Linda Hicke

Linda Hicke

"Linda took an observation that other people would have ignored or dismissed as a weird anomaly and turned it into what has become a big story."

As a new member of Randy Schekman's UC Berkeley lab in 1984, Linda Hicke remembers telling other graduate students that she would be working on yeast mutants defective in secretion. "It hadn't yet been shown that the secretory pathway in yeast would be at all relevant to what was happening in human cells," Hicke recalls. "I remember people saying, 'Why would anybody want to study secretion in yeast?' It was as if this subject was some bizarre little behavior in some obscure microorganism." Fortunately for Hicke and for science, it turns out that yeast have a lot in common with mammals, humans included.

Hicke's yeast career began in Berkeley with a "black box" gene called Sec23 and continued with a post-doc in Basel, where yeast revealed an unsuspected role for ubiquitination in the endocytic pathway. Now at Northwestern, Hicke's lab tracks the expanding role of mono-ubiquitin in regulating a variety of basic cell processes. She believes she found the perfect organism for her personality: "In yeast, you can do experiments rapidly because it doesn't take long for them to grow up. I'm not a patient person."

She believes she found the perfect organism for her personality: "In yeast, you can do experiments rapidly because it doesn't take long for them to grow up. I'm not a patient person."

Twenty years on, Schekman still remembers Hicke's "extremely precise" work, using his just-developed, cell-free assay to take the Sec23 protein back and forth from organism to glass. "What she did was crucial in proving that the biochemical reaction was an authentic recapitulation of the physiological event. Although we didn't know it at the time, this protein Sec23 is critical to a process that we've continued to study to this day," he says.

Schekman was also responsible for turning Hicke onto the ASCB. A member since 1984, Hicke won the WICB Junior Career Award in 2000, was elected to Council in 2003, and served as Program Chair for the 2005 Annual Meeting.

Hicke's work at the University of Basel launched her as an independent investigator, says Schekman. "Linda made a stunning observation as a post-doc in Howard Riezman's lab, showing that the ubiquitination of a receptor—in this case, the pheromone receptor for alpha-factor—was a prerequisite for its internalization. Subsequently, it's been shown to be involved in probably all receptor-mediated internalization events. This was the first instance of a functional link between the ubiquitination of a membrane protein and its traffic as opposed to its proteolysis." Ben Glick, a fellow post-doc in Basel who is now at the University of Chicago, recalls that, "Linda worked in the Riezman lab for quite a while without anything really panning out until that break. Linda took an observation that other people would have ignored or dismissed as a weird anomaly and turned it into what has become a big story."

Hicke's observation was startling at the time, says Cecile Pickart, a co-organizer with Hicke of the ASCB's 2002 summer meeting on ubiquitin. Before Hicke's contributions, says Pickart, "it was an accepted principle that while ubiquitin mediated proteolysis, it had no role in endocytosis, that is, protein degradation within lysosomes. There were good reasons for that thinking at the time, but Linda was one of the pioneers in making us realize that this paradigm was incorrect."

Hicke's scientific career almost ended before it began. A Chemistry major at Humboldt State University in northern California, Hicke took advantage of an undergraduate summer research opportunity to ship out on a Pacific sampling expedition run by the Woods Hole Oceanographic Institution. "I was deathly ill," Hicke recalls with a shudder. "They almost had to abort the entire research trip because I couldn't keep down water for three days. This effectively ended my oceanographic career."

Born on the Ramstein Air Force base in Germany, where her father was stationed as an officer, Hicke grew up on a string of air bases until the family landed in the Bay Area and her father retired. Hicke started at UC Berkeley as a Chemistry major, but found the campus scene overwhelming. She transferred to Humboldt for its small size and rural setting, becoming a

Wildlife Management major. When after one quarter that proved too slow, Hicke went back to Chemistry. After Humboldt, she returned to Berkeley for graduate school, eventually earning her PhD in Biochemistry under Schekman.

Now a leader in the ubiquitin field, Hicke explains that, "Ubiquitin's role turns out to be much more important in the endocyctic pathway than we ever thought. In this pathway, it's almost become analogous to phosphorylation. In my lab, we are looking at how mono-ubiquitin regulates proteins in a proteasome-independent way in many basic cell processes."

Hicke met her husband, Andreas Matouschek, a German biophysicist who is also at Northwestern, in Switzerland. Matouschek's doctorate is from Cambridge; his interest is in how proteins unfold in the cell. Their daughter, Rebecca Hicke, is five, and started kindergarten last fall. Says her mother, "Given the fact that both her parents are scientists, it's not surprising that Rebecca is very observant and curious and wants to make connections between things. She's interested in chemistry kits but she also loves to do art, to dance and to make up songs. Rebecca is a lively, happy girl. I think she's wonderful."

"They were bored with me standing up there and talking for 50 minutes a day, three times a week. And I was bored with me."

Five weeks a year, Hicke teaches the big introductory undergraduate cell biology class at Northwestern. She observed that the undergrads who worked in her lab were consistently wonderful, but the same would-be pre-meds and biology majors were tuning her out in the lecture hall. She comments bluntly that, "They were bored with me standing up there and talking for 50 minutes a day, three times a week. And I was bored with me." To shake up the course, Hicke is turning to the "problem-based learning" method pioneered by *Cell Biology Education* Editor-in-Chief Bill Wood. "My goal is to get at least some of them as excited about the science as I was at their age," says Hicke.

"That's classic Linda Hicke," says Ben Glick. "Linda is tremendously engaged in science. She's one of those people who finds science so amazing that it's hard to believe that someone would actually pay you to do it." ■

MEMBER Gifts

The ASCB is grateful to the following members who have recently given a gift to support Society activities:

Valarie A. Barr
Karen A. Becker
Michael W. Berns
Laura A. Cisar
Douglas Allen Cotanche
Thelma Dunnebacke-Dixon
JoAnne Engebrecht
Noel T. Florendo
Clara Franzini-Armstrong
Sarah P. Gibbs
Alfred L. Goldberg
Jean S. Hugon
David L. Kirk
Yohko Kohno
Gordon W. Laurie
Bruce Lee Miller
Terry G. Newcomb
John O'Brien
Virginia E. Papaioannou
William M. Saxton
Joachim R. Sommer
Walther Stoeckenius
Sara Szuchet
Bill J. Tawil
Jeremy W. Thorner
James A. Weatherbee
Susan M. Wick
Edith C. Wolff
Robin L. Wright