

IRI Intros: 5 Questions with Bob Guldberg

Georgia Institute of Technology

You've probably heard that Georgia Tech has a number of Interdisciplinary Research Institutes (IRIs) – but do you know much about them?

This article is the second in a series of Q&As to introduce the Tech community to the eight IRIs and their faculty leaders. In this installment, Executive Director Bob Guldberg answers questions about the [Parker H. Petit Institute for Bioengineering and Bioscience](#) [1].

Q: What is unique about the bioengineering and bioscience community at Georgia Tech and what has made the Petit Institute such a success?

A: Georgia Tech's Parker H. Petit Institute for Bioengineering and Bioscience was created in 1995 as a new model to facilitate interdisciplinary research among faculty and students from different academic units on campus. The Petit Biotechnology Building was opened in 1999 and was uniquely designed to break down barriers to working across disciplines by creating open research neighborhoods composed of investigators with common collaborative interests – from different schools and colleges.

Over the years, the Petit Institute has grown beyond the walls of the initial building and now serves as the heart of the biotechnology complex. Part of the uniqueness of the Institute lies in the amazing breadth of research, spanning from cancer biotechnologies, regenerative medicine, and drug delivery, to multi-scale biomechanics, molecular biophysics, and chemical biology. The Petit Institute currently supports 16 interdisciplinary research centers focused on applications related to pediatric healthcare, military medicine, cardiovascular disease, stem cell engineering, and even the origins of life itself.

The Petit Institute's success can be attributed first to a clear mission to add value by catalyzing research and education initiatives at the interface of bioengineering and the biosciences. As one example, the income from our endowment provided through the generosity of alumnus Parker H. "Pete" Petit is used to support collaborative seed grants between faculty from different colleges at Georgia Tech. We also support a broad range of experimental core facilities, conferences and seminars, industry interactions, student activities, and outreach, combining to create a truly dynamic culture and ecosystem for interdisciplinary research. Another critical element of the Petit Institute's success has been coordination and partnership with participating academic units on campus as well as with external entities such as Emory and Children's Healthcare of Atlanta.

Q: How is the Petit Institute making an impact locally, nationally, and internationally?

A: In the coming decades, our society will face the multifaceted challenges of providing energy, sustainable food sources, and cost-effective, accessible health care for 9 billion people worldwide. The complexity of these challenges will require solutions that draw on research conducted at the intersection of the life sciences, the physical sciences, and engineering: a concept called convergent science that is being promoted by the National Academies and the White House Office of Science and Technology Policy. The Petit Institute is actively contributing to these discussions and was recently recognized as a national model for promoting interdisciplinary research and education in partnership with academic departments.

Internationally, the Petit Institute partners with institutions that share our ideology. Through various partnerships, we have held international workshops with researchers in Ireland, China, Australia, Germany, United Kingdom, Portugal, France, Switzerland, Singapore, Norway, Egypt, and Canada, to name a few. Out of those events, research proposals are emerging, and the Petit Institute's global footprint is continually expanding.

Locally, the Petit Institute acts as a liaison to our thriving local partnerships with the member institutions of the Georgia Research Alliance (Emory University, Georgia State University, Georgia Regents University, Clark-Atlanta University, and the University of Georgia) as well as other institutions such as Morehouse School of Medicine, Centers for Disease Control and Prevention, Children's Healthcare of Atlanta, Shepherd Center and Georgia Bio.

Q: How does the Petit Institute support interdisciplinary research?

A: An important part of the Petit Institute's mission is to provide a collaborative culture and environment that catalyzes the formation of new interdisciplinary activities and research centers. The Petit Institute, with its unique environment and entrepreneurial spirit, facilitates collaboration between engineers and scientists to create new opportunities through its seed grant programs, innovative education programs, and staff support of grants, facilities, public relations, proposals, and industry relations. Out of these types of collaboration, true interdisciplinary activities and innovations emerge.

At the core of our community is the shared core facilities, which facilitate and enhance the research taking place throughout the bio-complex. These facilities and their powerful capabilities, allow Georgia Tech researchers to take their interdisciplinary research to the next level, giving Tech a competitive advantage over our peer institutions. As a technology-driven research institute, it is also the Petit Institute's mission to support the advancement of fundamental knowledge and help drive the translation of new research discoveries into applications that benefit human health and society.

Innovative scientific research in the 21st century requires three critical factors: the ability to form and deploy teams having diverse skill sets, the availability of state-of-the-art facilities, and the engagement of the world's brightest minds to understand and solve complex research problems. The Petit Institute, through its faculty, trainees, and partners, is fortunate to possess all of these essential ingredients.

There are now over 140 faculty and nearly 1,000 graduate students, undergraduate students, and postdoctoral fellows who make up and contribute to the Petit Institute community.

Q: How does the Petit Institute support education throughout the bio-community?

A: The Petit Institute supports nontraditional education programs in a variety of ways and focuses on providing opportunities and experiences for students at all levels that extend beyond formal courses, integrating science and engineering principles into educational experiences.

Although the Petit Institute is not a school or department with traditional classes, we are involved in graduate student education on many levels. The Petit Institute invests in education experiences to support the bio-community's growing graduate student population. For instance, the Petit Institute is home to four research training grants that provide scholarships, fellowships, or stipends for graduate and postdoctoral fellows. Graduate students who are supported by training grants often get to experience deeper relationships with industry through internships and often develop an understanding of a specific field – all while building their life experiences. The Petit Institute is also the administrative home for both the Bioengineering Graduate Program and the Bioinformatics Graduate Program.

In addition, the Petit Institute is home to the Bioengineering and Bioscience Unified Graduate Students (BBUGS) group. The Petit Institute supports this group, which organizes over 30 of their own events each year as well as provides graduate students with a more well-rounded training experience, integrating social, policy, and industry activities into the classroom and lab work.

The Petit Institute is also supportive of undergraduate initiatives, one of which is the Petit Undergraduate Research Scholars Program, a competitive scholarship program for top undergraduates majoring in any of the bioscience or bioengineering fields. The program offers undergraduates a 12-month mentored research opportunity, providing a solid foundation to pursue advanced degrees in science or engineering. After graduating, 80 percent of Petit Scholars go on to obtain advanced degrees. Since its inception in 2000, the program has supported hundreds of top undergraduate researchers who have established distinguished careers in research, medicine, and industry.

Q: What will the bioengineering and bioscience community look like in the decade to come?

A: We look forward to continuing to strengthen and build the Georgia Tech bio-community as we head into a bright future. Since its investment in bioscience and bioengineering began almost 20 years ago, Georgia Tech has been at the forefront of the convergent science revolution. In 2015, we will see our bio-community expand with the addition of the Engineered Biosystems Building and recruitment of new faculty who believe in our mission. Talent is flocking to Georgia Tech to be a part of the culture we've established and the regional growth in integrated

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biosciences and bioengineering. Together, we will quicken the pace of new discoveries, while promoting the commercialization and growth of biotechnologies in Georgia to benefit human health and society in the years ahead.

Related Links

- [Parker H. Petit Institute for Bioengineering & Bioscience](#) [1]
- [The Interdisciplinary Research Institutes of Georgia Tech](#) [2]

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[1] <http://ibb.gatech.edu/>

[2] <http://tlw-proxy.gatech.edu/research/institutes>