5 Questions with CTF-funded Researchers: James A. Walker and Benjamin P. Kleinstiver

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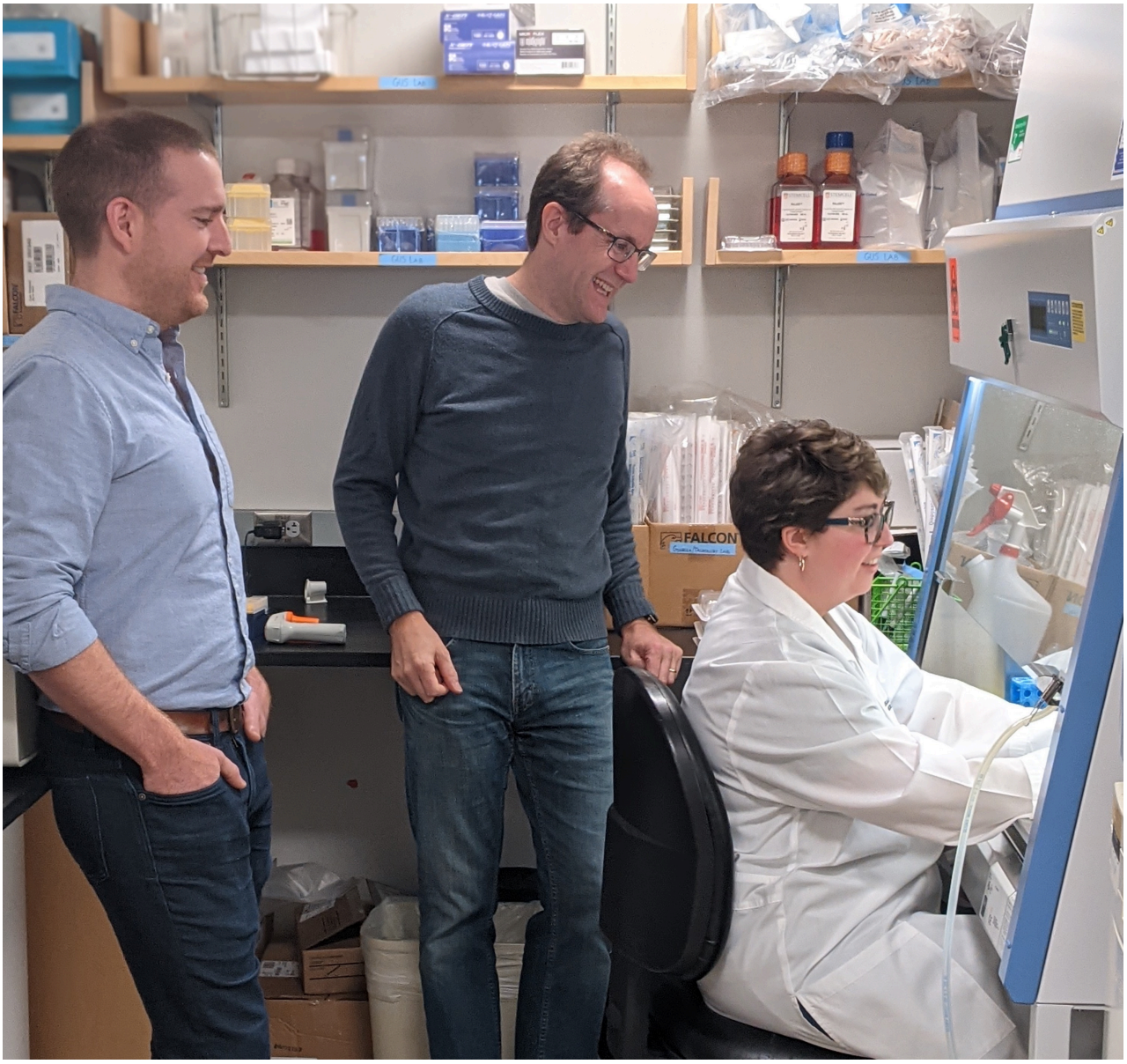

The CTF NF1 Gene Therapy Initiative is funding a research program focused on gene-based therapeutic approaches for the treatment of NF1. We asked these researchers, James A. Walker and Benjamin P. Kleinstiver (Harvard Medical School & Massachusetts General Hospital), to tell us more about their work and how they ended up in the NF field.

What are you hoping to learn from this project?

James & Benjamin: This project aims to harness the latest advances in gene editing technology as a potential therapeutic approach for NF1. We are investigating the feasibility of using CRIPSR-based genome editing (specifically base editing and prime

editing) to correct NF1 mutations in plexiform neurofibromas. Routine use of gene editing in the clinic will require improvements in efficient delivery, precision of editing and resolving safety issues. By testing a variety of gene editing strategies for correcting NF1 mutations in human Schwann cell lines, we hope to devise precision treatments for individuals with NF1.

What are your long-term research goals? What are you looking to achieve?

James & Benjamin: Our long-term research goals are to develop safe and effective genome editing strategies to potentially treat NF1. Since there are many thousands of different NF1 mutations that can cause the disease, personalized therapeutic approaches will be required. We are endeavoring to develop an efficient pipeline that will enable moving from sequencing an individual's NF1 gene, to testing patient-specific gene correction designs in cell lines for both efficacy and fidelity, before implementing in the clinic to treat NF1-related tumors.

What does it mean to you to receive this funding from CTF?

James & Benjamin: The award from the CTF has enabled the formation of our collaborative team, pairing our respective skills in NF1 biology (James Walker) and genome engineering technology development (Ben Kleinstiver). By partnering with the CTF, we have also benefited from regular meetings with other NF researchers who freely offer their expertise and encouragement.

What brought you to the NF research field?

James: After completing a PhD which strived to answer fundamental questions in how cell division is controlled, I was looking to apply my efforts to a genetic disorder with an unmet need. Having known someone with NF1 and relishing the challenge of studying such a complex disease, I joined the labs of Drs. Andre Bernards and James Gusella at Massachusetts General Hospital for my post-doc training. The members of my lab all have their individual reasons for pursuing careers in NF1 research: Dr. Stephanie Bouley, post-doctoral fellow, did her PhD work on NF1, receiving a CTF Young Investigator Award and was so taken with the NF research and patient community and the work being done to end NF that she decided to stay in the field. Francisco Fernandez, a Harvard graduate student from Mexico, is motivated by a family member with NF1.

What do you like to do when you're not in the lab?

James: I like to keep active and my main passion outside of work is triathlon. Racing often involves traveling to interesting places – recent highlights have included Switzerland, the Netherlands, Canada, and Mexico.

Benjamin: Much like we do within the lab, where we construct genome editing technologies, outside of the lab I spend time building things from home renovations, to woodworking, to craft cocktails, and a growing family.