First year, first applicant: Early admission success

The Eberly College of Science’s Premedicine program launches an early admission opportunity with Rutgers School of Dental Medicine and nets its first acceptance in junior Richard Ni.

“First applicant, first acceptance, first year—it’s off to a good start,” program director Ron Markle said with a smile. “That, I think, we can feel good about; and I fully expect that we’re going to see more students jump at this opportunity.”

Promptly following the first announcement of this early admission opportunity in June 2017, Richard Ni—a science major with a minor in cello performance—submitted the program’s first application and subsequently secured its first offer and acceptance of early admission to the Rutgers School of Dental Medicine.

“I rushed to get my application in, not expecting much,” said Ni. “But I did get an interview, and I thought, ‘Oh, God, I have to get this.’”

“My father is a dentist,” he continued. “All through my life I was exposed to it. I was working in his office at an early age. So, to me, dentistry was the only choice. I saw how hard he worked and the way he made people feel better and smile.”

On the subject of Ni’s unique qualifications, Markle spoke unequivocally: “Richard’s self-motivation to jump on this opportunity really sets him apart; and it’s pretty clear that he’s making a well-informed decision on a career track that he feels a good affinity for.”

But beyond a hearty dose of “get-up-and-go” and a certain affinity, what also does such success require of someone in Ni’s position?

First addressing the perennial topic of grades, Ni noted that his GPA “isn’t stellar, but it’s good enough—as long as you show commitment and passion, schools will pick up on that.”

No doubt, Ni’s undergraduate research experience and extracurriculars also helped to elevate him above his fellow applicants; he works in the lab of Penn State Distinguished Professor Jeff Peters and with Jim Epstein at the University of Pennsylvania, while also serving as vice president of Penn State’s Music Service Club and as outreach chair of the Eberly College of Science’s Student Council.

“With the Music Service Club, we use music as a way to serve the community, going to nursing homes and hospitals,” he explained. “For the college’s student council, I’m doing recruiting and outreach to local high schools and starting initiatives within our own college.”

About his research, Ni said: “It’s a great learning experience, and I think research actually cultivates a thinking process and a problem-solving process to approach other things in life.”

Ni’s excitement was palpable as the conversation turned to his future at Rutgers.

“It’s an amazing school!” he beamed. “I’m a New Jersey resident, so, obviously, going there would be a great choice. I’m planning to specialize and do some continuing education, and I feel that, going to Rutgers, I have an opportunity to save some money and then continue my education. Another thing, I know I’ll have good clinical experience working with an underserved community.”

Reflecting, finally, on his experience and success with this new early admission program, Ni said he thinks it’s “a great opportunity, really, for people who have their mind set on dentistry at an early age to show that to dental schools and get an opportunity for a decision.”

—Seth Palmer

A $40 solution to empower East African energy research

Power problems in Tanzania spark a Penn State Ph.D. student’s decision to build an affordable diagnostic device

Chris Li’s inspiring story began in the summer of 2016, when he travelled to Tanzania with Penn State chemistry department head Tom Mallouk to teach a two-week summer course organized by the Joint U.S.-Africa Materials Institute (JUAMI). While he was there, Li recalled, the electricity would go out at least three or four times a day—just a regular thing,” he said. “It’s normal for them. They don’t have a stable power grid.”

Li and Mallouk were teaching in Arusha, at the Nanyang Institute of Science and Technology—"one of the better schools in East Africa," Li said—and they realized that even there, the research equipment was still very limited compared to the technology at most American universities.

When they got back home, Li said, “we decided that we would submit a proposal and then build some equipment for them to use. A group of U.S. and African students, we teamed up together, wrote a proposal to the Materials Research Society, and we actually got funding to develop this project.”

Their project was to build a potentiostat—a device that measures current and voltage—that they could ship to African universities to enable students there to conduct energy-related research.

The challenge was that a single potentiostat of the type Li uses in the lab costs between $6,000 and $10,000—effectively putting a lab’s supply of such equipment well beyond the budgets of even the best African universities. So Li’s group built one for $40.
They designed and custom-fabricated the hardware from existing designs and components, then 3D-printed the case and assembled the device in-house.

When the devices are shipped, they will include Li’s custom software interface—a standalone executable file that can be used without having to be installed on a computer—and a set of basic experiments so students can get the device up and running.

“It’s a kit that people can start using right away,” Li said. “We’ve built a dozen to start, and we’ll ship them to several African universities where we hope that they will be used in undergraduate labs so that students can learn how to do electrochemistry—how to build batteries, fuel cells, solar cells.”

Li’s group is working with a team of local African students to distribute the devices directly to the universities. And following the initial run, Li says, he plans to scale up production to make and ship another 50 or so devices in early 2018.

“We want to help,” he explained. “There is definitely a problem with energy in East Africa. It’s not a problem that this device is immediately going to solve, but I hope that it will help African students to learn more about electrochemistry and do more energy-related research in order to someday solve this problem.” —Seth Palmer

Chris Li is a graduate student in the Department of Chemistry at Penn State.

Penn State chemistry graduate student Julie Fenton was selected to participate in the 67th Lindau Nobel Laureate Meeting, where she interacted with Nobel Laureates at Lindau, Germany. She was chosen after a multi-stage, competitive selection process among science scholars under the age of 35 at 155 scientific institutes, universities, foundations, and research-based companies worldwide. 400 young scientists from 76 countries were selected to attend the six-day meeting in June 2017, during which the students and Nobel laureates shared their knowledge, ideas, and experience during meetings, lectures, discussions, master classes, and panel discussions.

“These Nobel laureates represent numerous countries, continents, cultures, and sub-disciplines of chemistry, all contributing to some of the most impressive and impactful work in chemistry done over the last several decades,” Fenton said. “Making connections with them and learning from all their different backgrounds and cultures will give me a rich network that will help me to pursue of my goal of having an impactful career in academic chemistry, unbounded by national borders or cultural barriers.”

“Julie is a rising star in chemistry and this is a well-deserved honor,” said Fenton’s research advisor at Penn State, DuPont Professor of Materials Chemistry Raymond E. Schaad. “This honor will provide her with an excellent opportunity to interact with, and learn from, some of the top scientists in the world.” —Barbara Kennedy