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Biophysicist in Profile

LISE THOMAS

The best part of the job for Lise Thomas, Associate Professor of Biology at Quinnipiac University in Hamden, Connecticut, is “seeing students succeed,” she says. “I like victories in all sizes, from little ones in lab like getting a ligation to work, or academic breakthroughs like understanding how a particular neural circuit works, to life-changing ones like acceptance to graduate, medical, or dental school.”

Fortunately for Thomas, her faculty position at a primarily undergraduate institution offers views of many such wins. “My primary responsibility is teaching, and I have taught at all levels, freshmen through graduate students,” she says. At least two students occupy her research lab at any given time, with as many as five researching there in the summer months. But a full teaching schedule and a full lab is just how Thomas likes it, provided she can find the balance between teaching and lab time. “This is a constant struggle,” she says. “The best solution I’ve found so far is to make sure there are students in the lab at all times. There’s nothing that can get me into a lab faster than a student who needs help.”

Thomas loved science from the get-go. Her dad, a professor at Carleton College in Northfield, Minnesota, let his daughter play in his lab, “freezing things in liquid nitrogen for our enjoyment,” she says. By the time she hit middle school, Thomas thought she knew what she wanted to be

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when she grew up. “I was completely hooked on biology from seventh grade science class when I first looked through a microscope at cheek cells and onion cells,” she recalls. “I

spent most of high school and college certain I wanted to be a botanist.” However, before she could take the class, the professor who taught plant physiology at Swarthmore College, where Thomas was an undergraduate, went on sabbatical. Forced to find a substitute course that semester, she opted for a neurobiology course taught by *Jon Copeland*. “We spent many hours recording electrical activity from cockroaches,” she says. “I still distinctly remember the minute when I first really understood the molecular details of an action potential.” This moment showed her the glories of ion channel proteins, and permanently altered her career path.

After earning her MS in Pharmacology at the University of Colorado Health Sciences Center, Thomas went on to pursue a PhD at Harvard University as *Rod MacKinnon’s* first graduate student. At the time, MacKinnon was one of several ion channel researchers at the university, the abundance of which Thomas says attracted her to Harvard’s program. “My thesis work used molecular biology and electrophysiology to understand functional properties of K⁺ channels,” she says. She continued working with ion channels throughout her postdoc in *Chris Miller’s* lab at Brandeis University, “using biochemical approaches and functional reconstitution,”

she says. Today, her work involves a couple of Ca^{2+} transport proteins in the yeast vacuole: a Trp ion channel and a $\text{Ca}^{2+}/\text{H}^+$ exchanger. “We are using a combination of genetic, biochemical, and functional approaches to understand their function and regulation,” she says. Mainly, though, Thomas is teaching.

Landing herself a teaching-focused gig was no accident. After completing her postdoc with Miller, Thomas initially joined the faculty at Yale University, where she spent most of her time doing research. The experience was eye-opening. “I realized fairly rapidly that my passion was teaching and mentoring,” she says. She’s been at Quinnipiac ever since, and finds plenty to sink her teeth into. “It’s a continuing challenge—learning how to be an effective teacher,” she says. It’s a challenge she feels prepared to meet, thanks in large part to her support system, comprised of former advisors and coworkers and current colleagues. “In developing my teaching I’ve benefited from having a huge network of mentors,” she says. “My colleagues at Quinnipiac are receptive and enthusiastic about sharing their experience and knowledge about novel teaching approaches.”

Thomas’ students recognize her efforts. “She takes the time to explain everything from different teaching angles in order for her students to thoroughly grasp the information,” says *Brittani Strayhorn*, a former student. “In doing this, she makes difficult subject matter approachable for a wide range of academic levels.” *Jason Landino*, another former student, points out an additional way that Thomas connects with the students. “She treats all of her students as if they were colleagues, and always encourages professor-student collaboration,” he says. According to Landino, Thomas fosters a bond with her students that encourages give and take and builds trust. “She is not afraid to open up to students, to share her expertise and life experiences, or to engage students with caring social interactions,” he says. “By forming such ‘partnerships’ with her students, Thomas instills within them a sense of value, respect, and trust that in turn nurtures the learning environment.”

Thomas treats her colleagues with the same respect, warmth, and consideration. *Merritt Maduke*, now Associate Professor of Molecular & Cellular Physiology at Stanford University, was a postdoc

alongside Thomas in Miller’s lab at Brandeis. “Lise came into the lab with a lot of experience in ion-channel biophysics, while I was completely new to the field,” says

Maduke. “She was extremely generous and patient in teaching me electrophysiology and molecular biology, and in taking time to introduce me to others at the Biophysical Society Annual Meeting.”

Indeed, the Biophysical Society Annual Meeting holds recurring value for Thomas. “I have attended nearly every year since I was a graduate student,” she says. “They provide me with opportunity to catch up on scientific progress, and with old friends.” She emphasizes the role the meetings have played as she progressed through different phases of her career, especially in the transitional periods. For her, the Annual Meeting “provides the opportunity to meet others who have made similar transitions and who can give unique insight and advice,” she says.

If you can’t find Thomas at the Annual Meeting, in the classroom, or in the lab, check her basement. Thomas, a carpenter, keeps a number of power tools down there, from among which she picks and chooses to work on her cabinetry projects. “My current favorite is a router,” she says. Thomas also spends free time with her husband, *Ben Turk*, who is a scientist and faculty member at Yale University, and their three-year-old daughter, Cora.

“Lise is a Renaissance woman,” says Maduke. “In addition to being a great scientist and teacher, she is athletic—she played on the boys’ soccer team in high school—she knits, makes her own soap, refinishes furniture, and I would bet she could do anything she set her mind to.” Among these interests, Thomas is also invested in “issues surrounding undergraduate education, particularly increasing access to research for students who have never considered research as a future career,” she says. “I’m currently exploring ways to incorporate freshmen in ongoing research projects.” A recent recruit to the Biophysical Society’s Education Committee, Thomas plans to continue her search in more depth. Odds are she’ll succeed.



Lise Thomas with husband Ben Turk and daughter Cora.