ACHIEVEMENT

Science Citation

Owen Colegrove ’14 graduates with a diploma and a published paper in the journal *Science*.

Interview by Julia Sklar ’14

WHEN SENIOR OWEN COLEGROVE TRANSferred to Rochester for his junior year, he had little research experience under his belt. Two years later, he is one of few undergraduates with published work in a major scientific journal, *Science*. In the summer of 2013, he conducted solar physics research through a Research Experience for Undergraduates (REU) alongside David Hathaway, a NASA astrophysicist.

What aspect of solar physics were you studying?

I did a lot of programming and analyzed data from NASA’s Helioseismic and Magnetic Imager to study the existence of giant convection cells. Basically, we were looking at the sun’s magnetic fields.

Did you know this experience would end in a published paper?

Given my level of experience going into my REU, I had no idea. My advisor hinted that it was a possibility, if all went well, but I guess I didn’t really realize that it truly would happen. At first, it was an “I’ll believe it when I see it” thing, but then we wrote the draft and I started thinking, “Maybe this could really happen.”

We had the big breakthrough that resulted in our being able to publish a paper about a week before I left. On my second to last day, we sat down and talked about what to put into the paper, double-checked everything, and then corresponded over email from there. Maybe three or four weeks after I left, we had a draft submitted to *Science*, so it was a pretty fast turnaround toward the end there.

How did you land this opportunity?

I was a transfer student so I had only been at Rochester for one semester, and on my community college transcript I had no research experience and limited programming skills. Basically I didn’t have anything that made me that desirable for an REU, and I was pretty lucky to get into one. When I applied, I didn’t know specifically what I would be working on, just that it would be in the niche field of solar physics, which I actually didn’t know much about.

What was the most challenging part of conducting this research?

Well, the first thing we tried, which my advisor thought was going to work, just completely didn’t work. This had really been the focus of the first five or six weeks of my REU, and that was a really discouraging feeling because half of my experience, timewise, had already been used up. My advisor had already been working on this research for 30 years. I guess the biggest challenge was just keeping up my motivation when I felt like nothing was going to work.

▲ **WORLD VIEW: “Even if we couldn’t get the study to work, it would still be a great learning experience,” says Colegrove, a senior whose research earned him a spot as a coauthor of a paper in *Science*.**

How did you maintain motivation?

I just trusted my advisor, and held the mindset that even if we couldn’t get the study to work, it would still be a great learning experience. My goals weren’t to solve this problem that my advisor had been working on for 30 years and to get published.

How does this experience compare to your coursework?

I hadn’t really taken any programming or astronomy classes, even though we offer them, so the research experience was actually pretty disjointed from my classes. That’s not a bad thing, though; it just means that I’ve now gotten both the classroom and hands-on experiences in physics.

How has this research affected your postgrad plans?

It was actually really interesting because I had never even heard of solar physics before, and now I’m looking at a couple grad schools that specialize in the field, and I might end up studying solar physics full time now.

Do you have any advice for underclassmen interested in research?

Stay open to any opportunity that comes your way. The REU I got into wasn’t necessarily my first choice, and I was a little hesitant to accept, but I couldn’t imagine having had a more productive summer somewhere else. Also, don’t be afraid to try something new in terms of research. I had never even done anything in astronomy, so solar physics was an even more niche topic, and yet I came away with a new interest. The worst-case scenario is just that it doesn’t work out, but you’re still likely to get something out of the experience anyway. ®

Julia Sklar ’14 plans to study science journalism in graduate school at Boston University in the fall.

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