Tech seeks to maintain excellence in the face of dwindling state resources

Sarah Eby-Ebersole
Institute Communications and Public Affairs

During the past decade, Georgia Tech has gained recognition as one of the nation’s top ten public universities. Demand from in-state and out-of-state students has never been higher, and the Institute has never been more successful in attracting research funding and donor gifts to help support its quest for excellence and to leverage state dollars. Yet recent trends in state support are putting this dramatic progress at risk. A clearer focus on the issues of funding public education in Georgia is warranted, before irreparable harm is done to Georgia Tech and the University System of Georgia, which are key resources for the state’s well-being.

Demand and enrollment are growing...

The economic power of a college education is on the rise. Jobs requiring college degrees have been growing faster than the overall job growth, and college graduates earn more than high school graduates — $1 million more over the course of their careers. The gap is even wider for a technologically educated worker. Nearly 90 percent of the funds Tech receives from the state are designated for student instruction. Of this latest $8 million cut which Georgia Tech must now bear, 1,250 students.

In August 2004, Governor Sonny Perdue announced yet another cut — this time in the state budget for the 2005 fiscal year, which began in July. This latest reduction will be borne disproportionately by the University System of Georgia. Appropriations for the University System comprise 10 percent of the state budget, but the System must bear 38.6 percent of the cut.

Georgia Tech has sustained $45 million in cuts from its state funding — a 23 percent reduction. During this same period, Tech’s enrollment rose by 1,250 students.

State funding, which represented a third of Georgia Tech’s budget ten years ago, now comprises only a quarter. That decline may continue. The governor has indicated that in the future, the University System may not receive full funding of the enrollment-driven formula set in state law to determine System funding levels.

State funding is focused on student instruction

The primary purpose of the funding Tech receives from the state is to subsidize the cost of tuition, allowing Tech to offer low tuition rates to its in-state students. Nearly 90 percent of the funds Tech receives from the state are designated for student instruction. Of this latest $8 million cut which Georgia Tech must now bear, $7.3 million is a reduction in funds for education in the classrooms and labs.

2004 State of the Institute Address

President Wayne Clough will deliver the annual State of the Institute Address to faculty and staff on Oct. 14 at 3 p.m. in room 236 of the Global Learning and Conference Center at Technology Square.
President Bush taps Clough for science policy post

National Science Board members oversee the NSF and advise Congress

Sean Selman
Institute Communications and Public Affairs

President George W. Bush has nominated President Wayne Clough to serve as a member of the National Science Board. The 24-member board is a highly influential policy body established by Congress in 1950 to oversee the National Science Foundation (NSF) and provide advice to the president and Congress on critical issues related to science and engineering. The independent board usually meets six times a year.

President Bush’s nomination of Clough was announced Sept. 23. The U.S. Senate and NSF Director Arden Bement Jr. must still approve the nomination.

If appointed, Clough will be the second Georgia Tech president to serve on the board. The first was the late Joseph Pettit, who was on the board from 1976 until 1982. National Science Board members are selected on the basis of their distinguished service in science and engineering research and education. They also are chosen because of their roles as scientific, engineering and educational leaders throughout the nation.

In 2001, President Bush appointed Clough to the President’s Council of Advisors on Science and Technology (PCAST). If his latest nomination is approved, Clough will be the only individual to serve on both PCAST and the National Science Board. He currently chairs PCAST’s Nanotechnology Task Force, and he previously chaired its Federal Research and Development panel.

Among his other national posts, Clough is a member of the executive committee of the U.S. Council on Competitiveness, where he co-chairs the National Innovation Initiative. He also chairs The Engineer of 2020 Project for the National Academy of Engineering.

The chief task of the National Science Board is to oversee the NSF as it carries out its critical statutory responsibility: to maintain the health of the nation’s science and engineering enterprise by funding research in the basic sciences and engineering. The NSF also supports innovative education programs from kindergarten through graduate school, preparing future generations of scientists and engineers and contributing to a more scientifically literate workforce and society.

The National Science Board establishes NSF policies, identifies issues critical to the NSF’s future, approves the NSF’s strategic budget directions, approves annual budget submissions to the U.S. Office of Management and Budget, and approves new programs and major awards.

In advising the president and Congress on science policy, members of the National Science Board also initiate and conduct studies on a broad range of policy topics related to science and engineering research and education. The board then presents its results and makes important recommendations to the president, Congress and the general public.

If his appointment earns approval, Clough will be the second Georgia Tech connection among the National Science Board’s current membership. He will join fellow engineer John White Jr., who was on the faculty at Tech for 22 years but today is chancellor of the University of Arkansas.
Searching for a kinder, gentler chemotherapy

David Terraso
Institute Communications
and Public Affairs

Painful and damaging chemotherapy may one day be a thing of the past. Researchers at Georgia Tech and Purdue University have developed nano-sized particles that can target and trick cancer cells into absorbing them. Once inside, the particles may soon be able to deliver a pharmaceutical payload, killing the tumor from within and avoiding the destruction of healthy cells responsible for much of the damage caused by traditional chemotherapy. The research is published in a recent edition of the Journal of the American Chemical Society.

“We’ve developed a class of particles called core/shell nanogels that we can functionalize with a specific kind of chemistry that allows them to target cancer cells,” said Andrew Lyon, associate professor in the School of Chemistry and Biochemistry.

That specific kind of chemistry is folic acid. Cancer cells have more receptors for folic acid and absorb more of the nutrient than do healthy cells. In a process akin to hiding a dog’s heart-worm pill in a glob of peanut butter, researchers covered the surface of the nanogels with folic acid, disguising the particles as an essential nutrient. Once the cancer cells took the particles in, researchers increased the temperature of the cells, causing the particles to clump together and shrink, killing the cell. Heating the cell is a crucial step in triggering the particles to destroy cells, but it’s also a safeguard. Cancer cells have more folic acid receptors than normal cells, but normal cells could still absorb the nanoparticles. By applying a targeted heat source — such as ultrasound — to the tumor, doctors should be able to avoid killing healthy cells that happen to take in the nanoparticles.

“The possibility for using these nanoparticles as vehicles to target and kill only cancer cells is particularly exciting,” said Jean Chmielewski, professor of chemistry at Purdue University. “Decorating the exterior of the vehicle with folic acid is a very direct route to enter cancer cells. This type of an approach will bring cancer chemotherapy to a new level of treatment.”

Traditional chemotherapy, by contrast, can be described as a shotgun approach with the cellular poisons affecting tumors and healthy cells alike. Nausea, vomiting, hair loss, and a reduction in red blood cells are just some of the side effects that can occur with chemotherapy.

“If there’s a way to specifically target medicine to the site of disease,” Lyon said, “that makes this potential treatment all the more effective because then presumably you could use smaller doses and avoid the collateral damage that occurs during traditional chemotherapy.”

Now that they’ve gotten cancer cells to take in the nanoparticles, the next step is to see how they behave with a toxic payload. “In the lab right now we’re loading particles with anticancer agents and understanding the fundamentals of how the particles can encapsulate, how tightly they can hold onto them and how closely we can regulate the uptake and release,” said Lyon.

Even more vacant positions open. This is post by more than 60 percent. The Institute also laid off 70 staff and is holding another 185 vacant positions open in response to earlier cuts.

Absorbing the remainder of this most recent budget cut will probably result in laying off additional personnel and holding even more vacant positions open. This is a labor-intensive business. Studies prove time and again that a low student-to-faculty ratio is essential for a quality learning experience. Thus, the Institute’s layoffs will focus on staff rather than teaching faculty, so that the direct impact on educational programs will be minimized.

A continuing commitment to excellence

Georgia Tech’s experience is not unique. The financial landscape for higher education is a labor-intensive business. Studies prove time and again that a low student-to-faculty ratio is essential for a quality learning experience. Thus, the Institute’s layoffs will focus on staff rather than teaching faculty, so that the direct impact on educational programs will be minimized.

Packaging Research Center celebrates its 10th anniversary

Last month, the Packaging Research Center gathered with its industry, government and university partners at the Georgia Tech Hotel and Conference Center to celebrate its 10-year anniversary as a National Science Foundation (NSF) Engineering Research Center (ERC).

The day was spent discussing the local, national and international impact of the PRC’s educational and research programs, with a review of a decade of innovations and contributions in its major research areas, and a look forward to the vision for the next decade.

Lynn Preston, deputy division director for the NSF, reflected on the challenge her organization faced 20 years ago — to change the academic culture in engineering from its highly theoretical and scientific emphasis to one that would be more interdisciplinary, systemic and reflective of industry thinking and needs. She cited the leadership of PRC Director Rao Tummala in influencing this culture change, where cross-disciplinary teams of faculty and students have worked in collaboration with industry to transform research, education and technology.

Charles L. Liotta, vice provost for Research and dean of Graduate Studies, said, “The trajectory of where Georgia Tech is going has been significantly influenced by the PRC.”

More information about the Center is at www.prc.gatech.edu.

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Classifieds

Appliances
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28R/28A house in East Atlanta. Huge rooms, high ceilings, 4 fireplaces, hardwood floors, front porch and rear patio. Complete renovation: new kitchen, roof, HVAC, plumbing, exterior paint. $239,000. Call 404-964-3964.


Reduced 38R/28A home in Lithia Springs. 25 minutes to Tech. Motivated seller. 2-car garage, full basement, private back yard and screened porch. Pictures available. MLS #591775. $219,000. Call Glenda, 404-843-2500.

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