

ECR SPOTLIGHT

ECR Spotlight – Patrick Green

ECR Spotlight is a series of interviews with early-career authors from a selection of papers published in Journal of Experimental Biology and aims to promote not only the diversity of early-career researchers (ECRs) working in experimental biology but also the huge variety of animals and physiological systems that are essential for the ‘comparative’ approach. Patrick Green, the author of ‘Behavior and morphology combine to influence energy dissipation in mantis shrimp (Stomatopoda)’, published in JEB. Patrick is starting as an Assistant Professor at Brown University, USA, in autumn 2024, investigating integrative approaches to understanding how animals gather information and make decisions in contexts like competition.

How did you become interested in biology?

Even though I always loved nature and thinking about how animals ‘worked’, I assumed that liking biology meant one became a medical doctor. It wasn’t until I was far along in college that I found out one could be a biologist for a career! I spent 2 years in between college and graduate school, with a lot of that time spent talking to biologists, and especially ECRs, to learn what this career was like. Combined with my interest in biology and nature that stemmed from growing up in the Sierra Nevada foothills, I feel fortunate to have found my ideal career!

Describe your scientific journey and your current research focus

I earned my Bachelor’s degree at UCLA in California, but spent a long time figuring out that I wanted to get my PhD and learning what that meant, as no one in my family had ever been to graduate school, let alone lived outside of California. I was lucky enough to join my PhD advisor’s lab in Massachusetts, and then at Duke University in North Carolina, USA. From there, I took a postdoc position at Duke University, and then a fellowship at the University of Exeter, UK, before coming to UC Santa Barbara, USA. In fall 2024, I will start as an Assistant Professor at Brown University, USA!

My current research focus is understanding how animals gather and use information in contexts like competition and mate choice. I like to study both the behaviors animals use in these contexts – like signaling and fighting behaviors – as well as the biomechanics and physiology that power these behaviors. As such, I consider myself an integrative organismal biologist.

How would you explain the main findings of your paper to a member of the public?

I show that mantis shrimp, who receive high-force hits from opponents during contests over territory, can dissipate a high proportion of the energy of these hits by coiling their protective, armored tailplates in front of their bodies. Previous work has shown that the armor is built to withstand these hits, but my work adds the knowledge that their behavioral use of the armor helps



Patrick Green

even more. Diverse animals, from fish to rams, exchange blows during contests, so this research could help us understand how weaponry and armor have evolved to deliver and withstand high-force impacts.

Why did you choose JEB to publish your paper?

JEB has always been one of the premier journals for research in my field, and it’s quite exciting and an honor to publish in JEB. It’s the journal I go to when I’m looking for integrative research of great quality. I also find the review and evaluation process at JEB straightforward and helpful; the reviews I’ve had from the journal have always been incredibly constructive. Finally, I value the support JEB gives to ECRs, in the form of funding and collaboration opportunities. It truly develops a structure for ECRs to build their careers.

What do you enjoy most about research, and why?

There is a feeling I get when I solve a research problem that I don’t get in any other career or part of my life. I feel this across contexts in research – be it fixing a piece of equipment in the field or figuring out how to fit the best statistical model to data. Even though the process of solving that problem can be quite challenging and uncertain, the sense of accomplishment when the problem is solved is a great feeling.

What is the most important lesson that you have learned from your career so far?

I feel like I have learned that this career path can take a long time to truly feel ‘stable’. From the start of your PhD, or even earlier, you are likely moving around the country or world, developing and changing relationships with friends and mentors, and trying to understand where you might end up. That has been quite challenging at times. For me, I’ve tried to take the standpoint of being persistent and trying to enjoy where I am in a given moment. As an ECR, there are a lot of uncertain aspects of one’s life at this stage, but I’ve found it useful to remember that there are a lot of very exciting, fun things we get to do.

Patrick Green’s contact details: Brown University, Ecology, Evolution, and Organismal Biology, Providence, RI 02912, USA.
E-mail: patrick_green@brown.edu



A mantis shrimp looking out of its burrow. Burrows, or holes in rock and dead coral, are essential resources that protect mantis shrimp from predation, and mantis shrimp fight vigorously over burrow access, exchanging high-force blows on each others' coiled tails. Photo credit: Roy Caldwell.

What's next for you?

I'm starting my lab at Brown University in fall 2024! It's a bit intimidating, but incredibly exciting to join such a great university and great group of faculty. Plus, I'm very excited to live back in the Northeast!

Reference

Green, P. A. (2024). Behavior and morphology combine to influence energy dissipation in mantis shrimp (Stomatopoda). *J. Exp. Biol.* **227**, jeb247063. doi:10.1242/jeb.247063