

**Dr. Peterson**

**National Media Dinner**

Wednesday, Nov. 14, 2012

## **Changing the Way we Educate Students**

- Georgia Tech is fortunate to have some of the brightest and best-qualified students in the world, and we have an obligation to create an environment where they can succeed and reach their full potential.
- We can enrich the student experience by taking advantage of new technologies and instructional methods, while creating opportunities for increased student/faculty interaction.
- We have some outstanding faculty at Georgia Tech who are leading the way as we explore new opportunities for engaging and educating students.
- Examples:
  - Tech's two recipients of the Regents' Teaching Excellence and Scholarship of Teaching Award for FY2013. Steve Potter, associate professor in the Laboratory for NeuroEngineering, won in the faculty category for research universities. He engages his students through a personal, discussion-oriented approach, by exposing them to exciting research and challenging them to create YouTube videos to explain research to lay people.
  - The Wallace H. Coulter Department of Biomedical Engineering won the program/department category across the entire University System. BME implements an innovative problem-driven learning approach.
  - Several of the Strategic Plan project teams focus on changing the way we teach. (the Burdell Design Center, Revitalizing Undergraduate Education, the X-Degree, Technology and the Law, Globalization of Education, Service Learning, and TechArts.)
  - Nov. 8 story on Venture Atlanta Website: Georgia Tech Encourages Social Entrepreneurship with Ideas to Serve Competition. An annual competition for early-stage products and service ideas that make a social impact, organized

by the Georgia Tech Scheller College of Business' Institute for Leadership and Entrepreneurship. Open to current Tech students and recent graduates. I2S invites entries focusing on social issues such as hunger and poverty, as well as those that address sustainability, public health and alternate energy sources. Example: spring of 2012 participant LevelRF, seeks to build low-cost cellular network base stations in the developing world. It was accepted to the prestigious Y Combinator accelerator program shortly after the competition last year.

- The universities of the future will embrace both new technologies and teaching methods that expand their reach and maximize their effectiveness.
- We're doing that through collaborative learning methods, such as problem-driven learning within the Wallace H. Coulter Department of Biomedical Engineering, and through vertically integrated projects that foster innovative thinking and entrepreneurial behavior. These are large teams of students that stay on the project for about three years.
- Since we launched the Center for 21<sup>st</sup> Century Universities, or C21U, under the direction of Rich DeMillo last fall, faculty from business, public policy, and industrial and systems engineering have come together to focus on the role of disruptive technologies, serving as a living laboratory for testing new transformational educational ideas and approaches.
- This summer we announced an agreement with Coursera, a spinout of Stanford, to put Web-based courses online and create new opportunities for hands-on learning in the classroom, and to provide opportunities for lifelong learning for people throughout the world.
- Tech is a founding member of a small group of highly respected university partners in this bold experiment in the future of education. We also have a number of other, similar projects and partnerships in the works that will put Georgia Tech on the cutting edge in this area.

- These steps will give us the opportunity to investigate new methods and approaches. It's important to note that we remain committed to our primary focus of residential undergraduate and graduate instruction.

### **Coursera Update Here:**

- Four million college students took at least one online class during fall of 2007. Over the past few months, several pacesetting universities have embraced the Internet. Georgia Tech has chosen to be among that group.
- There is a real possibility that competitive pressures among the top institutions will create a stratified system in which a few institutions supply their branded online content to thousands of other institutions and companies around the world and therefore become the premier global providers of educational content. If that happens we are committed to placing Georgia Tech in that group.
- We think that the technology behind these online courses will continue to evolve rapidly and will give us educational tools and abilities that serve traditional Georgia Tech students in ways that would otherwise not be possible.
- It is a way of creating and sustaining a strong STEM pipeline in Georgia high schools and beyond.
- We are anticipating the needs and expectations of a new generation of Georgia Tech students (most of them still in Middle School) who will demand the flexibility and high quality that these new online materials will offer.
- We are enabling new business models, revenue streams, and collaborative synergies that will fundamentally change the way research universities operate over the next generation.

### **Research**

- We believe that much of the research that will change our world will be interdisciplinary in nature, and as a result we continue to work to create the world's foremost innovation ecosystem, one that incorporates the pursuit of "game

changing” research and moves the results toward commercialization.

- This will provide our industry partners with a competitive advantage, while benefiting the economy and society.
- Our industry partners often tell us that while they value the research that is taking place here at Georgia Tech, they especially value the access to our students.
- They tell us that our students bring a new level of creativity and innovative thinking, and are job-ready upon graduation.
- As part of our new research strategy we have identified 12 research areas that will make it easier for the outside world to understand what we do.

1. Big Data
2. Bioengineering and Bioscience
3. Electronics and Nanotechnology
4. Energy and Sustainable Infrastructure
5. Manufacturing, Trade and Logistics
6. Materials
7. National Security
8. Paper Science and Technology
9. People and Technology
10. Public Service, Leadership and Policy
11. Robotics
12. Systems

- This list is not all-inclusive. We anticipate that it will evolve as our research evolves and grows. By aligning and integrating our resources, and presenting our research activities in a market-focused way, it will become even easier for Georgia Tech to work with our partners in government and industry.

## **Innovation Ecosystem**

- Examples of how our innovation ecosystem is coming together:
  - Carbon Neutral Energy Solutions Building. 45,000 sq. ft. facility for clean fuels development, carbon capture technologies, clean combustion, gasification, and solar balance of system. Part of North Avenue Research Area. Across the street is Technology Enterprise Park. Strong examples of continuing to enrich an innovation ecosystem with an embedded industry presence.
  - We have collaborative partnerships and are supporting accelerated research to get it more quickly from the lab to the manufacturing floor. We are working at the nexus for research intersections. Our work includes research to improve the human condition, including energy, sustainability and the environment, and health.
  - It includes faculty, other researchers, students, and business and industry.
  - Research facilities such as the Carbon Neutral Energy Solutions Laboratory showcase Georgia Tech's commitment to the concept of working closely with industry partners and provide an example of how our integrated IRIs facilitate and build engagement across Georgia Tech's many constituencies. In keeping with the concept of One Georgia Tech, our "research space" is a reflection of our vision for a complete innovation ecosystem.
  - Partnering with GE Energy on the Smart Grid Challenge, a student competition, and Tim Lieuwen, in his role as director of the Strategic Energy Institute, will lead our overall energy strategy.
  - Georgia Tech is a major player in advanced manufacturing nationally. The Manufacturing Institute is targeting specific industry needs in manufacturing by forming collaboratories — pilot plants or prototype shops between industry, government, and academia, and working to create an innovation ecosystem. The Manufacturing Institute includes accelerated technology translation for innovative manufactured products. Competitiveness and impact.

- Georgia Tech is partnering with the City of Atlanta, the state, and business and industry to create a culture of innovation. We are actively and aggressively working to commercialize the technologies developed at Tech, moving the discoveries made in our laboratories to the marketplace, and building the companies that will create jobs, drive our economy, and stimulate economic growth. We are also committed to helping individuals in the community transform their intellectual property to drive innovation.
- Technology Square has become an innovative ecosystem bringing together needed resources, expertise, and opportunities for collaboration that create an exciting environment for innovation to flourish. Georgia Tech continues to work closely with the Georgia Department of Economic Development, headquartered in Tech Square, to attract new business and industry. The Centergy Building is home to about 40 start-up companies, and several other organizations are exploring having a presence there.
- In May Panasonic announced its new auto innovation center in Centergy One in Tech Square, creating an incubator for next-generation automotive infotainment technologies. A driving factor was their interest in enhancing partnerships with Georgia Tech, including E12. Tech Square is home to Flashpoint, Tech's latest startup accelerator, and of course ATDC, the nation's first university-based technology incubator and widely regarded as one of the best.
- This past summer Tech was selected for a leadership role in the National Science Foundation's I-Corps, or Innovation Corps program. Tech is a founding network node for I-Corps, which aims to develop scientific and engineering discoveries into useful technologies, products, and processes. Much of the work will take place in Tech Square.

## **Student Innovation**

I think the real excitement comes from what our students are doing. They are an active part of research and discovery, and in fact, over 70 percent of innovation disclosures at Tech name one or more students among the inventors. We are continuing to offer programs to foster innovation and entrepreneurship, such as the Georgia Tech Integrated Program for Startups, TI:GER; an award-winning program and partnership between Georgia Tech and Emory University School of Law; Business Plan Competition; and the InVenture Prize, an annual competition that inspires undergraduate students to create inventions for cash prizes. Many of these innovations from the past three years are in the commercialization process.

## **Challenges**

Higher education is in the public spotlight because of integrity and accountability, anticipated challenges in federal support, dwindling state support due to economic pressures, and associated rising tuition, rising student debt, college completion rates, and employment opportunities upon graduation. We have a commitment to integrity that has been ingrained in the Georgia Tech culture for its 127-year existence. We will continue that commitment.

## **Quote from Strategic Plan**

“All universities educate students, and most pursue research. Great universities also lead. They lead in education, by defining what and how we teach, and by understanding how our students learn. They lead in research — by creating new knowledge and by identifying new solutions, new directions for research, and new ways in which we perceive the world around us. In short, great universities help shape the world, rather than being shaped by it.”

## **Sequestration**

*(Points from joint op-ed with Michael Adams)*

- Nearly everyone agrees that sequestration would be a disaster. In 2013 alone, it would result in an 8.7 percent, or \$12.5 billion, reduction in federally funded research and development across the U.S., causing an estimated 200,000 job losses, disrupting multi-year research projects, and hampering growth-inducing investments.
- While we, as a nation, must get our fiscal house in order, we must do so in a way that helps ensure a prosperous future for our children and grandchildren. Our country faces some very difficult decisions over the next few months. The challenges will require us to set aside partisanship to hold a national dialogue around our nation's priorities. We commend the leadership of Senator Saxby Chambliss, former Senator Sam Nunn and other national leaders who have been willing to work toward a long-term fiscal plan based on the bipartisan Simpson-Bowles Commission debt plan.
- Last month, the Task Force on American Innovation, which includes private corporations, research universities and professional associations, sent a letter to the president and congressional leadership with a simple yet critical challenge: develop a plan for debt reduction while keeping the nation on the path to innovation and economic growth by prioritizing spending on science and technology. We support this challenge and urge our congressional leaders to act in a bipartisan way to address our nation's fiscal challenges, while preserving the research and innovation that will allow us to stay competitive in the global economy.

### **Importance of STEM Education** *(from your AJC op-ed a year ago)*

Each year, the National Science Board produces a report on Science and Engineering Indicators. The latest report clearly indicates that many countries are making science, engineering and technology a national priority. The reason is because these fields address important issues, ensure global competitiveness and create new jobs. To ensure our economic place in the world, we must continue to attract, develop and



retain top engineering and science talent for this drives world-class innovation and R&D. This requires that we prepare students with the necessary background at all levels: elementary, secondary and post-secondary. Georgia Tech partners with K-12 schools in a wide variety of programs, ranging from teacher preparation to summer camps for students.