Sixteen years of giving benefits MS research, trainees, and patients

By Jennifer Durgin

Murray and Selma Bornstein's second date was unusual to say the least. Selma was sick with a 103-degree fever, and when she called Murray to tell him that she wouldn't be able to meet him, he said, "That's okay. I'll come to you."

Selma, then 22, lived in a two-bedroom apartment in Brooklyn with her mother, father, and grandmother. She was in graduate school for medical social work and had landed a summer job at Mount Sinai Hospital, where Murray, age 37, was a doctor and a research fellow. An acquaintance had arranged their first meeting, despite Murray's protests.

> "Mrs. Bornstein understands our ongoing needs in teaching, research, and aspects of patient care that are not reimbursed well."

He liked his bachelor lifestyle and wasn't interested in settling down. But after that first date with Selma, he quickly changed his mind. In fact, he proposed to Selma on the second date, much to her astonishment.

"You've got to give me at least a couple weeks to think about it," she remembers saying. "He said, 'Okay, I'll stay here until you make up your mind.'" And he did stay, for two weeks, sleeping on the family's couch and even meeting a few of Selma's other suitors who came to call. "After two weeks, I said yes," recalls Selma. The two married later that year on the 40th wedding anniversary of Murray's parents. They went on to raise five children, enjoying many years together until Murray passed away in 1995, just shy of their own 40th anniversary.

Selma and their children were not Murray Bornstein's only loves, however. He was a passionate neuroscientist who made important contributions to the study and treatment of multiple sclerosis. A 1939 graduate of Dartmouth College, Bornstein was the first to apply certain tissue culture techniques to the study of central nervous system development and diseases, notably multiple sclerosis. At Albert Einstein College of Medicine, where he served on the faculty from 1966 to 1993, Bornstein "established a world-renowned tissue culture facility and provided the neuroscience community-at-large an international training ground," according to Cedric Raine, Ph.D., D.Sc., a colleague who paid tribute to Bornstein in a journal article after his death. Bornstein is also well known for his exemplary and pioneering work in the phase I clinical trial of glatiramer acetate, a leading drug for the treatment of multiple sclerosis.

In 1994, Murray retired and the Bornsteins moved to Norwich, Vt. It wasn't long before he connected with the Section of Neurology at Dartmouth-Hitchcock and became an adjunct professor of medicine at Dartmouth Medical School (neurology became a department in 2008). He also reconnected with Roy Forster, Ph.D., a long-time physiology professor at Dartmouth who had inspired Murray to pursue medicine when he was a student in Forster's class. Murray planned to make a significant gift in Forster's honor but died before that happened. Selma

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Selma Bornstein, pictured in the Department of Neurology library, carries on her late husband's love of science and learning through her giving.

carried out Murray's wishes, honoring both men by establishing the Murray B. Bornstein-Roy Forster Fund for Neurology Research and Education. The fund provides for the purchase of the latest neurology journals and textbooks for the department's library—named in honor of Murray Bornstein and Roy Forster—and affords residents and fellows opportunities to attend professional conferences.

Selma vividly remembers telling Forster about her plans to establish the fund in his and Murray's names.

"He didn't say a word," she recalls. "He got up and walked over to his bookshelf, reached up to the top shelf, and brought down a green laboratory notebook to show to me. He said, 'This was Murray's work in my laboratory in 1939. This work should have been published.'" It was a bittersweet moment for Selma, and further proof that Murray was an exemplary scientist.

"Truth in science was what Murray aimed for and he did not compromise ever on that," says Selma. She sees the same dedication to science—and to patients—in the Department of Neurology, which she has supported for 16 years with gifts to the Bornstein-Forster Fund and the Murray B. Bornstein Endowed Fellowship Fund, established in 2008. The endowment provides partial support for a fellowship in the Department of Neurology, to be awarded to a physician who is doing research on multiple sclerosis or other neurodegenerative diseases. In addition, it funds the annual Murray B. Bornstein Lectureship, a grand rounds

lecture for a distinguished scholar-physician in neuroimmunology. Selma also recently made a generous gift to provide salary support for a full-time nurse in the department's multiple sclerosis clinic.

"Mrs. Bornstein understands the critical role of philanthropy and our ongoing needs in teaching, research, and aspects of patient care that are not reimbursed well," says Gregory Holmes. M.D., a professor of neurology and of pediatrics who was chair of neurology for 10 years. "We've come a long way in the field of neurology, thanks in part to scientists like Murray Bornstein, but there are still tremendous challenges in addressing the range of neurological disorders that affect adults and children."

"It means so much to be able to carry on my husband's commitment to science and learning by giving to the Department of Neurology," says Selma. "Its faculty and students embody many of the characteristics that made Murray a great scientist, doctor, and human being."

Seed funding aims to improve prostate cancer diagnoses

By Jennifer Durgin

For men with prostate cancer, getting an accurate diagnosis can mean the difference between having their prostate removed and choosing a less aggressive treatment option. But often it's difficult to know just how serious a particular prostate cancer is because biopsies can be misleading, suggesting that a cancer is more or less aggressive than it really is.

"In an estimated 30-to-60% of cases, there is a lack of agreement between the cancer grade identified through biopsy and that found in the prostate once it is removed following surgery," explains Ryan Halter, Ph.D., a biomedical engineer at Dartmouth's Thayer School and an adjunct assistant professor of surgery at Geisel. "Sometimes the prediction is right on. Sometimes it's not." Given that prostate cancer is the most common cancer in men, with an estimated 240,000 Americans diagnosed in 2012, this is a big problem.

Halter is working to improve the accuracy of prostate cancer diagnoses, thanks in part to two recent grants from the New Hampshire Prostate Cancer Coalition (NHPCC). The Coalition works with hospitals, doctors, lawmakers, and New Hampshire residents to educate men and their families about prostate cancer, to encourage informed decision-making, and, ultimately, to reduce prostate cancer deaths in the state.

"The NHPCC grants have enabled me to try some new things that I wouldn't have been able to try with other, more restrictive funding sources," says Halter.

Halter is using a novel approach that combines routine ultrasound imaging with electrical impedance tomography (EIT). EIT imaging works by measuring the different electrical properties of normal and cancerous tissues and creating a tissue map based on that data.

Halter is working to improve prostate cancer diagnoses, thanks in part to grants from the New Hampshire Prostate Cancer Coalition.

"The idea is to put electrical property images on top of the ultrasound images and hopefully provide better targeting for biopsies," explains Halter. That, in turn, should lead to more accurate diagnoses.

Halter's initial data—collected at DHMC from participating patients during otherwise routine prostate ultrasounds and biopsies—are promising. Although Halter and his collaborators have not yet produced images from their most recent prototype, they have been able to correlate the electrical properties of certain tissue regions in a prostate with the microscopic analysis of tissue samples gathered from that prostate through biopsy.

"We still have more technology development and computation to do in order to develop the images," says Halter. But he's cautiously optimistic that the data he's gathered, with support from the NHPCC, will help secure federal funding for further research and ultimately improve the accuracy of prostate cancer diagnoses for men in New Hampshire—and nationwide.

MARK WASHBURN

Ryan Halter is developing a new way to image the prostate.