State of the Institute address stresses need to maintain competitive edge

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Institute Communications and Public Affairs

In his annual State of the Institute address to the faculty last Tuesday, President Wayne Clough used the theme “creative disruption” to discuss Georgia Tech’s intent to become a global university that both drives innovation and helps society adjust to the disruption it causes. “Without question, as we pursue our goal to define the university of the 21st century, we must be an innovator and drive change. But we also must recognize and manage the disruption side and even turn it to our advantage — so that we are not engaged just in destruction, but rather in building a better world and educating our students for it,” he said.

Economists use the phrase “creative disruption” to describe the process in which start-up companies with next-generation technologies compete with and eventually displace larger established companies. Clough noted that the slow pace of technological change used to provide long periods of equilibrium between times of disruption when a new technology eclipsed the old. Today, creative disruption is a constant in the economy, and companies and countries must continually innovate to compete. The United States, for example, was the established economic leader of the 20th century, but is now being challenged by ambitious nations who are educating their workforces and becoming more innovative.

Similarly, Georgia Tech must now compete in a global arena. “With technology progressively driving the world, our role becomes ever more important, but this does not automatically guarantee our leadership,” Clough said. “Only if we are willing to adapt to the new circumstances and educate our students to compete in a global context within the forces of creative disruption will we fulfill our potential. We need to become a university that not only drives innovation, but is innovative in itself.”

Educating innovators

Clough devoted most of his time to Georgia Tech’s efforts to be innovative in its education programs and research thrusts. He noted the improvements to undergraduate education in recent years, beginning with enhancements to the admissions process and including Web enhancements to courses, revisions to the core curriculum and mid-term grades with follow-up advising for those having problems. He also mentioned the increasing number of interdisciplinary degrees Georgia Tech has developed. He focused especially on the

Research demonstrates how gold nanoparticles destroy malignant cells

R
esearchers from the University of California, San Francisco, and Georgia Tech have found a new way to kill cancer cells. Building on their previous work that used gold nanoparticles to detect cancer, they now are heating the particles and using them as agents to destroy malignant cells.

The researchers are a father and son, working together on opposite coasts. Their study findings are reported in the online edition of the Sept. 28 issue of the Journal of Cancer Letters.

“In an earlier study, we showed how gold nanoparticles could be bound to malignant cells, making cancer detection easier. Now we have examined how the particles’ ability to absorb light helps kill those cancer cells,” said author Ivan El-Sayed, assistant professor of otolaryngology at UCSF Medical Center.

Ivan conducted the study with his father, Mostafa El-Sayed, director of the Laser Dynamics Laboratory and chemistry professor at Georgia Tech.

“Many cancer cells have a protein, known as epidermal growth factor receptor (EGFR), all over their surface, while healthy cells typically do not express the protein as strongly. By conjugating, or binding, the gold nanoparticles to an antibody for EGFR, suitably named anti-EGFR, the researchers were able to get the nanoparticles to specifically attach themselves to the cancer cells.”

In the new study, the researchers incubated two oral squamous carcinoma cell lines and one benign epithelial cell line with anti-EGFR conjugated gold nanoparticles and then

Student admits involvement in campus scare

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Institute Communications and Public Affairs

A Georgia Tech student has voiced his involvement in an Oct. 10 incident involving a crude bottle explosive found on Tech’s east campus.

He turned himself in to the Georgia Tech Police Department (GTPD) the morning of Oct. 11 and confessed to his involvement. He’s facing charges for possession of a destructive device, a felony under state law, and reckless conduct, a misdemeanor.

The freshman engineering student has been temporarily suspended pending a student judiciary ruling. The GTPD and the Atlanta Police Department are still investigating the incident. The contents and exact nature of the bottle explosives have not been determined and are still under investigation.

Around 8:45 a.m. on Oct. 10, during a routine grounds cleaning, a Georgia Tech Facilities worker picked up an item believed to be trash in the courtyard between the Glenn and Cloudman Residence Halls on the southeast side of campus and it exploded.

Campus police were immediately notified, and the two residence halls were evacuated as a safety precaution. Most students were in class at the time of the event.

Two similar bottle explosives were found in the same area, and the Atlanta Police and Fire Departments were called in to assess and contain the situation.

The Atlanta Police Department’s bomb squad detonated the remaining two bottle explosives shortly before noon, and students were allowed to reenter the residence halls. The Facilities worker was taken to a clinic for evaluation and released.

With the pace of technological innovation churning the economy at a faster rate, President Wayne Clough emphasized that Georgia Tech must “adapt to new circumstances” to compete in the global economy.
Swann renovation complete; ready for Modern Languages

A building that once housed turn-of-the-century engineering students is now a state-of-the-art classroom facility that will be a hub for Georgia Tech’s international education initiatives.

The Janie Austell Swann Building, which was largely occupied by the School of Modern Languages’ administrative offices, was vacated in 2003 to work on the restoration. The multiphase project cost about $3.6 million in construction, and another $800,000 to equip with furniture and electronics.

After two years, Modern Languages Chair Phil McKnight said he was eager to return. “The wait for the beautifully renovated Swann Building was worth every minute. The architects, contractors and the Georgia Tech teams have created a truly unique building with friendly spaces reminiscent of classical humanities buildings and high-tech classrooms that create a much different feel than in any other campus building.”

With Georgia Tech implementing several new initiatives geared toward increasing the percentage of undergraduate students with international experience, the School will become more important in the kinds of courses and services it provides.

“The building will be a center of international activity and a focus for integrating culture and language into the global context of numerous other disciplines,” McKnight said.

The building is named in honor of the wife of a New York benefactor named James Swann, who in 1900 donated $20,000 to finance Tech’s first campus dormitory. The Institute matched his contribution with an additional $15,000, and hired architect Walter Downing to design the building.

Originally built as a dormitory, the Janie Austell Swann Building was dedicated in fall of 1901. Architect Walter Downing chose to design the entrance as the dominant feature, adorning it with a two-story portico.

OIT workshop gives tips on managing a security incident

Panelists at the Office of Information Technology’s (OIT) Security Awareness Workshop held last week voiced a common theme: information security is not just a technology issue, but a management issue. Key members of Georgia Tech’s incident response team were present, illustrating the variety of issues affected by security incidents.

At the outset of the workshop, School of Chemical and Biomolecular Engineering (ChBE) Chair Ron Rousseau provided a case study of his School’s security incident in July that resulted in four weeks of department-wide computer problems. “It’s easy to place the blame on the IT department,” he said, “but a security incident causes a loss of confidence all the way up the chain. It causes a loss of confidence in the leadership, the school and even Georgia Tech.”

The incident initially appeared not to be serious. OIT detected some port-scanning activity (a popular approach that helps the attacker determine what to probe for security weaknesses) from one of ChBE’s computers, but the system was checked and seemed secure. Several days later the e-mail system failed. During the subsequent data recovery, major security problems were found.

Once the seriousness of the incident was realized, Rousseau and his IT team had a meeting with faculty and staff to explain the situation. Since e-mail was not working, they continued to update faculty and staff in writing. After one month, all services and individual desktops were up and running. In the end, all data seems to have been recovered, but Rousseau called the breach “the single most frustrating event in my almost 19 years as School chair.”

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At Georgia Tech, an average of 12 systems a day are infected with viruses,” Baines said. And while most incidents are contained within a department since firewalls have been installed across campus, he cautioned that a growing trend of laptops utilized as primary computers is increasing the number of entry points behind departmental firewalls.

Internal Auditing Director Rob Clark emphasized the importance of communication between the technical staff and management during security incidents and the importance of technical staff understanding management’s priorities and needs.

Gold. cont’d from page 1

exposed them to continuous visible argon laser. “The malignant cells required less than half the laser energy to be killed than the benign cells,” said Ivan El-Sayed. “In addition, we observed no photothermal destruction of any type of cell in the absence of gold nanoparticles at these low laser powers.”

“There is the real potential to design instrumentation to allow non-invasive detection and treatment of the particles in living humans,” Mostafa El-Sayed said. “The particles can be used to create multiple designer agents targeted toward specific cancers. Much work still needs to be done, but at some point, we hope to be able to inject these compounds into patients with cancer in a search-and-destroy mission.”

The WHISTLE

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Georgia Tech is a unit of the University System of Georgia
continuing efforts to engage undergraduate students in research and international experiences, describing new programs in these areas that began this year. The Undergraduate Research Opportunity Program and the International Plan allow students in any major to infuse their undergraduate experience with either a research or an international perspective through coursework and first-hand experience.

As proof of the value of undergraduate research and study abroad programs, he referred to a recent survey of alumni who had graduated between 1998 and 2001. “Many explicitly gave credit to these experiences for their ability to do well in their careers, to adapt to the changes they experienced, and to prepare for the next stage in their lives,” he said.

Clough also cited the College of Management’s Global Team Executive MBA program, which involves partner universities in France and Argentina, and the Nanoscience and Technology Certificate Program, which allows students of any major to take a 12-credit-hour emphasis in this emerging new field.

Another important aspect of the undergraduate experience is giving students an opportunity to learn the value of participating in community service. “It is a determining factor in their future,” he said. “The remarkable response of our campus to assist evacuees from the disaster brought on by Hurricane Katrina showed clearly that Georgia Tech can lead with its heart as well as its head,” he said, adding that Tech will assist with the long-term effort to rebuild the Gulf Coast.

Driving innovation
In describing Georgia Tech’s innovative research endeavors, the president focused on new research thrusts that involve an investment and shift in direction, including nanomedicine, electronic health systems, and high-performance computing. He noted that Georgia Tech and Emory have received several large nanomedicine grants, the most recent being a $19 million National Center of Cancer Nanotechnology Excellence.

Electronic health systems are important not only to enable advances in molecular medicine, but also to update and coordinate the entire healthcare system, the president said. He referenced RealQ, a computer program designed at Georgia Tech to enable a rapid, effective response by state and local health systems to an outbreak of infectious disease.

In the area of high-performance computing, Clough pointed to three new Dell computer clusters in the College of Computing that can be linked together to form one of the 100 most powerful computers in the world. These new high-performance computing tools will enable Georgia Tech to place a major emphasis on computational biology in addition to serving the needs of researchers across campus.

In other cases, Clough said, major disruptions in society present opportunities to apply existing Georgia Tech strengths. He described the Institute’s new Strategic Energy Initiative, which focuses on the development of alternative fuels such as solar cells, microgenerators, fuel cells, and wind power.

He also noted of the Iraq war casualties caused by the inability of traditional military vehicles like humvees and Bradleys to protect soldiers from roadside bombs and guerrilla-style attacks. The Georgia Tech Research Institute has responded by designing the ULTRA Armored Patrol, a concept vehicle that incorporates new technologies for safety and maneuverability.

Noting that Georgia Tech’s efforts by themselves were not enough to make the Institute a global university, Clough spoke of the importance of international partnerships. He cited the growth and success of Tech’s research and education platforms in France and Singapore, and described the expanding list of other universities with which Tech has dual degree programs. These include the Technical University of Munich in Germany and the Technological Institute of Monterrey in Mexico, plus Shanghai Jiao Tong University in China, with which Clough will sign a dual degree agreement in December.

“Many of our more substantial international partnerships begin when individual faculty members who collaborate with colleagues around the globe on research projects,” he said.

Being a global partner is also a two-way street, according to Clough. “It means that others from around the world reach out to us and come here to Atlanta to develop partnerships with us,” he said. Recent examples include decisions by Samsung, a South Korean company, and Pirelli, an Italian company, to locate major research and development units at Technology Square. Georgia Tech will also soon begin construction on Technology Enterprise Park along North Avenue near the North Avenue Research Area, which will expand its ability to accommodate corporate R&D operations that want to locate close to campus.

Creating innovative spaces
In addition to being innovative in its work, Georgia Tech needs an innovative campus, Clough said. Citing the Chinese proverb, “Talent counts 50 percent, appearance counts 70 percent,” he explained that Georgia Tech wants its appearance to indicate its intentions.

An important part of the campus’ appearance which has been neglected historically is the ground plane. Clough said he wants Georgia Tech’s outdoor spaces to provide a calm beauty that counterbalances the creative intensity of its labs and classrooms and offers informal meeting places for creative minds to exchange ideas.

He shared plans for new green spaces around the Klaus Advanced Computing Building, in the quadrangle of the Technology Complex, and across the northern end of campus, where an Eco-Commons will restore natural waterways that were paved over and engineer them to manage runoff stormwater for use in irrigating the campus.

Clough concluded by noting that research universities are the mother lode of the talent, the discoveries, and the inventions that drive the innovation. “We want Georgia Tech to be innovative as well as to drive innovation,” he said. “Together we are steadily creating the academic programs, research thrusts, and strategic alliances, and designing a new campus that will enable us to address the issues caused by the disruptions of our time.”

For more information...

State of the Institute
(www.gatech.edu/state/)

Golf program rated tops in U.S.
For the second time in three months, Georgia Tech’s golf program has been named the best in the country by a major golf magazine.

Golfweek magazine, based on a six-year compilation of its Golfweek/Sagarin Performance Index, has ranked the Yellow Jackets the best program in the nation.

The staff of Golfweek magazine wrote, “Georgia Tech makes a habit of beating the best. The Yellow Jackets may have not won a national championship the last six years, but their overall head-to-head record and winning percentage (.813) puts them atop Golfweek’s all-time rankings list.”

Rounding out the top five are Clemson University, the University of Georgia, Oklahoma State University and the University of Florida.

In August, Golf Digest magazine also rated Tech’s program the nation’s best.

VENTURELAB MEMBER WINS CONTRACT
Virtual AeroSurface Technologies (VAST) has received a Small Business Technology Transfer contract from the U.S. Air Force for $750,000. The flow-control-technology company has been a member of Georgia Tech’s VentureLab for the past two years and is the 10th company to win financing.

VAST is working on technologies that could have a revolutionary effect on future aviation, among other things,” said Stephen Fleming, Georgia Tech’s chief technology officer. “The fact that they’ve gotten major phase-two Air Force funding is very satisfying for Commercialization Services — it’s a big part of what we do here.”

Commercialization Services, a division of the Office of Economic Development and Technology Ventures, helps identify Georgia Tech discoveries with potential commercial value and either helps negotiate technology-licensing agreements with existing companies or assists fledgling companies through the feasibility and first-funding phases.

Evening classes for ESL students
The Georgia Tech Language Institute will host a second session of evening classes in English as a Second Language (ESL). Course offerings include: “English Conversation: Current Events,” “Clearer Speech,” “Practical Writing Skills for Non-Native Speakers of English,” and “Preparation for the TOEFL Exam.”

Classes meet twice a week (Monday and Wednesday) from 6 - 8 p.m. beginning October 51. Tech employees may register for one of several reserved spots in each class that are eligible for a 50 percent discount. For more information, visit www.esl.gatech.edu and click on “Programs and Courses,” or call 385-2500.


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Art & Culture
Oct. 24 - Nov. 9
The School of Literature, Communication and Culture and the School of Modern Languages co-sponsor an international film series. For titles and times, visit www.film.gatech.edu/series.htm.

Oct. 26
The annual Bourne Poetry Reading, featuring Doreen Góldy, Michael Ryan and Thomas Lux, will be at 7 p.m. in the Clary Theater.

Oct. 26
The Fert Center for the Arts welcomes jazz trumpeter Chris Botti for an 8 p.m. performance. For tickets or information, visit www.fertcenter.org.

Brown Bags/Conferences/Lectures
Oct. 19

Oct. 20

Nov. 1
The Healthy Places Research Group is hosting a presentation on “Physical Activity, Health and the Built Environment” by Bill Kold of the U.S. Centers for Disease Control and Prevention at 7:30 a.m. in Emory University’s Rollins School of Public Health. For more information, visit www.cga.gatech.edu/cgrd/projects.htm.

Faculty/Staff Development
Oct. 19
The Georgia Tech Research on Accessible Distance Education (GRADE) project hosts a lunchtime presentation on “Accessibility and Course Management Systems.” This is a free event, but registration is required. E-mail barbara.christopher@coa.gatech.edu. A confirmation notice will contain location and directions.

Oct. 20
The Center for the Enhancement of Teaching and Learning’s faculty development seminar series continues with “Promoting Classroom Civility,” from 11 a.m. - 1 p.m. in the Library’s Wilby Room. Lunch will be provided for those who register at www.ceti.gatech.edu or by e-mail to clint.lye@ceit.gatech.edu.

Oct. 25
Professor George Nemhauser on “Sports Scheduling,” at 2 p.m. in the Wilby Room.

Oct. 25
The Materials Council’s seminar series continues with Florida State University Professor Justin Schwartz, on “High Temperature Semiconductors: How They Fail, and How They Might Yet Succeed,” at 3 p.m. in room 185, Love Building.

Oct. 27
Regents’ Professor of Physics Ronald Fox will deliver a “Centenary Commemoration of Einstein’s Annus Mirabilis, 1905,” at 7:30 p.m. in the College of Management’s LeCraw Auditorium. For more information, call 894-7088.

Miscellaneous
Oct. 19
The Office of Sponsored Programs hosts a workshop on “Intellectual Property and Tech Transfer,” from 10 a.m. - noon. To register, call 894-6944.

Oct. 19
The School of Applied Physiology is hosting an open house for its master’s program in Prosthetics and Orthotics from 2 - 5 p.m. in the Clary Theater. Faculties tours begin at 2:30 p.m. in the Weber Building, bottom floor. For more information, call 894-7658 or visit www.ap.gatech.edu/mspo.

Oct. 19
A town hall meeting on the Financials 8.8 upgrade will be held from 9 - 11 a.m. in room 117 of the Student Services Building. For more information, e-mail kara.tillman@orgdev.gatech.edu.

Oct. 19
The annual Open Enrollment Benefit Fair will be held from 10 a.m. - 2 p.m. in the Student Center Ballroom. Retirement plan representatives, benefit providers and financial counselors will be on hand.

Oct. 20-21
A TIAA-CREF consultants will be on campus conducting individual counseling sessions and answering questions about financial matters. To schedule an appointment, call Michael Odom at 800-842-2005 or visit www.tiaa-cref.org/moc.

Classifieds

Appliances
GE Spacemaker ‘Over the Range’ black microwave oven. $50. E-mail belinda.harding@dev.gatech.edu or call 894-1622.

Automobiles
1974 VW Bug, 1600cc motor. Daily driver for past year. Extensive repairs and parts replacements. Needs body work, paint and minor repairs to complete. $2,700 OBO. E-mail hugh.denny@gtri.gatech.edu.

1991 Honda Accord EX. Excellent mechanical condition, 155k miles, sunroof, a/c, power windows, CD player w/MPS input, burgundy w/gray interior. $3,200 OBO. Call 404-277-5705 or e-mail joanie.chembars@coa.gatech.edu.

Furniture
Dining room set. Traditional light cherry wood. 6 chairs, table with leaf to expand, custom table pads, sideboard cabinet w/glass china cabinet, $500. E-mail tim.carroll@mgt.gatech.edu.

Girl’s bedroom furniture. Light colored pine. Professionally hand-painted light roses/flowers, $3,000 new, asking $1,250. Includes bunk bed w/ side rail & headboards, nightstand, corner dresser, w/open cabinet. E-mail tim.carroll@mgt.gatech.edu.

Six-piece entertainment unit from the Bonhlay Company. Cherry finish, mint condition. Pieces can work together or separately. A $2,800 value for $750. Call 404-444-6942.

REAL ESTATE/ROOMMATES
3BR/2.5BA family-ready house is available for lease. Located in pedestrian-friendly Oakhurst. For more information, call 770-849-2692 or visit www.showing247.com/132mead.

20BR/28A loft in Castleberry Hill, minutes from campus. Pool, rooftop deck, gated parking, and dog run. $2,224, 00. Call 404-688-8098, or e-mail jyn性强val@em.mnta.gatech.edu.

2BRs available in a brand new 3BR/3.5BA townhouse for rent, $550/month each. Midtown west. On MARTA bus line. No smoking or pets. Contact May at 408-876-7370 or e-mail mg225@mail.gatech.edu.

Sports/Fitness/Recreation
Weight bench with complete set of weights, free to a good home. E-mail dh16@mail.gatech.edu or call 404-444-8516.

1989 Sears Gamefisher fishing boat, 14-foot aluminum V-hull w/ 15 HP Evinrude engine, 2 swivel seats, trailer, $1,400. E-mail david.zurn@grti.gatech.edu.

Transfermer series exercise regimen. Brand new, includes step, 5 instructional DVDs, vitamins and results booklet. $56 OBO. For more information, see www.firmdirect.com. Call 305-2254.

Miscellaneous
Female Siberian Husky, 4 months old, free to good home. Alpha personality, likes adults, doesn’t care for children. Call 404-558-0654.

Philips 60-inch rear projection HDTV 1080i/480p. High-definition component video and RGB-HV inputs. Multipoint digital, virtual Dolby surround sound. Bought for $1,400, selling for $1,100. Extra warranty. E-mail pecan128@yahoo.com.

Music system consisting of control/power unit, receiver, remote control, dubbing tape deck, turntable and CD/AUX input. Two 100-watt speakers. $100. Will deliver to campus. E-mail Hugh.Denny@grti.gatech.edu.

Baby clothes for sale. Boys, mostly 18-24 mo. For pictures and prices, go to www.coa.gatech.edu/jc. E-mail j5382@mail.gatech.edu.

Truck bed tool box. Fits small Ford truck. Practically new and in excellent condition. Originally paid more than $200; sell for $100. Call Carol York at 894-8040.

Free yellow jacket nest removal, to be used for research at Georgia Tech. Call 301-6211 or e-mail mg225@mail.gatech.edu.