

Bright Lights

Blazing a path

JMU played host to microbiologist's promising career

BY SARAH FEATHERSTONE ('13)

The world of scientific research is changing as women assume leading roles in what was once a male-dominated field.

"Having more and more women who are at the top of their field and who have a voice in science makes it better for all of us," says Chelsea Cockburn ('13), an honors student who graduated from JMU with a Bachelor of Science degree in biology.

Now an M.D.-Ph.D. candidate at Virginia Commonwealth University, Cockburn recently returned from the 68th Lindau Nobel Laureate Meeting in Germany—one of only 15 American doctoral and post-doc students to be invited to attend the prestigious event.

The annual Lindau Meetings bring together scientists from various cultures and disciplines and allow Nobel laureates to meet the next generation of leading scientists. At this year's meeting, which was dedicated to physiology and medicine, Cockburn had the opportunity to present her work to a record 39 Nobel laureates. She felt honored and excited to be in the room with such influential figures. "Talking to different laureates about their experiences in science and how they navigated the world of scientific discovery was incredibly rewarding."

As a fifth-year graduate student in VCU's Department of Microbiology and Immunology, Cockburn studies host-pathogen interactions within host cells. She and her colleagues recently discovered an alternative use for a drug already approved by the Food and Drug Administration to treat bacterial infections. Rather than attacking the bacteria as an antibiotic would, the drug inhibits the pathways of bacteria, preventing the spread of infection and making it much more difficult for the bacteria to develop resistance. "It's an interesting and novel way to think about how to treat bacterial infections," Cockburn says.

The daughter of two musicians, including the director of the JMU Music Library, Brian Cockburn, she thought she'd pursue a career in music until she took an Advanced Placement biology class in high

school. For her, that was where it all clicked. "I like that biology can answer a lot of basic yet interesting questions about the human body and how the human body works. There's a lot we already know, but I like the aspect that there's still so much to learn and so much we don't know yet."

In beginning down the path toward answering those unknowns, she sought out the best undergraduate biology departments that would help her reach her goals. A Harrisonburg native, she initially felt unsure about staying in her hometown for college, but once she toured JMU and learned more about the biology major, she felt like it was a place where she could grow—as a student, an aspiring scientist and a leader. "I had no doubt I could receive an excellent education."

Because of JMU's size and department structure, freshman biology students can begin participating in research during their first semester—something atypical at most larger institutions. "Those first few research experiences were phenomenal and made me want to pursue the M.D.-Ph.D. path," Cockburn says.

Knowing that path required multiple years of preparation and a lengthy application process, Cockburn sought advice from biology professor Sharon Babcock, who serves as director of preprofessional health advising at JMU.

Babcock remembers Cockburn as a highly motivated first-year student. "Chelsea exemplifies brave risk-taking. She was genuinely interested in many things, and she took advantage of that. She really sought experiences, engaging in research on and off campus and making lasting connections along the way."

Cockburn, in turn, appreciated Babcock's willingness to share her knowledge and experiences. That guidance helped Cockburn feel more informed about the best path toward her dreams. "I don't think I would be where I am today without Dr. Babcock," she says.

Cockburn also credits her honors experience, including her classes and capstone project, with preparing her for her current and future endeavors. "The Honors College really provides the venue for the students to come into their own, and so do the undergraduate

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During a recent trip to campus, Chelsea Cockburn (right) was able to reconnect with her undergraduate mentor, biology professor Sharon Babcock.


research experiences on this campus.”

As she was preparing for her trip to Germany this summer, Cockburn was most excited about meeting Elizabeth Blackburn, a scientist who received the Nobel Prize in 2009 for co-discovering telomerase. Cockburn says Blackburn’s career is one she’d like to emulate as a fellow woman in science.

Babcock believes Cockburn is herself a model for future scientists—especially the students who may be beginning their jour-

neys at JMU. “She exemplified JMU’s piece about coming here and making it the kind of experience you want with the exceptional opportunities and mentors available, and then you give back—and she was already giving back before she left campus. That’s what always struck me about her.”

To those younger generations, Cockburn offers this advice: “You can definitely do it. You just have to surround yourself with mentors and advisers, both men and women, who will foster your growth as a scientist and your own personal growth as well.”

If Cockburn has anything to say about it, the future of science looks bright. 

PAVING THE WAY

‘I simply would not have been able to attend college without scholarships and financial aid. Having scholarships allowed me to discover and pursue passions such as research and music because without them, I would have most likely been working jobs to be able to stay in school. I don’t think I would have ever realized an M.D.-Ph.D. program was ever an option, and I certainly would have been a less competitive applicant if I hadn’t had the time to devote to research, studying and other extracurriculars. Being debt-free from college allowed me to not be constrained in where and what programs I applied to.’

—CHELSEA COCKBURN (‘13),
*developing a novel way to treat
bacterial infections*