Thank you for inviting me to join you today. We’re experiencing a tremendous time of momentum at Georgia Tech, and I’m glad to have the opportunity to share what some of the exciting things we’re doing. Just so I can get a sense of the lay of the land, how many of you are proud Georgia Tech graduates, or Georgia Tech fans? Thank you.

What I’m hoping today is that even if you’re not a proud graduate, you can be proud of what one of your outstanding public research universities in Georgia is doing. In particular, today I would like to focus on innovation.

**Smartphone as a reminder of the importance of university research**

How many of you have a smart phone? I won’t ask you to hold them up—you can save that for the Rolling Stones concert at Bobby Dodd Stadium on Tech’s campus in June.

Your iPhone is a reminder of the importance of university research. Georgia Tech is a member of the Association of American Universities. On their homepage, they have a story on the smartphone. It is powered by university research.

Try to imagine life without your smartphone. No email, no tweets, no alerts from the office. We use our smartphones for everything from driving directions to the weather to shopping, and of course fact checks. You’ll never hear someone college age say “I don’t know” if you ask them a question. You’ll hear “just a minute, or I’ll check” as they reach for their smartphone.

Federally funded research at several universities resulted in the touchscreen, the CPU, multicore processors, magnetic ram, GPS, and rechargeable lithium ion batteries.

Your smartphone would not exist without federally funded research done at America’s
research universities. First, they would likely be far bulkier because they would use bigger batteries. Location-based services would not exist without GPS. Your fingers would not work on the touchscreen because multi-touch screens would not exist. And more fundamentally, with no chip or memory they would be empty aluminum shells.

**Innovation Deficit**

Not only does university research make a difference in our daily lives, it makes a difference for our country. I have the privilege of serving on the National Science Board, which oversees the NSF and advises the President and Congress on national policy related to science and engineering research and education. One of the issues that we have been tracking for several years is the innovation deficit. It is the widening gap between the actual level of federal government funding for research and higher education and what the investment needs to be if the U.S. is to remain the world’s innovation leader.

The National Science Board’s 2014 Science & Engineering Indicators provides fresh evidence of the innovation deficit. The major Asian economies, taken together, now perform a larger share of global R&D than the U.S. Since 2001, the share of worldwide R&D performed by Asian countries grew from 25 percent to 34 percent. China led this expansion with its global share growing from just 4 percent to 15 percent during this period. Consequently, China alone now performs nearly as much of the world’s high-tech manufacturing as the U.S.

Because the innovation deficit will have serious consequences for our nation’s role as the world’s innovation leader, it could hamper U.S. manufacturing, trade, and economic and national security, jeopardizing our frontrunner status in each of these areas, as well as the best jobs in the world that go with them.

Closing the innovation deficit is essential to sustaining U.S. leadership in biomedical research and innovation. Federally funded research has produced extraordinary health
advances and diagnostic innovations, from MRI to anti-cancer and cardiovascular treatments that have added years to Americans’ lifespans. Today’s research is producing discoveries every day that may lead to vaccines, treatments, cures for countless diseases, and diagnostics that make possible early intervention. These innovations benefit not only the health of Americans of people around the world, but also lead to new businesses and industries that provide jobs and strengthen the economy.

**EBB**

We have an exciting new resource for research and teaching on the Georgia Tech campus. This month, we are taking possession of a new Engineered Biosystems building, or EBB. This beautiful 200-square-foot facility on the north side of campus has been designed as an interdisciplinary hub to foster collaboration that many times results in incredible breakthroughs.

The Engineered Biosystems building is a shining example of the power of partnership. Funding was provided through a combination of state support and philanthropy. The building is already 80 percent paid for, and we have commitments to pay the remaining 20 percent over the next five years.

In the coming decades, our society will face the 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. Georgia Tech is poised to be a national leader in convergent science and technology and is already recognized as a place that effectively brings together people from different disciplines to solve important problems.
Integrated life sciences technology is a strategic area of importance for Atlanta and the State. This new building will help ensure that Georgia Tech is at the forefront of the convergent science revolution and will quicken the pace of new discoveries and promote the commercialization and growth of biotechnologies in Georgia to benefit human health and society in the years ahead.

Creating graduates with entrepreneurial confidence—Student Innovation
At Georgia Tech, we are working to graduate students who will be successful in a rapidly changing international arena, and to help address the innovation deficit. Faculty and administrators plan to make entrepreneurial confidence a signature feature of undergraduate learning at Georgia Tech.

Through a combination of faculty-led and student-led programs, Georgia Tech is creating a startup pipeline that leverages the campus’ maker culture and encourages students to push their ideas even further.

Georgia Tech is working to create a climate of innovation across all areas of study. While you would expect a focus on innovation in one of the nation’s largest and best engineering programs, innovation is also much a part of programs in computing, architecture, liberal arts, sciences, and business.

Georgia Tech holds several competitions each year to create a culture of innovation. Last Wednesday evening we held our 7th annual InVenture Prize competition. InVenture brings together student innovators from all academic backgrounds across campus in an effort to foster creativity, invention, and entrepreneurship. Joining us for the event last week were representatives from 12 ACC universities to begin planning for a possible ACC-wide innovation competition. We also run a K-12 school version of the InVenture Prize, known as the InVenture Challenge @ Georgia High Schools.
The InVenture Prize competition has affectionately been called “American Idol for Geeks,” but no one will think of them as geeks when they launch their businesses. First place InVenture Prize winners receive $20,000 plus a free patent filing and an automatic spot in the summer cohort of Flashpoint, Georgia Tech’s business creation and innovation program. The second place prize is $10,000, plus the patent filing and Flashpoint spot.

We partner with Georgia Public Broadcasting to do a live broadcast of the finalist competition. The 2015 InVenture prize had more than 500 students entered the competition. Six finalist teams presented their inventions and business plans before an audience and a panel of judges. The winning team was Flame Tech Grill Defender. Flame Tech is a safety device for gas grills that alerts users when gas levels become dangerous. Team members included a computer science major (Alex Roe, Cumming), a mechanical engineering major (Scott Schroer, Dunwoody); and a business administration major (Will Sweet, Newnan).

Winning the number two spot was OculoStaple: The OculoStaple is a medical device to safely treat ptosis, drooping of the upper eyelid. The team members (Jacquelyn Borinski, Mohamad Ali Najia and Drew Padilla) are all biomedical engineering majors.

The biomedical engineering student came in second in last year’s InVenture competition as a member of team Sucette, which redesigned the pacifier to fit more naturally with a baby’s mouth and growing dental structure. It also changed colors when the baby has a fever.

Rachel Ford, a senior Biomedical Engineering major, continued working on the device during last summer’s Startup Summer program.

Startup summer is a faculty-led, student focused 12-week program. Allows student teams to launch startups based on their ideas, inventions, and prototypes. The teams
come in with a clear hypothesis, and in exchange, receive grant money, mentors, lessons, exposure, and intellectual property protection.

Last year’s Startup Summer pilot had 79 teams apply for eight spots.

As a result of the Startup Summer program and learning more about consumer and market demands, Sucette now emphasizes the “smart” design aspect of the pacifier, which enables a change in color to let parents know when their child is becoming sick. It changes color internally when fever is detected, and externally when temperatures may pose risks of heat-related illness.

Rachel is also part of a startup that produces a device that helps people understand what’s going on with their cars: FIXD. The device is plugged into a car’s diagnostics port, just underneath the steering wheel, and connects the car to a person’s smartphone via Bluetooth. It explains the cause behind an illuminated check engine light, diagnoses the seriousness of the problem, and provides repair estimates. The sensor also delivers updates on when the car needs repairs and regular maintenance. Ford and John Gattuso, senior Mechanical Engineering major, developed the company during last year’s Startup Lab course and continued working on it during Startup Summer. Since then, they have raised more than $30,000 on Kickstarter and are accepting pre-orders for the device.

We have numerous other programs to boost entrepreneurial confidence. Students can take advantage of Invention Studio, with its cutting edge tools, machines, and printers. There are courses like GT 2803, an undergraduate course for freshmen and sophomore, helps students explore invention and discovery. Also called “Your idea, your invention.” Students work in interdisciplinary teams.

Startup semester is not a course, but rather a program that allows students access to veteran entrepreneurship mentors and the opportunity to meet with potential investors.
CREATE-X is our newly launched initiative to enhance undergraduate entrepreneurial confidence. Unveiled at the InVenture Prize event, CREATE-X is an initiative to give students the skills, knowledge, experiences and opportunities to confidently pursue their own careers either as entrepreneurs or as innovation leaders in a more traditional career.

VentureLab—working with students and faculty, VentureLab helps create startup companies based on Georgia Tech research and ideas. Since 2001, it has launched 150 companies that have attracted more than $700 million in funding.

ATDC—Students who successfully complete VentureLab may want their next stop to be the Advanced Technology Development Center. ATDC helps transform fledgling ventures into viable businesses. It is one of the nation’s premier startup incubators.

The Institute is educating students who will become the intellectual talent that business and industry seek. Research universities play a key role in regional and statewide economic development. Georgia Tech is committed to fostering a climate of innovation, not only for faculty, staff, and students, but also for the state of Georgia and the region.

**Innovation Ecosystem**

Georgia Tech is taking a leading role in creating an innovation zone in Midtown Atlanta. Tech is helping people transform their intellectual property to drive innovation, attract and create new business, and transition ideas from the concept stage to the marketplace.

Technology Square is a high-energy hub, creating an exciting environment in which innovation can flourish. What was a blighted location just a little more than ten years ago is now fast becoming the center of the entrepreneurial community in the Southeast. The mixed-use area is a testament to what is possible through a
partnership between higher education, the state, business and industry. Tech Square is a unique environment where large companies can establish innovation centers and outposts, providing opportunities to interact with startup companies as well as the Georgia Tech community, creating synergy and a climate for innovation. Among the corporations with a presence in Tech Square are Home Depot, the AT&T Foundry Innovation Center, the Panasonic Automotive Innovation Center, GM, EY, and ThyssenKrupp.

(Tell Home Depot example of students working on project.)

The Enterprise Innovation Institute, or EI\textsuperscript{2}, is Georgia Tech’s primary business-outreach organization, providing a comprehensive program of assistance to business, industry, entrepreneurs, and economic developers. EI\textsuperscript{2} accelerates startup formation through education programs, assists startups through incubators, and amplifies commercialization impact through support programs. In FY2014, EI\textsuperscript{2} had an impressive report card. It helped 1,770 Georgia manufacturing companies reduce operating costs by $36 million, increase sales by $191 million, and create or save 950 jobs.

Expectations for higher education are changing. When I go to the Capitol, or out in the community, one of the first questions is “How many jobs are you creating?” The fact is, through partnership with business and industry throughout the state, we’re creating a substantial number of jobs. In addition, through Federally funded research, we’re creating innovations and coming up with discoveries to benefit society, including everything from components for devices like smart phones to cures for diseases. And, we’re preparing tomorrow’s leaders and innovators to take us into the future with confidence. Thank you.