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The Biophysical Society Newsletter (ISSN 0006-3495) is published six times per year January/February, March/April, May/June, July/August, September/October, and November/December by the Biophysical Society, 9650 Rockville Pike, Bethesda, Maryland 20814-3998. Distributed to USA members and other countries at no cost. Canadian GST No. 898477062. Postmaster: Send address changes to Biophysical Society, 9650 Rockville Pike, Bethesda, MD 20814-3998.

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Biophysicist in Profile



Amy Harkins

“My parents are amazed that I’m still in school because I hated it so much,” says Amy Harkins, who admits that she was usually bored with “stuffy” classrooms and preferred being outside or playing music. It wasn’t until seventh grade that school became more enjoyable. “I had some amazing teachers that just really inspired me,” she explains. Her seventh grade science teacher had the class dissect animals and do a comparative analysis of the GI tract. After learning the system in one animal, Harkins immediately wanted to look inside the next animal, and then the next. Later, the teacher had the class do a comparative analysis of the heart. “I’m amazed at how much we

In high school, Harkins took more science classes and participated in summer courses at a local university. She spent two high school summers in south Texas at the Welder Wildlife Refuge counting and studying the deer and mice populations. One of those summers was also spent at the University of Texas Marine Biology Station studying core samples from the bottom of the Gulf of Mexico.

At the same time, Harkins displayed her impressive musical talent by playing the piano, saxophone, flute, and piccolo having learned one at a time. “I was really a performing musician,” quips Amy, “a pretty hardcore musician.” She was often paid to play in a touring orchestra, which also allowed her to travel throughout Texas and other parts of the US. Her musical talent garnered her the John Phillip Sousa award for outstanding contributions to her high school band.

Facing graduation, Harkins hit the proverbial fork in the road. So it came as a shock to family and friends that after acceptance to Julliard, Harkins decided to turn down that option and pursue a major in science.

Harkins enrolled at the University of Texas at Austin as a pre-med student. Her grandfather had taken medical courses in the early 1900s and provided the only scientific influence in her family, so as an undergraduate she thought medicine was the only way to enter the field of science.

Harkins always seemed to do what she was told, but displayed her mischievous streak by usually doing what she wanted.

actually learned in the seventh grade,” she says, adding that she uses that same system today to teach her college students.

Harkins was born in the 60s, in Carson City, Michigan. Her parents, Marilyn, a teacher, and Robert, who worked in advertising, packed up and moved to Texas when Harkins was entering first grade. She and her three siblings, though close in age, had a wide variety of interests and friends. Harkins always seemed to do what she was told, but displayed her mischievous streak by usually doing what she wanted.

She quickly learned otherwise. After receiving an incomplete on an assignment, her professor, Alice Reinartz, called Harkins into her office and gave her an essay test. After grading the test, Reinartz unveiled a theory. “She told me,” explains Harkins, “you don’t think like a medical student, you think like a graduate student.” Reinartz then explained the research field. Amy withdrew all her applications to medical school and decided to take the research route. Reinartz quickly became an unofficial mentor.

Harkins began to work in an inorganic chemistry lab. Although she loved the lab environment, she didn't like inorganic chemistry and decided to pursue a different area. Unfortunately, schools at that time lacked good career counseling programs for undergraduate students; Reinartz quickly stepped in and helped Harkins prepare for graduate school.

Harkins did her graduate work at the University of Texas at San Antonio, where she worked with Deborah Armstrong, now Dean of the College of Sciences. After receiving her Master's degree in Neuroscience from the University of Texas while her husband finished a dental degree, she continued her studies at the University of Pennsylvania because San Antonio didn't have a PhD program at the time. She chose the University of Pennsylvania because it had an excellent Neuroscience program and her husband could easily find employment as a new dentist.

Working closely with her mentor, Steve Baylor, on resting calcium level measurements and active calcium measurements in frog muscle and on characterization of the chemical properties of the calcium indicators fluo-3 and fura red, Harkins learned how to think about science in a different way. "I sort of treated my PhD as a place to learn how to think about science and then I treated my postdoc as a place to learn how to do science," she explains. "I really had to learn how to propose a hypothesis, how to test that hypothesis, how to analytically determine what's correct," Harkins explains, "and he (Baylor) taught me that thought process." Baylor, currently Professor of Physiology at the University of Pennsylvania, says that Harkin's "goal

was to get things right, not jump the gun. She was a careful experimentalist and kept meticulous laboratory notes," he remembers. "She always wanted to be absolutely confident of

"I was really a performing musician," quips Amy, "a pretty hardcore musician."

any measurements included in a paper; she never wanted to promote speculations beyond what the data supported."

Once that process was learned, Harkins moved on to the application of her skills in Aaron Fox's lab at the University of Chicago. Fox gave her a lot of freedom. "I designed my own experiments, and I was allowed to

ular questions." Harkins finds molecular biology so necessary that she has merged it into what she teaches in her own lab.

After nine years in Fox's lab, Harkins took a position as assistant professor at St. Louis University, where she remains today. "They are just a really great group of colleagues," she says of the department. She admires the collegiality of the department and respects her colleagues. She remembers that during her original interview process she had observed her future colleagues actively involved in the lab, not trapped in their offices reading weekly reports from students.

"When I saw that while interviewing," she says, "I knew that this was the place for me, because I wasn't going to be the anomaly."

Currently Harkins' research is focused on the basic mechanism that controls vesicle secretion, primarily exocytosis. She also studies the voltage-dependent calcium channels and their subunit composition and how all these things relate to controlling and regulating vesicle fusion. "It's like a puzzle, trying to figure

out all the pieces, and how does this work and how does that piece of information fit into the big picture of things," says Harkins.

She attended her first BPS Annual Meeting with Steve Baylor and quickly became an active member. Throughout the years she has presented posters and given talks. She's a member of the exocytosis/endocytosis subgroup, where she enjoys being able to discuss pre-synaptic mechanisms and vesicle secretion with colleagues. She has also been active in several committees, including the Early Careers Committee and, now, the CPOW, for which she plans to organize a symposium for the 2008



Harkins working closely with a student in her lab.

make all my own mistakes," she explains. He even gave her an annual budget, an opportunity that prepared her for running her own lab. "Amy was always the organizer in the lab—everything from social events to lab meetings to where we kept the pipettes," says Anne Cahill, currently an Associate Professor at the University of Chicago, with whom Amy worked closely on the basic mechanisms of molecular biology while in Fox's lab. "It's been an invaluable experience," Harkins says of her time in Fox's lab, "because it's clear that in our field of vesicle release and exocytosis, you don't get very far anymore without getting into molec-

teins and the RNA polymerase II transcription apparatus. *Cell* 61, 1209-1215.

3. Asturias, F.J., Jiang, Y.W., Myers, L.C., Gustafsson, C.M. and Kornberg, R.D. (1999) Conserved structures of Mediator and RNA polymerase II holoenzyme. *Science* 283, 985-987.

4. Cramer, P., Bushnell, D.A. and Kornberg, R.D. (2001) Structural basis of transcription: RNA polymerase II at 2.8 Å resolution. *Science* 292, 1863-1876.

5. Gnatt, A.L., Cramer, P., Fu, J., Bushnell, D.A. and Kornberg, R.D. (2001) Structural basis of transcription: An RNA polymerase II elongation complex at 3.3 Å resolution. *Science* 292, 1876-1882.

6. Bushnell, D.A., Cramer, P. and Kornberg, R.D. (2002) Structural basis of transcription: α -Amanitin-RNA polymerase II cocrystal at 2.8 Å resolution. *Proc. Natl. Acad. Sci. USA* 99, 1218-1222.

7. Westover, K.D., Bushnell, D.A. and Kornberg, R.D. (2004) Structural basis of transcription: Separation of RNA from DNA by RNA polymerase II. *Science* 303, 1014-1016.

8. Westover, K.D., Bushnell, D.A. and Kornberg, R.D. (2004) Structural basis of transcription: Nucleotide selection by rotation in the RNA polymerase II active center. *Cell* 119, 481-489.

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meeting that discusses the transition from postdoc to employee. Various speakers including *Aldrin Gomes* and *Nathan Baker*, will go over numerous topics from how to find a job to how to negotiate salary. "I think it's really important at each level of our careers that we make sure to represent to the Society what is important for the advancement of our careers," she says. She appreciates that the Society easily adds new topics to the meetings. "I think the Society is a doable size for a lot of the career development issues that young scientists face," she explains, adding that the Annual Meeting is not all about science but careers as well. After all, as she says, "in very few other careers do you start your first job at 40. It's nuts!"

Harkins' two children, Colin, 10, and Claire, 4, keep her busy as well.

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They often plant in the community garden near their home. Both children are athletic and keep Harkins moving. Neither plays music seriously, although Colin can sing and

Claire shows early talent. Her husband Michael is a partner at one of St. Louis's major dental practices. Harkins has stopped playing music



Harkins enjoying gardening, one of her many hobbies.

and taken up photography, which she enjoys in addition to reading historical non-fiction and traveling.

Her decision to pursue science proved to be the right one for her. Cahill, with whom Harkins still remains a close collaborator, explains that Harkins is a con-

summate mentor. "In addition to the usual teaching, research, and grant writing, Amy finds time to mentor graduate, undergraduate and even high school students in her lab." A far cry indeed from someone who disliked the classroom.

Mario Bustamante Awarded International Visiting Graduate Student Travel Grant

Mario Bustamante was awarded an International Visiting Graduate Student Travel Grant to visit the laboratory of Society member *Paul Allen* of Brigham and Women's Hospital, Harvard Medical School. Bustamante is a PhD student working with lentiviral vectors and making stably transfected cell lines. During his three-month stay in the Allen lab, Bustamante will work on his research by using Ca²⁺ imaging equipment. His stay in Boston will be covered by a University of Chile fellowship and by an NIH-Fogarty collaborative grant between *Paul Allen* and *Enrique Jaimovich*, who is Bustamante's primary mentor at the University of Chile.