Getting Back to the Bench

JANELIA FARM OFFERS RESEARCHERS THE TIME AND RESOURCES TO FOCUS ON SCIENCE.

After several years as an independent researcher, David Stern says the demands of running a lab of 12 people, combined with teaching and administrative duties, simply became too much. In an effort to get back into the lab on a regular basis, last year the HHMI investigator took a “sabbatical” at his home institution, Princeton University.

During that one-year break, Stern threw himself into lab work—doing experiments and building hardware to study evolution and development of the nervous system in the fruit fly. “The most important things I realized during that time were that I missed doing research with my own hands and that my efforts in the lab could make a difference in advancing our work,” he says.

So when the opportunity presented itself to make a fresh start at HHMI’s Janelia Farm Research Campus in Ashburn, Virginia, Stern wasted no time in deciding to move south—even though that meant uprooting his family and giving up tenure at Princeton. He knew that at Janelia Farm, he’d spend less time on the administrative duties, teaching, and grant writing that had been consuming his days.

“At Janelia Farm, scientists have the time and resources to actually do their own research—not just manage it,” says executive director Gerry Rubin. “One of the problems we see in academia is that scientists are forced to become full-time managers, instead of spending their time focusing on their science. Janelia Farm offers an alternative.”

Stern and structural biologist Tamir Gonen, who was an HHMI early career scientist at the University of Washington, are Janelia Farm’s newest group leaders, along with Michael Reiser, a Janelia Farm fellow who was promoted to group leader this year. Gonen and Stern will anchor two new research programs: structural biology (with a focus on cryoelectron microscopy), and the evolution and development of the nervous system. In the past 18 months, Janelia Farm has recruited two group leaders, four fellows, and four junior fellows (see box).

Stern says Janelia Farm appeals to him because he will be able to focus on the evolution of behavior, a relatively new area of inquiry for his lab. “I started this work about three years ago when I became an HHMI investigator,” he says. “The work has been challenging and fascinating. I thought it would be wonderful if I could do this work close to other labs that are struggling with the same sort of challenges in studying behavior.”

Gonen’s decision to move to Janelia Farm was motivated by his realization that if he wanted to do his own experiments in the lab again, it was now or never. “I reached a stage where I thought, ‘Either I get back to the lab now or I will never be able to get back,’” he says. “I don’t really know yet what I’ll be doing at Janelia—and I find that exhilarating.”

All Janelia Farm group leaders, fellows, and junior fellows actively engage in research. They work in small interdisciplinary teams to address two broad scientific goals: discovering the basic rules and mechanisms of the brain’s information-processing systems and developing biological and computational techniques for creating and interpreting biological images.

Group leaders direct research groups of two to six lab members and receive an initial appointment of six years. Fellows, who receive five-year appointments, are independent researchers who lead labs with up to two additional members. Junior fellows are postdoctoral fellows who develop their own research programs and are appointed for up to three years, with a possible two-year renewal.

Rubin notes that recruitment of new scientists continues, and researchers from a variety of disciplines—including biochemists, biologists, chemists, computer scientists, engineers, mathematicians, neurobiologists, and physicists—can apply for laboratory head positions through a competition that closes December 15, 2011. Applications in the competition for junior fellow positions (an independent postdoctoral position) close December 1. Further information is available at www.janelia.org/professional-opportunities/research-positions.

—JIM KEELEY

JANELIA’S NEW SCIENTISTS

**GROUP LEADERS**

**TAMIR GONEN** uses molecular electron microscopy to study structures of large protein complexes that function as molecular machines. His research addresses two fundamental questions in cell biology: How do cells interact with each other and with their environment? How do they obtain the nutrients essential for cell survival?

**MICHAEL REISER** studies sensory mechanisms that drive innate behaviors in the fruit fly, such as the ability to sense gravity and visual motion. He uses molecular genetics to uncover the functional organization of neural circuits that orchestrate behaviors.

**DAVID STERN** is trying to identify the genes—and ultimately the individual nucleotides—that generate phenotypic diversity in fruit flies. He believes that a thorough understanding of the molecular basis for diversity may lead to a revised view of how developmental mechanisms influence evolution.

**FELLOWS**

**MENG CUI** wants to develop robust, ready-to-use tools for biomedical imaging. He plans to use ultrasound as a virtual light source, allowing him to visualize deep tissues.

**ADAM HANTMAN** seeks to understand how the central nervous system uses sensory input to control proprioception to inform and optimize circuits involved in motor control. He is using an approach that integrates genetics, physiology, optical-based circuit tracing, and behavioral assays.

**VIREN JAIN** is attempting to map the network of connections in the brain. He develops computational techniques for automating image analysis and applies them to studying neural circuits.

**NA FELL** develops imaging tools capable of peering deep inside animals’ brains to better comprehend the function of neural circuits. She is focused on improving the speed and resolution of in vivo brain imaging, and applying the resulting techniques to existing problems in neurobiology.

**JUNIOR FELLOWS**

**PAWEL MAMNAD** seeks to improve current methods and develop approaches to tackle a fundamental challenge in neuroscience: linking specific behaviors to specific neural activity in defined circuits.

**STEPHEN HUSTON** is a neuroscientist who has worked on the neural basis of flexible sensory-motor transformation in the fruit fly. He is continuing work on understanding how the outputs of the visual system are transformed into motor actions.

**STEFAN PULVER** wants to uncover fundamental operating principles behind the neural circuitry that controls locomotion in fruit fly larvae. He plans to study motor networks in the larva’s locomotor system.

**KOEN VERVAEKE** has been exploring how networks of neurons can produce both synchronizing and desynchronizing behavior via electrical activity at the synapse. At Janelia Farm, he will study the roles of specific inhibitory neurons in attention.