



# the Collage

Kutztown University's College of Liberal Arts & Sciences

Mar. 2018

## Student highlight

Michael Toolan '18 is a senior majoring in Environmental Science. His list of accomplishments includes the Ronald R. Rhein Biology scholarship, the Tibbits/Watrous Science scholarship, and the Samuel Gundy Early Achievement in Biology scholarship. He's a mentor for the Biology Department and is currently Vice President of the KU Botany Club. However, he wasn't always a wunderkind.

Having transferred schools twice, changing majors more, and after toiling under the fluorescent lights of retail, Toolan finally decided he'd had enough and enrolled in Kutztown. And it was in frustration that he happened upon Environmental Science. "At the time of choosing a major, I was just desperate to get out of the situation I was in," said Toolan. "I was interested in working outside. I knew almost nothing about the major going into it, and whatever

lot of people would be surprised how much more [they're] willing to work for something." For Toolan, research and applying his newly formed knowledge to the living world is what he's passionate about. After a time speaking with his professors, making friends, and taking his studies seriously, he finally began working toward a sustainable career path.

Toolan's first research project was with Kutztown professor, Dr. Kaoutar El Mounadi, who was starting a project on antifungal plant defensins. She was looking for students to get involved. Toolan's more at home in the forest looking at plants and bugs than he is in the lab behind a microscope, and never having done professional lab work, thought himself more of a hindrance than a help. Nevertheless, Dr. El Mounadi was not only patient with him, but encouraged him. He went on to present their findings at the Commonwealth of Pennsylvania University Biologists' meeting, and took second place for Best Oral Presentation in his division.



Michael Toolan | Environmental Science

His latest research position was working alongside the esteemed Rick Carr, Compost Production Specialist of the Rodale Institute Experimental Farm, on the deployment of microorganisms to safeguard seeds from soil-borne plant pathogens.

What's more, in cultivating the skill of research throughout his academic career, Toolan gained something more important: the ability to look introspectively. And in applying his knowledge and skills to finally realizing what he wants to do—well, as much as anyone can really—he has decided to be more involved in community. As he puts it, "the plan as of now" is to take the higher education he has received from KU and use it to start his own locally sourced organic farm.

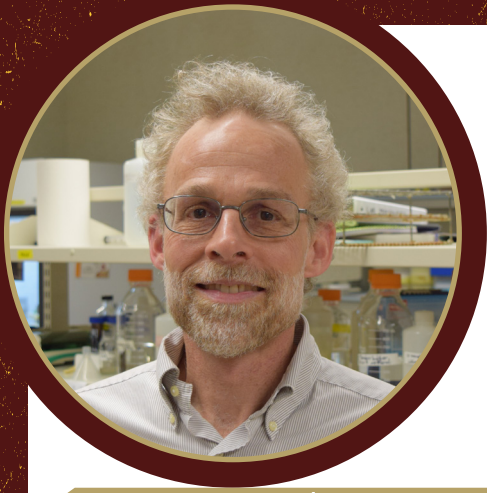
"I think the transition to a more sustainable way of living for the world as a whole is going to be centered around the community more than it's going to be centered around an entire country."

**"Once you find that motivation... I think a lot of people would be surprised how much more [they're] willing to work for something."**

I thought I knew was either wrong or grossly out of proportion."

What Toolan discovered is that one's passion is not necessarily inherent; rather, it's both formed and found out of dedication, hard work, and for some, frustration. "Once you find that motivation to not be where you are anymore..." said Toolan. "I think a

Using his experience in the lab he managed to step back outside under the advisement of entomologist and KU professor Dr. Gregory P. Setliff. Together, they studied the Spotted Lanternfly in order to find ways to protect our native ecology from an invasive species responsible for the devastation of local flora with the potential to greatly impact local industry.



**Dr. Matthew Junker** | Biochemistry

If one were to examine Dr. Matthew Junker, Professor of Biochemistry, under a microscope, you'd find he's made up entirely of cells. If Kutztown had a much larger lab budget, you'd see he's entirely made up of molecules. But even with a Discovery Kids™ Microscope Lab Kit, you'd be able to see that Biochemistry is literally in his DNA.

And assuming you received Dr. Junker's permission to examine him, your investigation into his love of Biochemistry would reveal that his greatest passion is research. Moreover, Dr. Junker enjoys sharing his enthusiasm for research with students, and through including and working alongside them, he feels like he's collaborating instead of just teaching.

"When students come in to do research, what they really enjoy is that it is really different than class work," said Junker. "They are given a problem and they have to use some of their course knowledge, but really, a lot of it is [using] their own wits to figure out an answer. There's no answer at the end of the book—they are discovering new things for themselves."

Dr. Junker is currently conducting research on apoptosis (or programmed cell death)—the process whereby cells self-destruct in a controlled fashion, and without harming neighboring cells, in order to make room for new cell development. Dr. Junker breaks down his research into discrete projects for educational purposes. According to Dr. Junker, nearly 90% of the hands-on work associated with his long-term research project is done by KU students.

Through their work on these projects, students become experts on a specific topic. Additionally, this allows students to not only contribute to a long-term research goal, but it also gives them something concrete, something that is theirs that they can present at a research meeting, as well as use for both graduate school and job applications.

In the mid-1980s, when Dr. Junker was just beginning his own academic journey, most undergraduates didn't have many opportunities for doing research.

## Faculty highlight

Today, students at universities around the world are engaging in research. However, many of these opportunities aren't fully realized.

"It turns out, at a lot of larger universities, the students can't get on the equipment in lab courses," said Junker. "They do their experiment, they prepare their sample in the lab, and then they give it to a TA (Teacher's Assistant) who then runs it on the instrument, and gives them the data back. So they don't get that hands-on experience."

At KU, we don't have TAs in the labs. Professors like Dr. Junker participate at every level of the coursework. Students also find that they are not competing for lab space with graduate students or post-docs. Kutztown depends on undergraduate student participation for research, and it's the firsthand experience that translates well to both the working world and graduate programs. "Graduate schools are not prejudiced against us at all," said Junker. "I think they know that small schools provide well trained students."

## DEAN'S CORNER DR. DAVID BEOUGHER



This edition of *The Collage* highlights the importance of scientific research at Kutztown. For faculty, research shapes their teaching and provides an opportunity to engage students in the discovery process. Students have the opportunity to discover purpose and passion as well as to potentially define the path that will allow them to make a difference to others and our world. Michael serves as a great example of making what he has learned in the classroom his own, applying his knowledge, and becoming progressively more influential regarding challenges that he wants to help overcome.

Our faculty and staff strive daily to awaken this intellectual curiosity and internal commitment to continuous learning that mark our alumni long after they leave the classrooms and labs.

Our graduates are evidence of their success. It is truly good to be golden.