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Biophysicist in Profile



Edward Egelman

It was perhaps prescient that Ed Egelman, who on July 1 began his five-year term as Editor-in-Chief of *Biophysical Journal*, was once editor-in-chief of his high school newspaper. His respect for the art of reading and writing has only grown since then, in large part through his experience in authoring scientific papers. Along the way, he has earned a reputation for doing everything with focus, intelligence, and enthusiasm.

Egelman was born in 1952 in Malverne, NY, on Long Island. He and his older brother, Alan, now a cardiologist in New York, kept their father Israel, a physician, and mother Frances, a school teacher, quite busy. Egelman admits his natural curiosity and initiative as a child, which continue to this day, sometimes bordered on the obnoxious. From the beginning, he was intellectually quicker than most, skipping a grade in elementary school as well as another in high school. “No one wanted me there,” he notes with self-deprecating humor.

His decision to attend Brandeis University after high school came relatively easily. “I got the feeling that it was progressive,” he remembers. “It was relatively small with an excellent reputation.” Egelman’s interests at first lay in the social

sciences. But in 1970, after two years at Brandeis, Egelman dropped out of school. It was the height of the Vietnam War and the anti-war movement was in full swing. He decided to become a full-time organizer for Students for a Democratic Society (SDS), an organization that promoted change in social, political and education practices through demonstration and education. “My time spent as a youth in the anti-war movement has made me more aware of issues of social injustice, social inequity and racism,” he explains. “I view myself as a progressive today, one who wants to work towards a more just society.”

As the war came to an end in 1975, Egelman returned to Brandeis, focusing on earning his degree. In the intervening five years, however, Egelman’s interests had changed. “I became very interested in philosophy, particularly epistemology and the philosophy of science,” he explains. He spent the next year and a half finishing up a bachelor’s degree in physics. “It was rather bizarre because I had not been a science major at Brandeis originally, and I went back and took a concentrated program in physics with this philosophical motivation that physics held the answers to many fundamental questions about the origins of knowledge and epistemology.” His advisor was David DeRosier, now professor of Biology, Emeritus, at Brandeis University. “As an undergraduate, Ed showed he was exceptional,” states DeRosier. “I taught

...his natural curiosity and initiative as a child, which continue to this day, sometimes bordered on the obnoxious.

an experimental physics course. Ed set up and completed a particularly difficult experiment while I was out of town at a meeting. He analyzed why the apparatus wasn’t working, devised a fix, tested the fix by building an interferometer, and got a result.”

After graduation, Egelman took these skills to Harvard, where he worked with Carlo Rubbia, who won the Nobel Prize

in Physics in 1984. Together they worked on experimental high energy physics. “Working for him convinced me that I did not want to stay in high energy experimental physics,” Egelman explains. Whereas he had

ent support like most postdocs at MRC at the time, I was able to basically do whatever I wanted.” There he started working on RecA protein. “He had his own fellowship and did his own work. Hugh Huxley and

“As an undergraduate, Ed showed he was exceptional,”

envisioned walking into a small lab and designing experiments without spending millions of dollars or needing many people, high energy physics was much larger than this, often requiring a large lab and an industrial-sized budget.

Leaving Harvard, Egelman traveled to France to work on another deep-seated interest: he enrolled in culinary school. He admits that his interest in cooking stems in large part from his love of eating good food. While he did and continues to adore cooking, he found the schedule too strenuous and also realized that science was his true passion. He also cites another, smaller, reason, “because I enjoyed eating too much.” Returning to Brandeis to finish his PhD, Egelman quickly rejoined his old advisor DeRosier. “Most of what I know now is due to David’s tutelage,” confesses Egelman. DeRosier’s lab focused on F-actin and was relatively small. “We worked on analyzing a disordered helical structure, actin, whose perfect symmetry was reduced by disorder of the second kind,” says DeRosier. Together they published papers, some of which were, at the time, controversial, but have since been substantiated.

After completing his PhD in 1982, Egelman took a postdoctoral fellowship at the Medical Research Council (MRC) Laboratory of Molecular Biology in Cambridge. “I thought that I was going to work with Aaron Klug but Richard Henderson was the formal sponsor of my fellowship application,” Egelman explains, “and since I had independ-

I were his postdoctoral sponsors,” explains Henderson,

currently studying the development of electron microscopy techniques for high resolution (atomic) structure determination at MRC. “We talked to him occasionally, but he was completely self-propelled and required only periodic expressions of interest in his work.” Egelman explains that part of the reason for his apparent independence might be what he claims to be a lack of personality, a claim that those who know him say is quite the opposite.

His future would soon be sealed when Paul Howard-Flanders came to speak at the lab. The professor from Yale spoke with Egelman about the similarities between F-actin and RecA proteins. The two hit it off and soon Egelman was hired as an assistant professor at Yale. “Since I was in a department that was very much focused on protein-DNA interactions, it was much better to work on

“There’s a continual development of techniques that will give us more and more insight into the architecture of life...”

RecA protein than to continue working on actin,” explains Egelman.

A few years later, Egelman was offered a job at the University of Minnesota, where he continued to work on F-actin and RecA proteins. But after 10 years in the department of Cell Biology and Neuroanatomy, Egelman wanted to go to a department that focused more on Biophysics and Biochemistry. He moved to the University of Virginia shortly after where he remains today, continuing his work on F-actin and

RecA proteins.

Over the past several years new methods for viewing these filaments have emerged. These new methods can also be applied to other structures like bacterial pili or filamentous bacteriophage. “We are working on other helical polymers that were not previously amenable to electron microscopic reconstruction or study,” he explains. “We have exceedingly good resources and a very collegial faculty at the University of Virginia.”

Through the course of his career, Egelman has seen biophysical techniques come to be used more generally in other fields. “It’s clear that the techniques that are biophysical, such as single molecule experiments or X-ray crystallography, NMR spectroscopy or electron microscopy, are just becoming more pervasive now in many aspects of molecular biology,” he says. The continued growth of knowledge will no longer be limited by tools because the tools will progress. “There’s a continual development of techniques that will give us more and more insight into the architecture of life,” Egelman predicts.

Egelman joined the Biophysical Society in 1984. An invitation to serve on the BJ Editorial Board by

then colleague at the University of Minnesota, Vic Bloomfield, who was Editor-in-Chief at the time, motivated Egelman to become involved in Society activities. “I haven’t kept an accurate count but I’m sure over the past 27 years I’ve been to 95% of the meetings,” he reminisces. He has served numerous terms as an Editorial Board member as well as on the Society Council and, more recently, on the Society’s Public Affairs Committee. According to

(Continued on page 14.)

on Capitol Hill. The Biophysical Society was a cosponsor of the event.

The purpose of the event is to show Congress members and Congressional staff the importance of funding for NSF by demonstrating the breadth of the research funded by the organization, and that the money goes to researchers working all over the country. Many members and staff had an opportunity to connect directly with researchers from their own districts.

Over 490 individuals attended this year's exhibition, including Congressmen Altmire (PA), Baird (WA), Capps (CA), Clay (MO), Ehlers (MI), Etheridge (NC), Hopson (OH), Kennedy (RI), Lipinski (IL), H. Wilson (NM), and J. Wilson (SC).

Profile (Continued from page 3.)

Bloomfield, currently Professor of Biochemistry, Molecular Biology and Biophysics and Associate Vice President for Public Engagement at the University of Minnesota, Egelman will bring "good scientific

judgment, knowledge of important areas, scientific breadth, high standards, and articulateness," to the Journal. As he steps into the role of Editor-in-Chief of *Biophysical Journal*, Egelman brings with him a solid understanding of and respect for the Society and the field of biophysics as well as a sense of humor, although he notes that "most people doubt that I do have a sense of humor, so this gets controversial." He wants to see the Journal continue to grow in stature. "I would like to increase the number of review articles for several reasons," he explains. "One reason is that these reviews tend to be cited very heavily and regardless of how one feels about the liability of impact factors in judging a journal, they do carry weight with many people." He would also like to raise the standards for articles accepted in the Journal in terms of significance.

Besides science and BJ, cooking continues to be one of Egelman's great interests. As with everything he does, he brings intellectual curiosity and high energy to his cooking. He is

known for whipping up incredible gourmet meals, which he pairs with another love: wine. His wife Adrienne is a fine arts appraiser, the only Accredited Senior Appraiser designated in Fine Arts in Virginia. His two children, Serge and Liana, are both in graduate school and have followed in their parents' footsteps. Serge is currently working on his PhD in computer science while Liana is getting her master's in fine arts management. While Egelman admits that "it's hard for me to imagine doing anything other than science," he does continue to have an avid interest in philosophy, literature, and travel. He makes a concerted effort to "have collaborators in nice locations," so that he can turn work travel into an interesting vacation, with Adrienne often joining him.

Biophysical Journal can only benefit from the passion, energy, and intellectual curiosity that Egelman has brought to every endeavor he has undertaken.

Research Grants

NOHR Request for Applications

Grant Application #1—The National Organization for Hearing Research Foundation announces a request for Applications for Inner Ear Hair Cell Regeneration Research. The grant will present one project with one principal investigator and one collaborating investigator \$100,000 per year for a two-year period. For more information please visit <http://www.nohrfoundation.org/Pages/2007%20innereargrants.html>.

Deadline: September 7, 2007

Grants Awarded By: December 7, 2007

Grant Application #2—The National Organization for Hearing Research Foundation will award grants for exploration into innovative biomedical research areas in the preventions, causes, treatments and cures of hearing loss and deafness in January 2008. The grants will be for approximately \$20,000, primarily in the form of seed money. For more information please visit <http://www.nohrfoundation.org/Pages/2002%20reseach%20grants.html>.

Deadline: October 6, 2007