



## Building Bridges across Disciplines: Gregory Botta, MD '13, Ph.D. '11

With three major rivers carving its geography, Pittsburgh is known as “The City of Bridges.” It seems no coincidence, then, that native Pittsburgher Gregory Botta, M.D. '13, Ph.D. '11, a dual-degree candidate at Drexel University College of Medicine, is adept at bridging various disciplines and finding the synthesis among them – a practice that is able to flourish at Drexel. His multidisciplinary vision has garnered him several prestigious honors, including the much-acclaimed Young Researcher Award for the Lindau Meeting of Nobel Laureates.



Botta says that even as an undergraduate at Carnegie Mellon University, he was fascinated by the various connections between seemingly dissimilar areas of study. Majoring in both Information Systems and Biomedical Engineering, he noticed he “always found it interesting to be that bridge between two different areas, to have enough of an understanding of each side to be able to link them.” Botta was interested in a broad range of subjects, and pursued each with zeal. He worked as a cardiovascular stem cell researcher at the University of Pittsburgh Medical Center, but also parlayed his business courses into a position with Lehman Brothers in New York.

This desire to remain intellectually nimble eventually led Botta to Drexel University College of Medicine. He explains that while he was interviewing at other medical schools across the country, it became clear that Drexel's dual-degree programs were much more highly developed and supportive. The College of Medicine stood out in that it allowed the student so much intellectual freedom. For someone constantly seeking connections between academic fields, this approach was highly appealing.

Botta relates, “Drexel's leadership was always saying, if you want to do your Ph.D. in bioengineering and your medical degree in molecular biology, you can do it; form the collaborations. If you want to work with clinical researchers at Penn, go ahead and form the collaborations. If you want a course in imaging on the Main Campus, or in cancer biology at the New College Building, go ahead and make it happen. Drexel really keeps all of the options out on the table and allows you to tailor the curriculum yourself.... It permits the student to be an adult and to make these decisions themselves. I was really open to that idea, open to that education.”

As a dual-degree candidate, Botta pursued his medical school courses for the first two years. He then began the curriculum for his Ph.D. in the Molecular and Cell Biology Program as well as

in Biomedical Engineering, and will complete that degree this year. Once the Ph.D. is attained, he will finish his medical school education in Drexel's clinical component within its hospital affiliates.

Botta's Ph.D. research has focused on highly lethal pancreatic cancer. Specifically, he is investigating how pancreatic cancer begins to invade and spread throughout the body. "A lot of pancreatic cancer patients have very high rates of metastasis," he says, "and that's generally what contributes to the high mortality rate. I'm looking at a very early and specific mutation in pancreatic cancer called K-Ras. Ninety percent of pancreatic cancer patients have this mutation, and understanding its genetic effects can have a large impact on biomarkers and therapeutics." Botta is using a 3-D human extracellular matrix cell model to conduct his research into how this initiating K-Ras mutation contributes to metastasis. This cutting-edge research was funded by a prestigious fellowship from the National Institutes of Health and National Institute of Diabetes and Digestive and Kidney Diseases.

As stated, Botta has also been selected to attend the celebrated and elite Lindau Meeting of Nobel Laureates this summer through their Young Researcher Award fellowship. The rigorous selection process took about a year, with screenings ranging from the local to international level. The Lindau Meeting "brings young researchers from all over the world to Lindau, Germany, to speak frankly and one-on-one with Nobel laureates, an opportunity that is... actually impossible to do anywhere else in the world. There's really no other way to get 25 Nobel laureates in one location and for you to be able to sit down and have lunch or dinner with them and discuss your research.... It opens you up to so many different areas of expertise."

Botta's membership into this rare society is already opening doors and enabling him to make new connections in these intellectual circles. Based on his selection to the Lindau Meeting, Botta was able to invite and secure three Nobel laureates to speak at this year's APSA/ASCI/AAP Joint Meeting in Chicago, a conference he organized and chaired. Again, he is able to recognize and craft relationships, to build bridges among people where none may have existed before, for the betterment of the scientific community.

Botta has relished his time at the College of Medicine, saying that he "really enjoys the faculty at the medical school. Drexel is unique in that the faculty is 100 percent dedicated to you learning the material both scientifically and clinically. They're focused on the students. If you ever needed assistance they were always there to help you.... My Ph.D. committee, consisting of experts from the College of Medicine, Biomedical Engineering, the Fox Chase Cancer Institute, and the University of Pennsylvania, has been nothing but supportive.... Again, the cross collaboration between institutes and specialties is there constantly."

Nearing the completion of his Ph.D. and within sight of attaining his medical degree, Botta wants to pursue an academic residency and likely specialize in either radiation oncology or hematology and oncology. "Cancer research is a field really close to my heart," he reveals. "Many people in my family have died at young ages from cancer. It is something I have always had an interest in – and a personal connection with – that I think will help me bring passion to the field."

Botta notes that as a dual-degree candidate he has been in a unique position to observe the College of Medicine's growth, since he will have been within Drexel for about eight years once his curriculum is complete. The University has been "in an upward trajectory" during his tenure, becoming more and more influential in healthcare, medicine, business, and engineering. "At every conference that I go to, both nationally and internationally, Drexel's name has had nothing but good things associated with it and the clinicians and scientists it produces. Being here over this time, I've really seen a positive transformation at the University. I'm very proud to say I'm from Drexel."

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