

In Conversation:

Postdoctoral Fellow Alyson Freeman, Ph.D.

CCR: Alyson, we read your paper characterizing RAF dimerization in *Molecular Cell* earlier this year. What drew you to study signaling mechanisms in cancer?

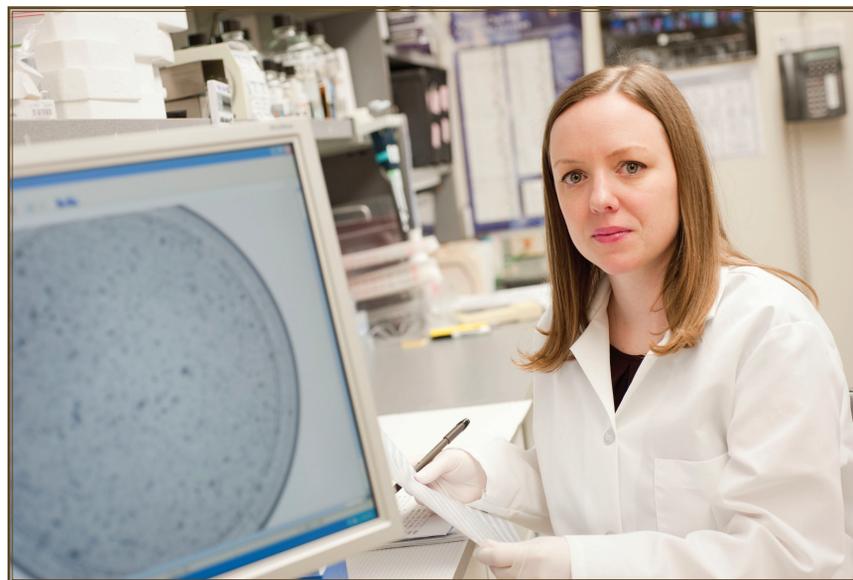
Alyson: I got interested in research as an undergraduate, and afterwards, I took two years as a technician at Boston College to really think about what I wanted to do next. I decided to focus on cancer. It's just one of those scientific problems that fascinated me. Cancer is so complex, involving almost every pathway in the cell. I wanted to explore those details and build them into a global picture. So, I decided to go the Moffitt Cancer Center for my Ph.D., principally because they have a joint program with the University of South Florida in integrative cancer biology for graduate students.

CCR: What led you to work with Deborah Morrison, Ph.D., in CCR's Laboratory of Cell and Developmental Signaling?

Alyson: As a grad student, I worked on the DNA damage response. I wanted to build on that knowledge, but also broaden my expertise. Debbie's laboratory is great at biochemical techniques—*in vitro* kinase assays, mass spectrometry—about which I knew enough to hit the ground running, while learning from the real pros.

CCR: What is most exciting to you about the work you have done so far?

Alyson: It's been known for a long time that RAFs dimerize, but now we really know which residues are critical, in which signaling contexts and how dimerization is affected by RAF mutations. This level of detail is



(Photo: R. Bauer)

Alyson Freeman, Ph.D.

going to be key to developing good therapeutics. It turns out that RAF dimerization plays an important role in the drug resistance that develops to first generation RAF inhibitors.

CCR: We understand that you are leaving soon on maternity leave. Congratulations! What are your plans going forward?

Alyson: I'm planning on returning to the lab after my leave. There's so much to do! The RAS-RAF-ERK-MEK pathway is heating up and NCI has just committed to the new RAS Initiative at the Frederick Laboratory for Cancer Research to translate our increasing knowledge into therapies. Understanding the signaling nuances is going to matter for developing the best drugs. Based on our work with peptide inhibitors of dimerization, we might be able to collaborate with a chemical laboratory to develop a small molecule inhibitor of RAF

dimerization, and even take that further into a mouse model.

CCR: It sounds like you are succeeding in exactly the mission you embarked on before going to graduate school. Do you have any advice for budding cancer researchers?

Alyson: When starting a postdoc or even deciding whether to go to grad school, it's so important to really think about your long-term goals and get advice from as many people as possible on how to achieve them. I'd also encourage other trainees to take full advantage of the opportunities we have at NCI. I first arrived in the lab right before the CCR Fellows and Young Investigators annual colloquium; one of the senior postdocs encouraged me to attend. It gave me great ideas for collaborations, expanding my science and thinking about my career. It really opened my eyes to everything that I could be a part of here.