Cell PRESS

Special Issue: Specificity of plant–enemy interactions

Interview with Anurag A. Agrawal

Anurag Agrawal, born in Allentown, Pennsylvania (USA), received his BA (Biology) and MA (Conservation Biology) from the University of Pennsylvania, where he was inspired by Daniel Janzen, a pioneering evolutionary ecologist, and became intrigued with plant–animal interactions. He completed his PhD (Population Biology) with Rick Karban at the University of California, Davis, and held a Postdoctoral Fellowship at the University of Amsterdam before becoming an Assistant Professor of Botany at the University of Toronto. In 2004, he joined the Department of Ecology & Evolutionary Biology at Cornell, where he is currently a Professor. His research has been broad, embracing chemical ecology, quantitative genetics, phylogenetic analyses, community dynamics and the nascent field of community genetics. Making his work a hobby and some of his hobbies his work has made being a plant biologist and naturalist an immense pleasure.

What turned you on to plant biology in the first place?
It's hard to know how this happened to me, but I suppose it was spending much of my childhood outdoors, my mother's intense love of vegetable gardening, and then some key serendipitous moments, like stumbling into Dan Janzen's introductory biology course at Penn. I am the type of person who can get interested (and obsessed) by a lot of things, so I feel lucky to have landed here!

What paper influenced you most?
Ehrlich and Raven 1964. Not because of its specific content, but because of the conceptual linkage between something so mechanistic (plant-produced secondary compounds and their defensive impacts on insects) and something so big-picture and central to patterns of biodiversity (how new species are formed, generating clades of hyperdiverse plants and herbivores). Remarkably, we don't know if their hypotheses were correct, but evolutionary chemical ecology has certainly come of age, and great strides are being made right now.

What big questions interest you in the long term?
To what extent can we generalize in plant science? Are there laws that regulate the ways in which plants respond to the environment, evolve and diversify? I am a huge believer in the integration of work on mechanisms in model organisms and the study of patterns across many species. For example, it is remarkable that what we know about highly conserved traits from some of our model organisms (e.g. *Arabidopsis* and tomato) indicate that they interact with the environment in divergent ways. I think we have to reconcile the highly conserved blueprint of most plants with the diversity of how they actually behave. In part that means a move towards non-model-omics, but also a conscious decision to value the study of patterns in wild species studied in their natural environment.

What is the best (professional) advice you have been given?
Two things, one specific and one general. As an assistant professor, 'do another thesis project'. It is about the same time frame, results in the same thing (a novel, cohesive and advanced body of work), and is a concrete goal when thrown into academia on our own. More generally, succeeding in science isn't easy, but it shouldn't be a mystery. 'Do whatever you have to in order to learn the culture of being a scientist.'

And what advice would you give?
Be sure to play to your strengths and continually work on your weaknesses. There isn't a single formula for success in science, but again, it shouldn't be a mystery, and your recipe will require self-study. Most scientists could improve one or two things that are rate limiting steps (e.g. writing faster), which could be a major improvement. Oh, and you must be prepared to accept a steady stream of criticism and rejection, but there is no limit to what we can accomplish through dreaming and taking risks.

What is the biggest hindrance to science?
Two things, one general and one specific. First, there is often difficulty in accepting change. A colleague once told me that one of the great things about a life in science is that we have the ability to change what we work on, our approach and philosophy, and what we find inspiring. I couldn't agree more. Nonetheless, sometimes change is thrust upon us, in terms of funding streams, technology, what questions are hot or passé, etc. A challenge for the academic industry is allowing creative freedom while maintaining an environment where accepting change is facilitated. Second, most scientists sit on too much unpublished data... although there are many reasons for this (negative results, other things more pressing, student left the lab without finishing the project); it is a bit of a tragedy for the work to be done but not be available in the commons.

What has been your biggest mistake in research?
Letting my own impatience get the best of me. Was it really a mistake? A few times, yes. Like most things, there are tradeoffs, and my impatience has occasionally been beneficial as well. This interview is done.

1360-1385/$ – see front matter
doi:10.1016/j.tplants.2012.03.010 Trends in Plant Science, May 2012, Vol. 17, No. 5