

Interview with Dr. Blake Meyers

While interviewing Dr. Blake Meyers, we asked four questions of interest. His exemplary and interesting answers are provided below.

Q1 Let's imagine that you can travel back in time and give ONE piece of advice to your younger self, using the experience that you have now, what would you tell yourself while in (i) grad school, (ii) as a postdoc, and (iii) the first day you opened the Meyers lab?

Good question, and a tough one, because my perspective now is influenced by the success that I ended up having. Yet, at any of those earlier stages in my career, my success was an uncertain thing, and the positive aspects of my situation at that moment seemed like they could be short-lived. That is, like most grad students, postdocs, or early-career scientists, I've felt the pressure of making progress on my projects, publishing, and making a name for myself—plus balancing [my] personal life with work and myriad other things. There are a lot of decisions to be made along the way, to go one way or another, pursue one goal or another. Success is a product of how you set and measure up to your own goals, plus some hard work to meet those goals and a measure of serendipity. I've tried to spend time to also do things outside of work that I enjoy, although there were certainly times that I was putting more effort into work than I should have.

My single one piece of advice would be to appreciate both failures and successes along the way for the learning moments that they represent. And, appreciate the great people you meet, the moments when good fortune occurs, and the remarkable career that we as scientists can have relative to many other professions. I think this pretty much holds true at all stages of my earlier career.

Q2 The Meyers lab is a high-achieving and successful group Could you give us insights into how you manage it and also manage time?

My answer is different today than it would have been 10 or 20 years ago. When I first started my group, I had to spend a lot of time training people, working directly with them to build up systems for data management, juggle the many responsibilities of early-career faculty, including teaching, generating data for grant proposals, finding and training the people that I just mentioned, and making tough decisions about where to focus my limited time, while building up stories that would result in papers and good talks. Experience helps, of course—I can now do many of these tasks, such as write and evaluate, more quickly than I could when I was first starting out. But, those are aspects of the work that, over time, get quicker or easier. Other parts of the job take the same amount of time (mentoring, designing experiments, creative thinking). The selective investment of time early in your career can yield time savings later through greater efficiency and experience.

Probably most important of all, in recent years, I've been fortunate enough to be able to attract and retain talented staff, postdocs, and research scientists with whom I can share the work of managing the group. Having some sort of continuity and retained institutional memory of how things work, why things might fail, or who to go to when you need assistance—that's all important to managing one's time. I'm highly dependent on many people, from administrative assistants to the academic staff, and I'm fortunate to have those people. Your question really hits the key point, which is that we're a high-achieving and successful "group"—it's not me per se, but all of us working as a team, and when it's a well-oiled operation, we're that much better. I would also say that we're a cohesive, collaborative group that works well

together, which is also important to success. When conflicts and complications occur within the group, or communication is poor, it slows things down. For group members, a good personality is really a winning trait, arguably even more than technical skills.

In terms of me personally, and my own time management, it seems like my work revolves around my email, so I'm diligent about managing my email inbox. This means that the emails still in my inbox represent my "to do" list, and as soon as I've finished a task, I file or delete the email. The last couple of years, I've tried to keep my inbox to around 20 emails, at least as a regular weekly low point. I hit the legendary "inbox zero" over the last winter holiday, which was the first time that happened in over a decade. Anyway, as soon as I finish this interview, I can file your email—one more item on my to-do list taken care of!

Q3 As an accomplished writer, could you give us some tips for how to write good publications and successful grant proposals?

Another good question. As I mentioned in your previous question, experience is important for efficiency. I can provide a few tips, but probably the most effective thing is for someone to work with a mentor or instructor to critique their writing, or even read a few books on it, as there are many. My quick tips might read as follows, as these are points that I remind my lab members about:

- Write for a reader who does not know your work at all but has the ability to learn it quickly. I often see text written to assume some level of background understanding, and this can make it hard to understand.
- Every word and every sentence matters—readers will (or should) read it all, so pay close attention to the clarity of your text. Haste in writing comes off as sloppy.
- Think about transitions, continuity, and logical flow. Does one sentence follow from the former and into the next? Do the paragraphs fit from one to the other? Are there clear opening and concluding sentences within each paragraph that help to set up the paragraph and wrap it up? A lack of attention to transitions can create abrupt transitions that may leave the reader trying to understand the change in direction.
- Pay attention to the conclusions of paragraphs and sections—end on your strongest point made in that block of text and don't just let the text fizzle out with a minor or tangential point.

Unrelated to style, for a good paper there's also a lot to think about at the submission/evaluation stage of publishing. Reviewers are generally helping to improve your work, so you should be grateful for their input. But also, develop a thick skin, as you occasionally get reviewers who are mean, nitpicky, or just don't share your enthusiasm for the topic. If you're feeling irritated by a reviewer or editor, make sure you take an extra day or so to get over the emotions and purge your responses of adjectives or opinions—focus on the science and keep a neutral tone. Do as much extra work to address the comments as possible—reviewers and editors appreciate it when you fix a concern and don't argue everything.

Grant proposals are different from papers, in many ways. Not only do you need a good idea, but you need preliminary data, and it often takes months to generate (or years). In other words, you need to be playing the long game, building a story over time with the anticipation that you'll be able to work it in as preliminary data for a proposal. That's what start-up funds are for, and even when you have a grant, you

need to be thinking about the dual needs of addressing the objectives of the current funding while planning for the next round. And, you have to do this while ensuring that your people have interesting projects that are going to yield publications. Now that you're asking me to think about it, it's kind of stressing me out, but in real life, it seems to work out but can take a lot of planning.

Q4 What major breakthrough do you hope to achieve in research in the next decade?

There are so many interesting areas within plant biology in which breakthroughs are needed and are likely to come. On the biological side, my interests continue to focus on small RNAs—how are they made, how do they function, where do they go, how do different organisms exploit them for signaling, etc. For the last decade, we've been working with collaborators, mainly the lab of Virginia Walbot at Stanford University, to determine why many flowering plants accumulate extraordinarily high levels of several classes of small RNAs in anthers during pollen development. So, understanding why this occurs, and what those small RNAs are doing, would be a major breakthrough. Answering those questions is likely to require technical breakthroughs, including single-cell analysis of small RNAs and spatial transcriptomics of small RNAs, so those are also major (technical) breakthroughs to look forward to, whether from my lab or someone else's.

Since you're interviewing me in the context of the IS-MPMI, I would also say that another major breakthrough would be to fully understand the small RNAs that mediate communication between plant hosts and their pathogens and symbiotic microbes. Only in recent years have we begun to characterize these RNAs, and there are many things yet to learn about the mechanism of movement, perception, and response. This will require several major breakthroughs, by many people in the field, perhaps with contributions by my group—it's an exciting field that I'm pleased to be involved with, even if it's not my primary area of work.