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Biophysicist in Profile



Sarah Garber

Sarah Garber is a self-described academic nomad. Born on the south side of Chicago, Garber made many stops along the way, even crisscrossing the US, before finding the 'right fit' back in Chicago, where she is currently an Associate Professor in the Physiology and Biophysics Department at Finch University of Health Sciences/The Chicago Medical School.

While growing up, Garber always wanted to be a scientist, though initially she was torn between being a veterinarian or an astronomer. The inclination to be a veterinarian came from a natural love of animals. "Our first cats came from *George W. Beadle*, the Nobel Prize winning geneticist from the University of Chicago, whose wife bred Siamese cats." Her love of astronomy stemmed from nights spent as a child "on the beach looking up at the stars."

In high school Garber participated in a summer program at Rush Medical College, where she met *Tom Lint*, a professor in the Rush University Immunology/Microbiology Department. Garber credits him with turning her on to science as a career. "He is one of the best teachers I've ever had," says Garber, "This is a guy who could turn

into a tetrahedral carbon atom in no time at all. The Bobby McFerrin of science."

After completing her undergraduate degree at Barnard College, where she majored in biology and minored in chemistry, she entered Brandeis University for graduate work in biochemistry. She chose Brandeis because of her interest in cell membranes as communication barriers between outside and inside the cell. Once she arrived at Brandeis, she wanted to work with *Chris Miller* because he worked in single molecules, ion channel proteins in artificial bilayers. She also realized that Miller was young, bright and innovative. "Working with him would be a good challenge, and fun too," explains Garber.

Her next move was cross-country to Stanford University Medical School, where she did postdoctoral work in the Neurobiology Department with *Rich Aldrich*. "I was lucky to be able to work in the Aldrich lab at the time," she says, "I signed on to his lab before he knew he was moving to Stanford." Aldrich exposed her to different aspects of scientific method, and looking at ion channels from a more physiological point of view.

After completing her fellowship, Garber accepted the position of Research Assistant Professor at the University of Alabama at Birmingham in the Department of Physiology, and as an Associate Scientist in the Cystic Fibrosis and Neurobiology Research Centers. Here, she continued work on anion channels involved in cystic fibrosis that she started as a postdoctoral fellow. "This position established me as an independent investigator. The work that was generated there allowed me to apply for grants, first with the Cystic Fibrosis Foundation and ultimately NIH." Her later move from the

University of Alabama to the department of Physiology at The Medical College of Pennsylvania (which ultimately became MCP Hahnemann University) moved Garber into a tenure track position. There, she received an Established Investigator Award from the American Heart Association and continuous NIH funding.

The impetus for her final move back to Chicago, however, was purely personal. “I got married, had a child,” Garber says, “and I figured it was time to come to back to family.”

At The Chicago Medical School, her lab is studying a volume-regulated anion current that is functionally involved in cellular volume regulation. This current is regulated in several ways, including cytoskeletal integrity and the expression of a small protein called pICln. Both the current and the protein appear to be ubiquitously expressed in cell types as diverse as white blood cells, neurons, glia, myocytes, epithelia and endothelial cells. Their work integrates electrophysiological techniques with molecular biology with confocal and fluorescent imaging in order to understand the role of this protein and anion current to volume regulation and cellular homeostasis and physiology.

Even though she wouldn't describe her journey as clear sailing, she admits that it has been smoother than most and feels fortunate that most of her scientific mentors have been gender blind. “Gender issues do exist,” she explains, “but they don't have to become a real obstacle if you're with the right mentor.” Garber stresses that it's about finding the right mentor at the right time. “I was lucky that my graduate and postdoctoral mentors

really only cared about the science, not what a person looked like,” she says. Even with that, Garber has always had close friends and colleagues who help with some of the more sociological and political issues.

Garber advises young people entering biophysics to find the right mentor for the problem at hand. Her advice is to set goals at different stages of a career, and find people who can help address those goals. “It may take several different mentors,” she says, “no one person can address all of the issues a

person may be concerned about.” A good mentor, she explains, can teach important skills that are not often learned as a student. For example, learning how to communicate or manage a lab full of people. “As you go through the learning track, you learn how to collect data and document that data,” Garber explains, “but often you don't

learn how to communicate that data in different ways such as giving seminars and grant writing.” A good mentor will share past experiences that help you learn how and what to communicate effectively. “You also need to keep in mind,” she warns, “that as you do your postdoc and continue on as an assistant professor, you can become isolated.” She stresses the importance of keeping in touch with colleagues and mentors.

In finding her ‘right fit,’ Garber decided early on that the tenured track was the best option for her. It also helped, she admits, that she had an NIH grant, which gave her the power to make decisions, as opposed others mak-

ing decisions for her. And it helped to be in departments with supportive colleagues, which she found in Philadelphia and in Chicago. “I talk to colleagues about all kinds of issues; collecting and giving advice, sort of like free therapy,” Garber jokes.

Garber joined the Biophysical Society in 1984 while in graduate school, and credits the Society with fostering a sense of community and creativity. She became active in the Society's subgroups, which she says helped her to gain important skills that scientists are not taught, such as administration techniques.

In reaching out to those who have not yet considered biophysics as a field of study, Garber stresses the importance of presentation. “Just the word ‘biophysics’ is intimidating—a great way to stop cocktail party conversation, especially if you are female,” says Garber, “When talking to students, we should begin with saying ‘Hey, look at all the fun things we get to do!’ Then afterwards say ‘this is what it is’.”

As a biophysicist, mother of three-year-old Christopher, and wife of *Glenn Armstrong*, who has a PhD in Food Chemistry and works in industry, Garber performs a balancing act each day. She describes it as a constant struggle where priorities can change day-to-day, minute-to-minute. “It can be extremely difficult,” she notes, “and it is important that you have the support of family and friends. It is also important that you have outside activities.” When not in the lab, Garber enjoys swimming with her son and whitewater kayaking. Garber also practices yoga and uses her science training to teach anatomy and physiology to yoga students working toward their certification.

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