

TURNING POINT

Mary Gehring

Plant biologist Mary Gehring joined the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, in September.

Why did plants attract you?

I went to Williams College in Williamstown, Massachusetts, planning to be a writer, but became interested in plant physiology after taking a course on plants and later working in the professor's lab. It is fascinating that much of the same molecular biology is going on in animals, but plants look like they're just sitting there. I saw a talk by Norman Borlaug, father of the green revolution, who exhorted young people to continue improving agriculture, and my interest was solidified.

How did your own plant research evolve?

In graduate school at the University of California, Berkeley, my interest in plant development evolved into a dissertation on epigenetics after a discovery that seed development was tied to the epigenome. I worked with Robert Fisher, a plant molecular biologist, to explore the genes that maintain the epigenome. We discovered how they are regulated.

How did you decide to pursue a postdoc at the Fred Hutchinson Cancer Research Center in Seattle, Washington?

I interviewed at three places for a postdoc — two were plant labs, the third was with Steven Henikoff, the only person at the Hutch studying plants. I was attracted to Steve's lab because it wasn't constrained by the organism — he really thought about the biological questions. For example, he investigated the different controls over genetic inheritance in both *Arabidopsis* and *Drosophila* — which allowed me to think about plant projects in a broader way.

What has been your best research decision?

I took the time to do a really tedious thing, dissecting seeds, that ultimately paid off scientifically. We wanted to know how epigenetics work between the embryo and endosperm. To do that, I had to collect embryo and endosperm DNA. *Arabidopsis* seeds are tiny, and I had to sit at a microscope with a needle and forceps and dissect them into three component parts. For just one experiment, I had to dissect roughly 1,500 seeds — which took 8 hours a day for a week. As a result of that task, we could document the changes to the epigenome that are necessary to make a viable seed. By monitoring



DNA methylation between endosperm and embryo, we identified many genes important for directing seed development.

Are you a plant biologist or an epigeneticist?

I have often been asked that in job interviews, and have found it hard to answer. I'm both. There is much more synergy between organisms than there are differences. As a scientist, I benefit from hearing about epigenetics in mice or fruitflies. When I think about my research, I'm thinking about what is most interesting to epigenetics rather than to plant biology, although one hopes those are the same. I work on endosperm, which is a plant-specific tissue. But the epigenetic processes going on there and in plant gametes are, potentially, similar to gametes in animals.

Why did you apply to the Whitehead, where there isn't a lot of plant research?

I knew that the Whitehead used to do plant biology, and still did some. It was a great place to work. But it was the 'follow the question' approach that I liked. The scientists here, like at the Hutch, weren't wedded to one organism, but to using the organisms to best answer a question. I felt that, because I had been at the Hutch, I could do well here, even without other plant biologists. One thing we discussed was how I'd be evaluated as the only person here in a plant field. I've been assured that I won't be asked to change focus, and that my work will be taken on its own merit. It is daunting because it's the Whitehead, but I'm excited.

What inspires you?

Wanting to help feed the world is what got me into plant biology. Day-to-day, my work may not seem to be too close to that aspiration, but it is still there. My work is interesting at a general biology level — and in the future could play a role in better manipulating plants to improve yield. ■

INTERVIEW BY VIRGINIA GEWIN

UNITED STATES

Overseas enrolment up

The number of international students at US institutions rose 3% to a record high of 690,923 in the 2009–10 academic year, with gains in engineering, maths and computer science, says a report from the Institute of International Education, a New York-based non-profit organization. The report, out on 15 November, found that the growth was driven by a 30% increase in the number of students from China, who now represent some 18% of international enrolment. The report found that 18% of overseas students are pursuing engineering, up 7%; 9% are in biological and physical sciences, down slightly; and 9% are studying maths and computer science, up almost 8%. Stronger recruiting efforts helped to promote the increases, but visa woes contributed to fewer students coming from some nations.

WORKFORCE

Changing order

China, Brazil and India have begun to challenge the traditional science leadership role of the United States, asserts a report from the United Nations Educational, Scientific and Cultural Organization (UNESCO). The *UNESCO Science Report 2010*, released on 10 November and last out in 2005, notes that the total number of researchers in China ballooned by 75% to 1.42 million in 2007, roughly the same number as in the United States and just below the European Union's 1.44 million. Lidia Brito, UNESCO's science policy director, says that this growth heralds new collaborative prospects for researchers in all nations. But success, she says, requires that young scientists develop multicultural teamwork talents.

GRANTS

Faculty seek support

US junior research faculty members want more grant-seeking support from their institutions, an annual survey has found. Results of the Tenure-Track Faculty Job Satisfaction Survey, administered by Harvard University's Collaborative on Academic Careers in Higher Education (COACHE) in Cambridge, Massachusetts, were released on 15 November. Todd Benson, COACHE assistant director, says that addressing key concerns such as grant management could help institutions recruit and retain junior faculty. COACHE shares survey results among participating universities to help them improve internal policies, he says.