FOOD SCIENCE

Scott Poethig Leads an Exploration of the Biology of Food Production

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Photography by Shira Yudkoff

To the agriculturally uninitiated undergraduates in biology professor Scott Poethig's DNA, Diet and Disease course, a sunny spring day at Penn's Marshak Dairy seemed, at first, as idyllic as an English pastoral painting. But then the plastic booties appeared. As the students slipped them on in preparation for their tour, one tentatively queried, "Are we going to be walking in squishy stuff?"

"Maybe," answered dairy coordinator Darren Remsburg with a semi-straight face. This was, after all, a working farm in addition to being a research facility, and Poethig's class was going to see what that really meant. That afternoon, they watched an enormous cow heaving in labor, learned to identify the breed of a wobbly-kneed calf and marveled at the high-tech automation of the afternoon milking.

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According to the syllabus, the aim of DNA, Diet and Disease is to "present major themes in biology by examining the nature of food and the ways in which humans modify, and have been modified by, the organisms we eat." It's the brainchild of Poethig, who devised it to teach what he calls "stealth biology" to nonscience majors and also to serve as a gateway course for freshmen into numerous areas of inquiry. "If there's an interdisciplinary topic, it's food," he says. "My goal is to use food as a way of broadening students' perspectives on the intricate interactions that are involved in providing us nutrition."

Poethig covers topics ranging from the chemistry, structure and physiology of plants to the genetics of domesticated organisms to farm ecology and the place of agriculture in the global economy. The dairy tour was part of a lesson on the evolution, breeding and utilization of livestock. This and other field trips, along with in-class demonstrations that include making cheese to explore the chemistry of milk and hands-on lab experiments, augment Poethig's lectures by rendering food production less opaque.

"It's often like smoke and mirrors—the techniques by which our food is produced," he says. "When you see what's actually happening, it's completely amazing."

Nathaniel Foulds, C'10, especially enjoyed an experiment in which students tested food they brought in for genetically modified ingredients. "It was pretty advanced lab work," he explains, "and since the majority of the soy and corn grown in the U.S. is genetically modified, the experiment was really relevant to our everyday lives."

Students also pursue semester-long projects. Last spring's included planting a vegetable garden, teaching local high school kids about using nitro-

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Penn's Marshak Dairy has about 180 milking cows that produce 1,500 gallons of milk each day.

gen-fixation to produce environmentally friendly fertilizer and researching topics ranging from international food aid to hydroponics and food supplements. Some of the projects are extending beyond the course. The group working on the vegetable garden will be harvesting crops throughout the summer. And junior Debbie Schub's project of working with Penn's food provider to source foods more locally will culminate in this fall's New Student Orientation barbecue.

Poethig acknowledges that food has become a hot—and highly politicized—topic. Some of his students read Michael Pollan's bestseller *The Omnivore's Dilemma* as their freshman reading project and cited the book as an influence in their decision to take the class. But he explains that the goal of the class is not to promulgate a particular view on the topic but rather to give students a full sense of its complexity so they can make up their own minds. It's a lesson Schub has taken to heart.

"We learned about the science of genetic modification," she says, "and I now understand that the end result of genetic modification can essentially be identical to that of natural selection—an adjustment in the DNA sequence of the plant. Given the choice, I'd still pick Mother Nature over human intervention, but I'm starting to see things in less of a black-and-white way." ◆