

Sandra Schmid



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“It was my great good fortune at that early stage in my career to attract someone as talented as Sandy Schmid,” says Ira Mellman, who in 1984 was starting up his lab at Yale. The year before, Mellman and collaborators Ari Helenius and Ann Hubbard had assigned the name “endosome” to what was then a novel and controversial organelle. Applying a biochemical approach to the still-mysterious endosome is what drew the young Canadian PhD from Jim Rothman’s Stanford lab to Yale.

Schmid’s achievements as a post-doc were extraordinary, says Mellman. “Sandy was part of a group of incredibly talented people who cracked the problem of endosomes in those very early days. She worked out and perfected the techniques for isolating early and late endosomes, showing what their properties were *in vitro* and providing enough biochemical characterization to show that they were discreet organelles and organelle subsets.” Continues Mellman, “at the time, there were lots of ideas and concepts flying around about endosomes. She brought the first and most important piece of hard data to the problem. As a result, a lot of the arguments fell by the wayside.”

Nearly twenty years on, endocytosis remains the focus of Schmid’s lab at Scripps, especially since their development of a cell-free, stage-specific assay for endocytic vesicle formation. The mystery now is the role of dynamin, Schmid explains, which despite the name is not a motor protein but a GTPase required for endocytosis that self-assembles into “collars” around the necks of invaginating, clathrin-coated pits.

Along with her duties as department chair at Scripps, Schmid was appointed Editor-in-Chief of *Molecular Biology of the Cell* last January, resigning her editorship of *Traffic*, the journal that she had co-founded with Frances Brodsky, Mark Marsh

and the late Thomas Kreis. Schmid’s ASCB ties go back to 1990 when she won the Women in Cell Biology Junior Career Achievement Award. She was elected to a three-year term on the ASCB Council in 2000, and served as Program Chair for the 2004 ASCB Annual Meeting.

Research is what Sandy Schmid loves most of all, says her Scripps colleague and close friend Velia Fowler. “Sandy was not the first to find dynamin, but she’s determined to be the first one to find out exactly how it works,” says Fowler. “She’s already explored the molecular mechanism of

this little machine in great detail. Sandy’s not afraid of sticking her neck out with a hypothesis that’s testable which means she’s not afraid to be proved wrong either.”

Schmid is known for her assertiveness and earnestness. Says Fowler, “Sandy’s always very positive with lots of energy. She’s able to cut through stuff and get on with it because she doesn’t agonize over things as much as the rest of us. But I also think that she just enjoys science. Some people have all these other extracurricular interests like theater or gardening. I know that Sandy devotes a lot of time to her kids and her family but I think that science is also her hobby.”

A former post-doc now on the faculty at the University of Minnesota, Sean Connor, says Schmid’s energy can be startling at first. “When I first joined her lab, she’d just hurt herself skiing and I remember how many people had a hard time keeping up with her even when she was on crutches.” But her productivity goes beyond mere energy, says Connor. “Most of us think we multi-task well but, in reality, we don’t. Sandy’s very good at managing her time because she doesn’t multi-task. Sandy defines a certain task, gives it her total attention and deals with it then and there.”

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Born in Vancouver, British Columbia, Sandy Schmid was the third of four siblings in a science-friendly house. “I wanted to be a scientist since I can remember,” Schmid recalls, “When we played space ships, I was always the Scientific Officer. With my Dad’s help, I built a huge ant farm. Later, I had snakes and iguanas. My Mom was pretty good about all this.” Schmid’s mother was the head of Columbia Trust, a non-profit housing developer that under her leadership built 10,000 middle-income housing units around the province. Her father taught high school science and also wrote the grades 8-10 science textbook. “On our summer vacations, we were always stopping so Dad could take geology pictures of some alluvial fan or glacial erratic,” she recalls. “When I got to high school, I was horrified one day during a geology slide presentation to see a picture of myself posing on a boulder that had been broken by a tree.”

Missing from Schmid’s educational memories is any conflict between being a serious science student and being female. “I have a teenage daughter now and I’ve had a lot of women post-docs so I’m aware of women’s issues and how they impact on people’s careers. So I’ve asked myself, why didn’t I notice this when I was coming up through the system? I think it was because I was a complete tomboy. All my friends right through high school were guys. I threw a football better than most of them and knew as much about football, basketball and hockey as they did. So I was readily taken as one of the guys.”

At the University of British Columbia, she was known for her “Little Blue Book,” a small notebook she kept during large lectures for in-depth questions that she would take along to the lecturer’s office immediately afterwards. Most seemed to enjoy Schmid’s grillings and they encouraged her to take upper level and graduate cell biology courses. Schmid recalls that UBC physicist and self-taught biologist Pieter Cullis gave her bench space for “cockamamie” cortical granule fusion experiments on sea urchin eggs that she cooked up without any knowledge of the seasonal nature of sea urchin egg laying. Cullis finally steered her to a less ambitious experiment with pure lipids.

As a grad student in the Rothman lab at Stanford, Schmid first became interested in the problem of coated vesicles and, for her thesis, characterized an ATPase critical to the uncoating mechanism. Schmid says that she

learned years later that “her” ATPase had turned out to be HSC-70, the first of the chaperone molecules involved in cell cycle regulation. By then Schmid had gone on to the Mellman lab at Yale to focus on the endosome, and also to be with Bill Balch, a Stanford post-doc who’d taken an assistant professorship there. They married in 1984, went on the job market together in 1986, and were recruited by the late Bernie Gilula who was building a new cell biology department at the Scripps Research Institute in La Jolla.

The Balch lab and the Schmid lab are still directly next door, although Schmid says she hardly ever sees her husband during the day. As proof, Schmid recalls a conversation she had with a post-doc from another lab while Schmid was pregnant with their second child. “I was working late one night on a prep when this post-doc stopped by to talk,” Schmid remembers. “She asked me how I managed a small child, this new baby coming and a lab. I said, ‘I have a supportive husband.’ She asked, ‘Who’s your husband?’ She worked on the same floor as we did but she didn’t know that Bill was my husband.”

That baby, Katie, is now 13 and her older brother, Jeremy, is 17. Schmid describes her son as a “Renaissance man” whose wide range of interests, from history to music to science, may complicate his college search this year. Katie will start high school this fall. An artist, singer, pianist and actress, she was selected for an internship this summer in the “Young Shakespeare” backstage program at San Diego’s Old Globe Theater.

Schmid says the family has been brought together in part by “Homer,” an RV they bought twelve years ago and only replaced last year with “Meriwether” (of Lewis & Clark fame) for a five-week expedition from San Diego to Alaska. “The RV allows us not to plan but to just take off. So we pile into the RV and go every chance we get.”

The tomboy quarterback from BC admits, “I still spend Sundays on the couch watching football and suffering with my teams. I’m mainly a Patriots fan although I have a soft spot for Green Bay and for Denver. Canadian football seems slow to me now and I lost interest in hockey when it became all about fighting.” ■

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