. Her love for Geographic Information Systems and for her degree program flowed out of her in excitement and enthusiasm. Mattord's achievements and passions were recognized by her department, as she was awarded the 2014 Outstanding Student Award for the GIS Certificate Program.

Post-graduation, Mattord is currently working on a new project with her mentors. As of August, 2014 has been working at Quantum Spatial, a Geospatial Solutions company, as a GIS Technician. "I work on environmental projects that focus on the transmission lines and their impact on resourceful landscapes in the Northeast" said Mattord in her latest communication with CETL. ■



Map from Book "The Geography of Beer" by Springer Publishing.

ART HISTORY RESEARCH THRIVES AT KSU



The School of Art and Design in the College of the Arts established a Bachelor of Arts in Art History in 2011, and undergraduate research is already soaring. Students research art from across the globe, from antiquity to present day. Research diversity spans from architecture to ceramics, comics, illustrated scrolls, mosaics, paintings, and sculptures. The research process is a collaborative effort throughout the department and requires one-on-one mentoring from professor to

student. While this process is rigorous and time-consuming, it has produced countless success stories in three short years.

Faculty assist their students every step of the process. Art History professors teach students how to write research papers and construct professional presentations. Students also learn about conferences and funding opportunities, applying with support of their faculty mentors. The effort by both parties is

reflected in the numerous successes of the young program.

Since its inception in 2011, students have given over twenty-five presentations of original work at local and national conferences. National conferences include the Annual Meeting of the Archaeological Institute of America and the Annual Meeting of the American Council for the Study of Islamic Societies.

Regionally, students have presented



at the Southeastern College Art Conference.

KSU graduates have been accepted to several graduate programs at universities including Boston University, Georgia State University, University of Sussex (UK), and University of West Georgia.

Students have also been published in the Kennesaw Journal of Undergraduate Research and received Undergraduate Research and Creative Activity awards. Angelica Delaney

and Mariah Heilpern, two recipients of these honors, are featured below.

Angelica Delaney, a current Art History senior, studied art featuring famous women. She has two published pieces in the Kennesaw Journal of Undergraduate Research: "Wonder Woman: Feminist Icon of the 1940s" and "Reading Cleopatra VII: The Crafting of a Political Persona."

Mariah Heilpern, a 2014 Art History graduate, studied

architecture in a piece titled "The Mughal Marvel that is the Taj Mahal: Symbolic and Nostalgic Use of Past Tomb Architecture," among other topics. Her research received an Undergraduate Research and Creative Activity award for conference travel. In addition to her research, Heilpern served as President of the Art History Club and received the Outstanding Art History Senior award.

Right:

*Lauren Bearden
(3rd from the left)*

Photo Credit:
Shane McDonald



Lauren Bearden, a graduate of the program in 2013, is one of the program's biggest successes. Bearden's passion is for the Near Eastern culture, studying cross-cultural interactions found in art among the Ancient Near East, North Africa, and the Mediterranean. Bearden

commented, "studying these cultures, especially the Near East where there isn't a written lexicon on their aesthetic culture, is challenging but gratifying when I can make connections and see why and in what way certain cultures use certain artistic styles." Her passion for art history

led her to countless prestigious presentations and publications.

As an undergraduate at Kennesaw State, Bearden published an article in the Kennesaw Journal of Undergraduate Research titled "Repatriating the Bust of Nefertiti: A Critical Perspective on" 

Cultural Ownership.” This article expands on the current movement to bring Egyptian art displayed abroad back to Egypt. She specifically studied one case in which German Egyptologist Ludwig Borchardt excavated the famous Bust of Nefertiti, a depiction of the ancient Egyptian queen, in Egypt. It is currently exhibited in the Neues Museum in Germany.

Since her studies on the Bust of Nefertiti, Bearden has captured audiences with her original work at numerous additional conferences. Most notably she presented her paper, “Hybridization and

Nabataean Identity in the Khazneh Façade at Petra,” at the 114th Annual Meeting for the Archaeological Institute of America (AIA) in Seattle, Washington.

She also won the award for “Best Paper,” at the 7th Annual Collage Colloquium at Agnes Scott College for her paper titled, “Nabataean Aesthetics: Dueling Imagery at Petra in Ancient Jordan.” Bearden presented on “Aniconism in Ancient Petra,” at the 69th Annual Southeastern College Art Conference (SECAC) in Greensboro, North Carolina.

While taking classes and researching, Bearden was involved across the School of Art and Design. She worked for KSU Museums and Galleries as well as Emory’s Michael C. Carlos Museum. Bearden also served as an

executive member of the Art History Club.

Bearden attributes her success largely to the support of her Art History professors at KSU. Bearden boasted that her professors were amazing mentors and friends. Bearden still keeps in contact with Dr. Kristen Seaman, the coordinator of the program, while she is a graduate student.

Currently, Bearden is a graduate student and graduate research assistant at Georgia State University. Bearden works with Dr. Maria Gindhart, the Associate Director of the School of Art and Design.

“I recommend for anyone wanting to get into research or anything in their desired area to get to know your professors and never shy away from new experiences!”

-Lauren Bearden

This transfer of wisdom from faculty to student fosters a holistic experience in which students truly understand the nature of research. Bearden, Heilpern, and Delaney serve as excellent examples of active undergraduate research students who make their program proud.

With these numerous success stories across the Art History program, and the glowing remarks from students, it is easy to see the impact this department makes on students’ professional development. ■

SCIENCE AND MATH STUDENTS LEAVE A “CARBON” FOOTPRINT

Bottom:

The KSU Birla Carbon Scholars take a group photo at the Symposium.

From left to right, listed as Student (Major)/Faculty Mentor:

Samuel Keenan (Biology)

Dr. Matrin Hudson,

Alberto Romero (Biology)

Dr. Carol Chrestensen,

Mareidith Sapp (Biology)

Dr. Susan Smith,

Bradley Norvell (Biochemistry)

Dr. Daniela Tapu,

James Law (Biochemistry)

Dr. Chris Alexander,

Daniel Hoffman (Biology)

Dr. Troy Mutchler,

Aaron Pital (Biochemistry)

Dr. Heather Abbott-Lyon,

Alden Lathrop (Biochemistry)

Dr. John Salerno,

Dennys Rosales (Mathematics)

Dr. Anda Gadidov,

Amber Caldara (Biology)

Dr. Jonathan McMurry

Photo Credit:

David Caselli (all photos in this article)

This summer, The College of Science and Mathematics established a research program for undergraduate students. Through a partnership with Birla Carbon, the world’s largest manufacturer and supplier of Carbon Black, the College received \$50,000 to be used for a summer internship program. This donation granted student researchers a stipend of \$4,000 and the top student \$2,000 to present his or her research at a national conference. The money and program will be renewed for five years.

This competitive program accepted ten students, representing the best of their class. Each student pursued a project under the mentorship of a KSU faculty member. Students worked at least 40 hours a week throughout the summer, collaborating with other students and professors as necessary. The Birla Carbon Symposium at the end of the term highlighted the students’ work and the top student was selected.

CETL spoke with some of the Birla scholars and heard their personal stories. As the students shared their experience, it became clear that they were passionate about their work and that the program transformed their lives. Alden Lathrop’s and Sam Keenan’s perspectives are featured on the following page. ▶





Alden Lathrop

Alden Lathrop, a senior majoring in biochemistry, worked in the lab of Dr. John Salerno, a Professor of Biotechnology. Their study focused on the enzyme eNOS, endothelial nitric oxide synthase, and its regulatory sites. The team's study of the activity and control of the enzyme may contribute to the understanding of physiological conditions such as Type II diabetes and hypertension.

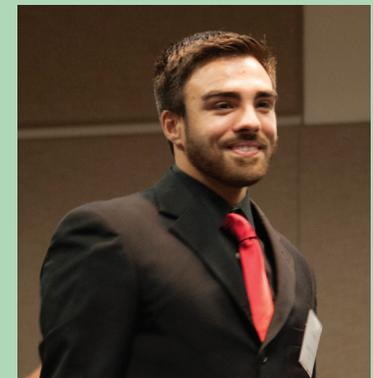
To understand this enzyme, Lathrop created a program to model the oscillatory behavior of the enzyme's regulatory sites. These models confirmed his hypotheses: They identified an intermediate in the feedback system, confirmed the activating and inhibiting roles of two sites, and discovered a previously unknown link between the two sites.

Lathrop presented his data at the Nitric Oxide conference in Cleveland, Ohio last June and was co-author on several additional posters. Lathrop will be co-author on future papers.

Lathrop thrived in this program due to his love of learning and confronting challenges. When CETL spoke to Lathrop, his excitement poured out. About working on his project,

Lathrop conveyed, "it was thrilling to learn something entirely foreign to me." He expressed his disappointment when he accomplished a complex task and no longer had the challenge to conquer.

Lathrop will continue to work on this project in collaboration with Dr. McMurry's and Dr. Christensen's research teams. His future plans include a MD/PhD graduate school program, allowing him to both practice medicine and continue making scientific discoveries. ▶



Alberto Romero

“This program was one of the most challenging experiences of my life. That being said, I don't think I have adequate words to describe how rewarding, academically and personally, this program was. The rigors of this research consolidated all of my scientific knowledge to something that left the world of theory, books, and tests to something practical and within my power to explore and manipulate. Overall, this experience opened many doors and provided me with opportunities that will go beyond the boundaries of KSU.”

-Alberto Romero



Samuel Keenan

Sam Keenan, a senior majoring in biology, worked with Dr. Martin Hudson, an Assistant Professor of Biology. Their research explored genes associated with Kallmann Syndrome, a disorder characterized by the failure to start or complete puberty and the reduced ability to smell. The team used the organism *C. elegans*, a microscopic roundworm, to explore the disorder.

Existing research identifies some contributing genes, but suggests that additional unknown genes influence the disease. The Hudson lab team aims to predict and validate these other potential contributing genes. To do this, Keenan maintained a *C. elegans* culture and sorted their cells for a desired green fluorescent protein (GFP) presence, which is correlated with the expression of a gene mutation present in Kallmann Syndrome. He then compared his transcription-factor mutant worms with the wildtype worms for physiological differences.

Keenan presented his work at the Birla Carbon Symposium and received first place. On the success, Dr. Hudson commented, “He

was so persistent and independent. Before his presentation, I didn’t tell him anything or help with the poster. The success was him, not me, and I was very impressed.”

Keenan stated that the experience was entirely rewarding, providing him with skills and knowledge that will carry him into his future career.

Keenan is continuing to work with Dr. Hudson into the fall semester, and will present his data at a research conference in Spring 2015, using the Birla presentation prize money. Keenan plans to graduate in May 2015 and attend medical school. ■

“Having this opportunity has allowed me to explore the world of research and how the scientific community plays such a critical role in advancing knowledge of disease, physiology, medicine, and life as we know it today.”

- *Sam Keenan*

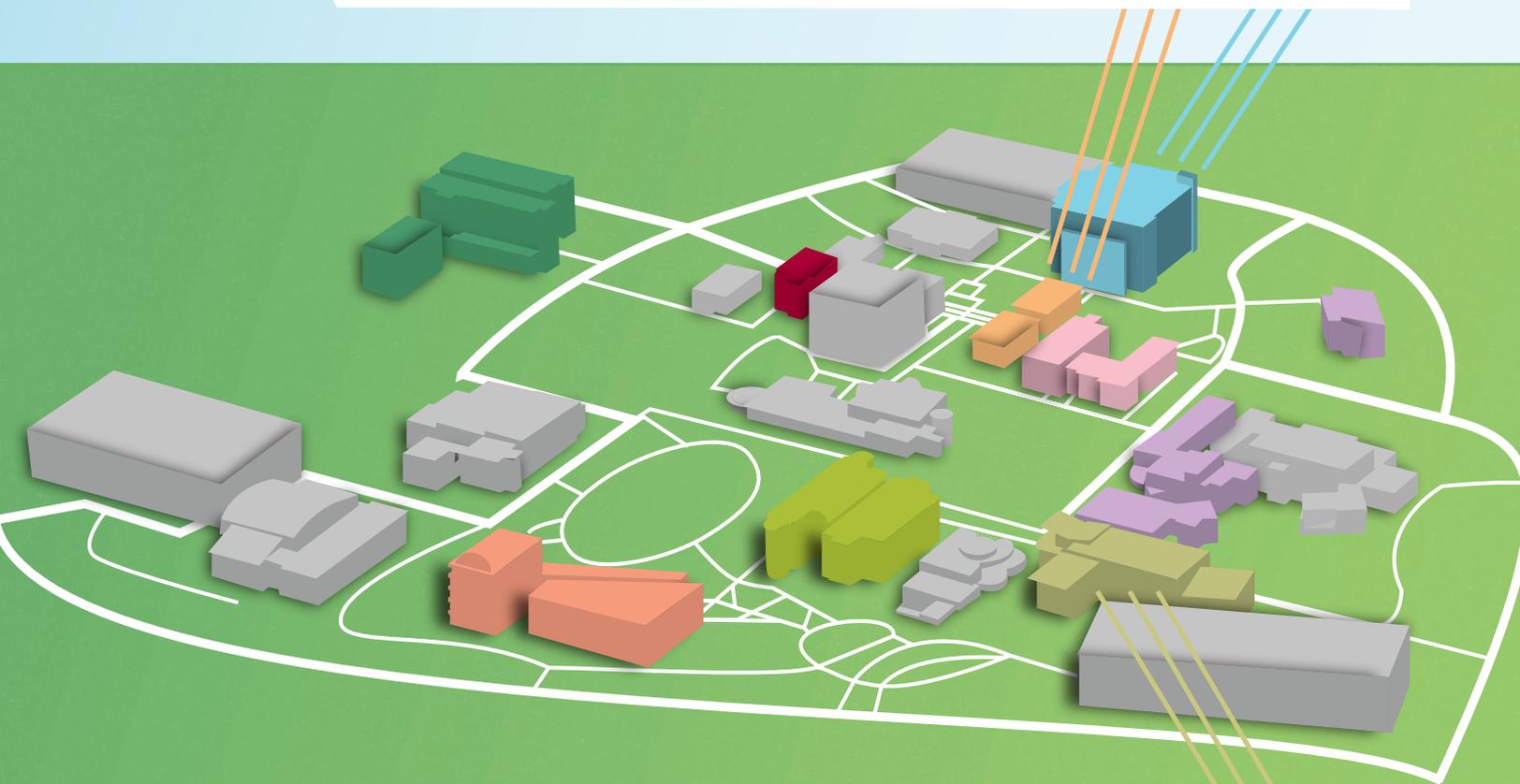
RESEARCH ACROSS CAMPUS

"It has made me a better student and sharpened skills that I did not think I'd be using. It stretched me and has been a worthwhile experience."

--Daniel Gambrell, Integrative Studies

"I enjoyed my project because it allowed me to combine my two passions of communications and music. I also had the opportunity to develop my writing skills which I will use throughout my future educational career."

--Katherine Ellsworth, Communications



"When I administered my survey in Kenya, everyone was so excited to participate. It was so encouraging and I was excited to see the results from this study that has never been done before!"

--Jessica Grindley, Nursing

CHECK IT OUT!



IMPORTANT DATES

CARET **Applications Due** **January 16, 2015**

Applications should be submitted no later than **Friday January 16, 2015 at 5:00 pm**. Applications can be found at <http://cetl.kennesaw.edu/faculty-funding/creative-activities-and-research-experiences-teams-caret-program>.

URCA Applications Due **October 3, 2014** **December 5, 2014** **February 6, 2015** **April 3, 2015**

Applications should be submitted no later than the above dates at **5:00 pm**. cetl.kennesaw.edu/faculty-funding/undergraduate-research-creative-activities-urca

NCUR Submission Deadline **December 2, 2014**

Abstracts can be submitted to NCUR no later than **December 2, 2014** at http://www.cur.org/ncur_2015/abstract_submission/

KJUR **Submission Deadline** **November 18, 2014** **March 15, 2015**

Submissions for the Kennesaw Journal of Undergraduate Research can be made at digitalcommons.kennesaw.edu/kjur/

EDITOR'S CORNER

Newsletter Submissions

Do you have research that you believe should be highlighted? Do you have a story to share or advice to offer regarding undergraduate research? Your submission could be featured in an upcoming issue of the Undergraduate Research and Creative Activity Newsletter. All inquiries should be made as soon as possible. Email cetl4ur@kennesaw.edu or call CETL at (470) 578-6410 to submit ideas.

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