

# HumanEcology

COLLEGE OF HUMAN ECOLOGY · CORNELL UNIVERSITY · VOLUME 45 · NUMBER 1 · SPRING 2017



## MULTI-DISCIPLINARY IMPACT

Faculty shines in cross-college, cross-campus collaboration



- ↳ Textile fiberizer recycles used clothing
- ↳ Ultra-efficient LEDs power indoor agriculture



Cornell University

# Cool and COMFORTABLE

Park and Donelan publish their work on thermal design

Just a few months after graduation, Caroline Donelan '16 celebrated another important achievement. The Fiber Science & Apparel Design (FSAD) student published her first academic paper, which appeared in the September/October issue of *AATCC Journal of Research*, issued by the American Association of Textile Chemists and Colorists (AATCC). The article, "Evaluation of Cooling Garments for Improved Design and Thermal Comfort Based on Thermal Manikin Tests," draws on research conducted in the summer following her sophomore year under the guidance of co-author and FSAD Assistant Professor Huiju Park.

While Donelan's focus is on apparel design, a passion she has been nurturing since second grade, she knew coming into Cornell that she wanted to take advantage of everything the department had to offer. "A big draw for me to the FSAD program was that it's not just an art school," she says. "We also have opportunities to do research and learn more about the materials we work with."

She successfully applied for a Human Ecology Undergraduate Research Program summer stipend and turned to FSAD's thermal manikin, Walter, to analyze how three types of passive cooling vests – evaporative, conductive, and phase change – perform over time and under different environmental conditions. Invented by department chair Jintu Fan, Vincent V.C. Woo Professor in Fiber Science & Apparel Design and Director of Cornell Institute of Fashion and Fiber Innovation, the manikin uses heaters and pumps to circulate water under a sweating skin of breathable fabric, simulating the human body's thermal regulatory function.

Walter provided Donelan and Park with data on evaporative resistance (how garments transport moisture through the fabric surface) and thermal insulation (how warm or cool the garment is) that allow for an objective rating of cooling technologies frequently

used in protective clothing. "There are many claims about cooling effects and perception, but until now there hasn't been a way for consumers to rate or compare different technologies without depending totally on human perception," Park says.

Donelan continued to analyze data and work on a formal paper throughout the following year, setting aside time from her regular coursework. "Writing a research paper as an undergraduate is tough stuff, and it's rare," Park acknowledges. "During the review process, we sometimes got very challenging questions, but I was very impressed with Caroline's positive attitude, patience, and persistence." Her effort was rewarded not only with the paper's acceptance for publication but also with a fourth place finish in the AATCC's Herman & Myrtle Goldstein Student Paper Competition.

Donelan's work with Park also piqued her interest in sportswear, which culminated in a senior thesis project designing more comfortable track uniforms and, most recently, in a position as a technical developer at Nike in Beaverton, Oregon. "The research that I've done helps me think differently about the materials we use and all the features that go into the apparel that we wear," Donelan says.

Park considers such a full-picture perspective a major strength in his former student – and the department from which she graduated. "Caroline always wants to understand scientifically why a design impacts the wearer in a certain way," says Park. "That's what makes Cornell FSAD strong – this very active collaboration between the two areas within the department. It's very meaningful to see an undergraduate design student publish a paper in a scientific journal. Caroline shows our strength through her work."

– Olivia M. Hall



Caroline Donelan



Huiju Park

answer a legally important research question, you must understand the inner workings of the judicial system."

The exposure to world-class researchers in the Department of Human Development and Cornell Law School provides an education like no other, explains John Blume, the Samuel F. Leibowitz Professor of Trial Techniques and Director of Clinical, Advocacy, and Skills Program at Cornell Law.

"Caixa and Amelia have had the opportunity to work with faculty in both departments on a number of groundbreaking projects at the intersection of law and psychology, the results of which have been published in top law journals," he says. "The program prepares students to be engaged legal scholars."

Hritz, who served as editor-in-chief of the *Law Review* this year, believes the program uniquely prepares students to focus on publishing, requiring them to complete two years of study toward a doctorate degree in psychology before starting law school full-time.

"The experience of working first on my PhD gave me a leg up when I started law school because I had already collaborated with faculty members and published in journals on these topics," she says. "I love the idea of doing research that has practical applications in the law because there is the opportunity for the research to influence what is happening in courts."

– Sheri Hall



Hritz, Sotamayor, and Royer