

Amy Kiger: A Place on the Edge

Amy Kiger admits to a healthy dose of yeast envy from time to time. In her tidy, two-year-old lab at the University of California, San Diego, she picks up a thin tube of *Drosophila* to explain how she's using the flies to investigate membrane-mediated events that guide cell shape. Yeast genetics may be faster, easier, and better worked out, but for Kiger one of the most exciting things about science is pioneering the unknown. *Drosophila* has given her lots of room to explore.

In 1994, when Kiger was a graduate student in Margaret Fuller's Stanford University laboratory, Fuller was investigating how stem cells in a *Drosophila* male germ line can self-renew and differentiate. It was an area replete with unknowns. "At the time there wasn't a big field," says Kiger.

Kiger forged ahead, helping to establish *Drosophila* as a viable system for stem cell inquiries. Her work notably contributed to the notion that a stem cell's location or "niche" could affect its fate.¹ As her graduate work came to an end, Kiger considered leaving *Drosophila* for another system. Then in 2000, as she finished her dissertation, the *Drosophila* genome was completed and RNA interference was emerging as a screening tool in Norbert Perrimon's laboratory at Harvard University. "I drove across the country and started right away," Kiger says.

Again, Kiger found herself on the edge of the biological unknown; this time, the topic was high-throughput cell-culture screens

using RNAi. "She was quite amazing," Perrimon says. "She was brave enough to embark on something new, take some risks, and succeed." Kiger began establishing the technique's proof of principal on 1,000 genes. "In the end," Perrimon says, "she convinced all of us this was the way to go." It took Kiger nearly four years to develop the screens, but she was ultimately able to use them across the *Drosophila* genome to identify genes essential to cell growth and survival.² Since then, Harvard's *Drosophila* RNAi Screening Center has completed dozens of genome-wide screens.

It hasn't always been easy exploring new scientific territory. Kiger says she didn't always have external evidence to assure her that she was making the right decisions. Leanne Jones, Kiger's former collaborator at Stanford and current assistant professor at the Salk Institute, says it takes courage to choose Kiger's path. "She's obviously a leader," Jones says.

Kiger is now focusing on answering basic biological questions, in particular, the mechanisms that guide changes in cell morphology. She's using co-RNAi screens to examine the role of membrane-lipid signals implicated in numerous human developmental syndromes. Kiger says it's another brand new area of biology for her to explore. "I do like working in areas that are close to the unknown," Kiger says. "I like a little breathing room." —Kerry Grens

Title: Assistant professor of biology,
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Age: 35

Representative publications:

1. A.A. Kiger et al., "Somatic support cells restrict germline stem cell self-renewal and promote differentiation," *Nature*, 407:750-4, 2000. (Cited in 79 papers)
2. M. Boutros et al., "Genome-wide RNAi analysis of growth and viability in *Drosophila* cells," *Science*, 303:832-5, 2004. (Cited in 183 papers)