

Inside:

Consumer privacy online	2
Micro-CT imaging	3
In Brief	3
Campus Events	4

THE WHISTLE

FACULTY/STAFF NEWSPAPER

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THE GEORGIA INSTITUTE OF TECHNOLOGY

U.S. Constitution provides framework for debate on genetic engineering of humans

Jane Sanders
Research News

The U.S. Constitution may not provide direct answers to policy questions about the genetic engineering of human beings, but it does offer shared values that can help frame the debate about this developing technology, according to a Georgia Tech professor.

"One of the chief difficulties in understanding and addressing the policy and ethical issues surrounding genetic engineering of humans is the novelty of this technology," said Roberta Berry, an associate professor in the School of Public Policy. "We've never before had the opportunity to revise our biological constitution in this way. So it's difficult to find a framework for addressing this."

But the U.S. Constitution provides a set of values, or foundational norms, such as the promotion of welfare, science and the useful arts, the protection of liberty and equal protection, that are part of Americans' shared political heritage, Berry noted. Disagreement often arises about how

to understand and apply these norms in certain cases — embryonic stem cell research, for example — and debate ensues.

Berry discussed her ideas earlier this month, in a presentation at the annual meeting of the American Association for the Advancement of Science in Washington, D.C., during a session titled "Beginning and End-of-Life Technologies and Core Constitutional Values."

A widening conversation

Though genetic engineering of human beings may seem the stuff of science fiction, researchers have already created human artificial chromosomes to produce transgenic animals and to administer gene therapy to living humans. Nevertheless, the public policy debate about genetic engineering in humans is likely to intensify over the next 10 years, Berry predicted, expanding from familiar public policy questions of medical risk and benefit to enter the realm of novelty.

"We will face the fact that defining the benefits of this technology is value-laden," Berry said. "It won't be a simple matter to say, 'it's better to be taller rather than shorter' or 'it's better to have a strong memory than to be forgetful.' People will disagree about the relative importance of features and the deeper questions on human relationships — how we treat each other."

"Should we devote ourselves to conscious efforts to design people according to a superior set of criteria? What is a superior human being? We'll draw upon all sorts of past experience with eugenics, people with disabilities and various affiliations."

It is then she hopes that the public policy debate will center on constitutional norms.

"Genetic engineering of humans raises questions about general welfare, procreative liberty, the advancement of science and the useful arts, and when it's for our benefit and when it's no longer a benefit because it violates other values we hold dear,"

Debate continued, page 3



According to Public Policy Associate Professor Roberta Berry, the foundational norms of the Constitution make it an ideal reference point for considering the societal implications of genetic engineering.

Students get in the game



College of Architecture undergraduate Keith Dunbar participates in a college basketball video game tournament, sponsored by EA Sports, at the Campus Recreation Center. The game design company visited campus last week to film students and fans during the Georgia Tech-Duke basketball game, footage it will use in commercials and future editions of its "March Madness" video game.

Professor: science partnerships can play a key role in U.S.-Arab relations

David Terraso
Institute Communications
and Public Affairs

At the largest general scientific conference in the world, a Georgia Tech faculty member argued that research partnerships in science and technology are a crucial part of American efforts to build alliances with Arab nations and should receive increased financial support from the United States and oil-rich Arab governments. Regents' Professor Mostafa El-Sayed presented his case at the annual meeting of the American Association for the Advancement of Science (AAAS) in Washington, D.C., earlier this month.

"There is a lot of misunderstanding between the United States and Arab countries, based on differences in religion and ideology, but science is a language we all speak, and the advances it brings can help fuel the economies of countries like Egypt,

Jordan and Lebanon, which don't have the tremendous oil wealth that some of the other Arab countries have," explained El-Sayed, who also directs the Laser Dynamics Laboratory in the School of Chemistry and Biochemistry.

Likening the partnerships to a scientific version of the Peace Corps, El-Sayed reasoned that while this investment will not single-handedly reduce anti-American sentiment in the so-called "Arab street," the working partnerships it forms can help to foster an atmosphere of international trust and understanding throughout academia, which can have a trickle-down effect in other parts of society.

"We will never make them rich off these partnerships alone," explained El-Sayed. "But the level of communication that is necessary for a successful research partnership is a step towards getting people in Egypt and

Relations continued, page 2

QUOTE UNQUOTE

"We've documented the efficiency of these catalysts in breaking down TCE [trichloroethylene], and the next step is engineering a system that will allow us to get at the polluted groundwater."

—Joe Hughes, professor and chair of the School of Civil and Environmental Engineering, on research showing that gold and palladium are effective at breaking down an industrial solvent that has contaminated groundwater supplies and is linked to health concerns. A report on the research will appear next month in the journal *Environmental Science and Technology*.
(United Press International)

Study: companies should give online consumers more privacy

Brad Dixon
College of Management

To quell the privacy-invasion fears that are stunting the growth of e-commerce, Web marketers need to give consumers more control of the personal information collected about them, according to research by Naresh Malhotra, Regents' professor of marketing in the College of Management.

"Despite the enormous potential of e-commerce, its share of the total economy remains less than 1 percent worldwide," says Malhotra, lead researcher of a study recently published in the journal *Information Systems Research*. He cites a recent report showing that 94.5 percent of Americans worry about abuse of their personal information when they shop online.

Malhotra's study, which surveyed 742 households in one-on-one interviews, found that online consumers

want to be aware of and have direct control over their personal information that is stored in marketers' databases. "Consumers should be able to add, delete or modify at will any of their personal information," Malhotra says. "At the very least, companies should make sure their consumers can easily verify their information and know how it is being used."

Online marketers want as much personal information as possible in order to provide individualized service to customers, including details about shopping behavior, lifestyles and finances, he explains. For instance, airlines can e-mail people customized fare offers if they know their destination preferences.

"This mass customization increases the efficiency of marketing and the value that customers can derive as long as marketers don't misuse the personal information collected," Malhotra says.

Many e-commerce firms retain the

right to sell personal information to outside parties unless consumers specifically opt out. "Information should only be obtained from consumers in ways that don't violate any ethical or legal norms," Malhotra says. "Obtaining information without consent isn't appropriate."

Consumers are more willing to provide information voluntarily if online companies can engender a sense of trust, the study found. One way to do this is through the use of increasingly popular third-party "seal of approval" programs, such as the Better Business Bureau's BBBOnline, he says. Online vendors who want to participate in these programs must follow a set of standards concerning privacy and security.

In addition to examining the control and trust issues of online consumers, Malhotra's study established a new scale for researchers to use in measuring the depth of Internet users' information privacy concerns.

Communications groups receive peer recognition at regional conference

Georgia Tech communications groups won six awards in the 2005 Council for the Advancement and Support of Education (CASE) District III recognition program, held last week in downtown Atlanta. Half of the awards, which were announced at the organization's annual meeting in Atlanta, were for photography.

- For the second consecutive year, the Research News and Publications Office won the "grand award" in the "Media Relations Programs" category.
- An "award of excellence" was given to the Georgia Tech Alumni

Association in the "Photo Essay and Series" category for a photo series shot by Georgia Tech alumnus William "Bill" Goodhew III titled "Images of Adventure."

- An "award of excellence" was given to the Research News and Publications Office for Research Horizons magazine, Georgia Tech's official research magazine.
- A "special merit award" was given to the Georgia Tech Alumni Association for Tech Topics, the quarterly tabloid publication for alumni.
- A "special merit award" was given to Institute Communications and Public

Affairs for the online photo galleries the department provides to the campus Web site.

- A "special merit award" was given to the Research News and Publications Office for a photo shot by freelancer Gary Meek of the "All-in-One" dental tool being developed in the Georgia Tech Research Institute.

CASE is the professional organization for professionals who work in alumni relations, communications and development for more than 3,000 colleges and universities nationwide. District III represents nine states in the Southeast.

Georgia Tech



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Relations, cont'd from page 1

other Arab countries to see
Americans as partners."

Egypt should be the centerpiece of any American effort in this area, he said, because it maintains good relations with both the United States and the rest of the Arab world. It also has the most to gain from scientific cooperation, since technological investment is poised to contribute more to the growth of its economy than oil. But even oil-rich countries should support these efforts, he argues, for the economic stability they can help bring to the region.

"Stability is in everyone's interest," said El-Sayed. "Advancements in science and technology have the potential to be stabilizing factors in the Arab economies and that has the potential to bring stability to both the streets and the region."

The U.S. Agency for International Development currently provides \$3 million in support of Egyptian science, said El-Sayed. Half of this money is given to the Egyptian Academy of Scientific Research to support Egyptian professors; the other half goes to the U.S. Department of State and the Egyptian Embassy to support American professors working abroad.

The National Science Foundation also provides funds for research — about \$1 million annually — for the entire Arab world.

"One potential solution for new funds is for the U.S. to encourage wealthier Arab nations to contribute money to the effort, while the U.S. could contribute matching funds," explained El-Sayed. "This would be an inexpensive way to make our good intentions known to our Arab friends, recover our influence in the region and regain their trust."



Regents' Professor Mostafa El-Sayed, believes that fostering scientific partnerships between the United States and Arab countries will engender a sense of trust that could affect regional stability.

Imaging technique to help improve bone grafts

Megan McRaney
Institute Communications
and Public Affairs

Tissue engineers can choose from a wide range of living cells, biomaterials and proteins to repair a bone defect. But finding the optimum combination requires improved methods for tracking the healing process.

New Georgia Tech research points to better ways to heal and regenerate bones using micro-computed tomography (micro-CT) imaging — a process 1 million times more detailed than a traditional CT scan. The new technique simultaneously looks at both vascularization (the process by which blood vessels invade body tissues during repair) and mineralization (the process by which mineral crystals form to harden regenerating bone) by collecting three-dimensional (3-D) images in vitro and in vivo.

Researchers used the new technique to help develop bone graft substitutes that combine the availability and structural integrity of bone allografts — bone grafts taken from a human donor — with the better healing properties of bone autografts, or bone grafts taken from the patient.

Unlike a traditional X-ray that only shows the presence of bone in two dimensions, the new micro-CT technique provides high-resolution 3-D images of vascularization and mineralization during bone repair. Although not yet available clinically, these techniques give researchers an unprecedented depth of data on how a bone implant is integrating into the body.

The project is headed by Robert Guldberg, a research director at the Georgia Tech/Emory Center for the Engineering of Living Tissues and an associate professor in the School of Mechanical Engineering.

"We're applying 3-D imaging techniques to quantify vascularization and mineralization in order to evaluate which of these tissue engineering approaches is going to be able to best and most quickly restore bone function," Guldberg said. "We've always known that vascularization is very important to bone repair, but we've never really had a good method to measure the process."

Guldberg's team has used micro-CT imaging to study fracture healing and repair of large bone defects that can result from the removal of bone tumors or crushing injuries. Large bone defects



A micro-CT image provides a detailed look at both the vascularization and mineralization of a bone sample.

are typically repaired with allografts because large structural pieces are available from human donors.

But allografts are processed to avoid transmitting any diseases from the donor to the patient, leaving the bone sterile but dead. Allografts therefore lack living cells that could help the implants better integrate with existing bone. Consequently, they don't heal as well as autografts, and can break again in 30 percent of patients within a year.

Autograft bone integrates much better, but large amounts of bone are needed to repair a site. They are often too large to remove elsewhere in the patient's body and cause substantial additional pain.

Georgia Tech's micro-CT imaging facility has been used to study tissue engineering approaches to enhance or replace the use of bone grafts clinically. Guldberg and his collaborators, for example, have explored various strategies to revitalize dead allograft bone. Wrapping allografts with biomaterials containing living marrow cells, or delivering bioactive genes has resulted in significantly accelerated repair and integration of allograft implants.

In addition to studying bone regeneration, the ability to look at detailed 3-D images of vascular networks can shed light on research into vascular injuries, disc degeneration in the back, and help pinpoint areas of increased vascularization, which often indicate tumor growth.

For more information...

Georgia Tech/Emory Center for the Engineering of Living Tissues
www.gtec.gatech.edu

Debate, cont'd from page 1

Berry explained. "We will figure it out over time and over our shared history together. Then we'll have a shared framework for a policy debate. It will shine light on this novel and complex problem and tell us what we should be debating."

Policymakers are likely to debate the question of whether genetic engineering promotes or harms the welfare of future children and the public at large, Berry said.

"Genetic engineering will be the focal point of disagreement about whether parents, if they are permitted to engineer their children, will be exercising their rights to raise their children as they see fit, or will be engaged in child abuse or inappropriate efforts to control rather than educate their children — thus requiring the intervention of the government to protect and promote the welfare of these future children," she explained.

Life, liberty and the pursuit of ...

The Constitution calls for the advancement of science, technology and the "useful" arts —

activities generally supported by both governmental and non-governmental programs, Berry noted.

"But controversy has arisen about whether other values — in particular, the safety of human subjects and the sanctity of human life — have been given short shrift in the push to make scientific and technological breakthroughs," she added. "Genetic engineering will be one focal point of debate about this interface between science, technology and society because it will force consideration of the value and meaning of human life itself."

Debate over genetic engineering of humans will be ongoing for future generations. "This issue won't go away," Berry said. "We'll have to deal with whether or how it's used and refined. We need to make a first tentative step now toward coping with this issue because the prospect of this technology is so imminent."

She is hopeful the debate will be open and reflective. "I'd like to see a wide variety of people thinking about this to arrive at a resolution," Berry said. "I don't want this debate to evolve into isolated encampments in which people hold their own views and won't listen to others."

IN BRIEF:

Seeking teachers for GT 1000

The Office of Success Programs is seeking volunteers to teach a section of GT 1000, a freshmen seminar helping new students adjust to college life.

Assistant Director of Success Programs Paddy Kennington says, "Every fall, new students arrive on campus with many questions, high hopes for success and lots to learn. This course helps to introduce them to campus culture, as well as the resources and opportunities we have here."

Instructors must hold a master's degree, have been employed at Tech for at least one year, and have their supervisor's support.

For more information, visit www.successprograms.gatech.edu or e-mail pk46@mail.gatech.edu.

Scholarships offered for children of graduate students

The preschool at Peachtree Road United Methodist Church is offering two scholarships for their early childhood program. These scholarships are for full tuition for three- to five-year old-children of Georgia Tech graduate students.

Information as well as applications about the preschool at Peachtree Road United Methodist Church is available in the Office of the Dean of Students, and applicants are invited to stop by the school to learn more about their facility and program.

Applications are due by April 22, and applicants are required to take a tour of the facility. Call Judy Askew at 404-240-8204 for an appointment and to get directions.

Employee discounts

The Council for State Personnel Administration is currently offering discounts for the Atlanta Hawks, Champions on Ice, Harlem Globetrotters, Georgia Force, Stone Mountain Park and Universal Studios for state and University System employees.

Visit www.gms.state.ga.us/employee/promotional.asp or www.cspa.state.ga.us/promotions.asp to view discount details and to print order forms. Details for ordering tickets differ, so refer to the ordering instructions on each order form.

Teach an Options class

Options — the Georgia Tech Student Center Programs Council's non-credit class program — is accepting applications from individuals interested in teaching an enrichment course. Anyone with a unique skill is invited to teach an Options class in a fun, informal setting. Options instructor applications are available at www.fun.gatech.edu/committees/options and are due by March 15. Call Cara Skeat at 894-2805 for more information.

CAMPUS EVENTS

Arts & Culture

Mar. 3

The School of Literature, Communication and Culture’s Poetry at Tech series continues as Professor Thomas Lux introduces C.K. Williams and Adam Zagajewski, at 7 p.m. in the LeCraw Auditorium. For more information, visit www.iac.gatech.edu/poetry.html.

Mar. 9

The Ferst Center for the Arts welcomes the Mozart Festival Opera for an 8 p.m. performance of “The Marriage of Figaro.” For tickets, call 894-9600.

Mar. 11-12

The Ferst Center welcomes Cirque Eloize for two 8 p.m. performances of its “Rain” program. For tickets, call 894-9600.

Brown Bags/Conferences/Lectures

Mar. 2

In cooperation with the Georgia Electronic Design Center, the Center for Research on Embedded Systems and Technology welcomes Ivo Bolsens, chief technology officer for Xilinx, on “A New Era in FPGA Design,” at 11 a.m. in the TSRB Auditorium. For more information, e-mail mooney@ece.gatech.edu.

Mar. 9

The College of Management’s IMPACT Speaker Series welcomes Bernie Marcus, founder of The Home Depot, at 4:30 p.m. in the LeCraw Auditorium.

Mar. 9

The School of Psychology’s spring colloquium series welcomes Jeffrey Schall, professor of neuroscience at Vanderbilt University, on “Neural Selection and Control of Visual Guided Eye Movements,” at 3 p.m. in the J.S. Coon Building.

Mar. 9

The Architecture Program welcomes Mahadev Raman, principal and building sector leader for Ove Arup and Partners Consulting Engineering, on “An American Perspective on Sustainability,” at 5 p.m. in the College of Architecture auditorium.

Mar. 10

The School of Mechanical Engineering’s Woodruff Colloquia series features Gareth McKinley, director of the Hatsopoulos Microfluids Laboratory at MIT, on “Elasto-Capillary Thinning and the Breakup of Complex Fluids,” at 11 a.m. in the MARC Auditorium.

Mar. 11

The Program in Cognitive Science Colloquium features David Kirsh, professor of cognitive science at the University of California, San Diego, on “Routines, Cost Structure and the Design of Environments,” at noon in room 114, MARC.

Faculty/Staff Development

Mar. 3

The Office of Information Technology gives an overview of Georgia Tech’s information security efforts for the layman in both business process and technical terms at 9 a.m. in room 242, Rich

Building. To register, visit www.trainsweb.gatech.edu/mastcal.asp.

Mar. 9

The Office of Sponsored Programs offers a brown bag session on Facilities and Administrative (F&A) costs with Associate Vice Provost for Research Jilda Garton and Director of Grants and Contracts Accounting Chuck Duffy, in the seminar room of the Research Administration Building. To reserve a seat, call 894-6944.

Mar. 18

The Center for the Enhancement of Teaching and Learning’s faculty development seminar series presents “Mindmapping the Classroom,” from 11 a.m. - 1 p.m. in the Library’s Wilby Room. For more information, visit www.cetl.gatech.edu.

Miscellaneous

Mar. 9

The Office of Human Resources hosts a pre-retirement meeting on Social Security and Georgia Tech benefits, from 1:30 - 4:30 p.m. in room 117, Student Services Building. For more information, visit www.ohr.gatech.edu. To register, visit www.trainsweb.gatech.edu/mastcal.asp.

Mar. 21-25

Spring break.

E-mail events to editor@icpa.gatech.edu. Submissions within two weeks of the scheduled date will be listed as space allows.

CLASSIFIEDS

AUTOMOBILES

1988 Volvo 240 GL wagon. White w/ tan leather interior. 210K miles. Runs well, body and engine in great shape. \$1,800 OBO. Call 404-806-6096.

1991 Honda Prelude Si. 5-speed, sun-roof, red, AM/FM/CD, 142K miles, good condition. \$2900 OBO. Call 404-295-3008 or e-mail shella.keilholz@bme.gatech.edu.

1992 Honda Civic hatchback, rebuilt engine and transmission and more. 5-speed. Good gas mileage. Good work car. \$2,000. Call 404-323-4371.

2000 Toyota Corolla VE sedan 4D. Teal, good condition, regular maintenance, 60K miles. E-mail ccosgrove@eas.gatech.edu or call 385-4566.

2003 Jeep Liberty Sport, silver, sun-roof, CD player, power windows and locks, tinted windows, 40K miles, \$17,500. Call 678-725-6093 or e-mail tina.crouch@ece.gatech.edu.

FURNITURE

Girl’s white wicker bedroom set. Excellent condition: 2 dressers, desk, chair, twin headboard, shelf. Paid \$750. Sell for \$300. Call 894-3325.

3-piece entertainment center, white-washed pine finish, lighted glass

shelves, holds up to 32-inch TV and other components. \$400 OBO. Pictures available. E-mail debbie.winn@gttri.gatech.edu.

Wooden captain bunk bed. Has two beds with built-in chest of drawers and built-in desk. Ladder to top unit. Less than one year old. Paid over \$900, sell for \$300. Call 894-5675.

Four bar stools. High back, padded seat and lumbar. Full swivel. Mint condition. \$80 each OBO. Call Phyllis at 385-1109.

REAL ESTATE/ROOMMATES

3BR/2.5BA house located in Durham, NC near neighboring universities and RTP. Large fenced-in yard in very peaceful neighborhood. Spacious, screened-in deck. Priced around \$134,900 for sale or \$1,200/month. Call Marc 404-964-9928.

Immaculate 2BR/2BA condo, 1.5 miles from Tech. Furnished/unfurnished. \$1,250/month. Call 404-873-5158 or e-mail markballam@aol.com.

Completely updated 3BR/1BA brick ranch on quiet street in West End. Renovated. Attached carport/portico and front yard with picket fence. Quick commute to Midtown. \$169,900. Call 404-502-8393.

3BR/2BA house for sale in Smyrna/Vinings. 20 minutes to Tech. Spacious brick ranch. Hardwood under carpet. 3-year-old Trane HVAC system. \$179,000. E-mail sandra.bullock@oit.gatech.edu or call 770-843-4758.

3BR/2BA brick ranch on 1/2 acre, deck, wood floors, garage. Located in Smyrna, \$149,000. Call John at 404-771-2067 or e-mail john.doane@gttri.gatech.edu.

4BR/2.5 BA house for rent. Inside I-285, three miles from Lenox Square. \$2,000/month. Call Tanya at 404-816-6113.

Roommate wanted for 1BR/1BA in Midtown, next to Fox Theater, \$410/month and 1/2 utilities. Call 404-275-3897.

2BR/2.5BA townhome for sale in Cross Creek, 12 min from GT. New appliances, plantation shutters, built-in bookshelves, patio. Swim/tennis/golf community. \$169,800. Call 404-210-8038.

SPORTS/FITNESS/RECREATION

Air hockey table by Harvard. Just over a year old and in great condition. Measures 67” x 32.5” with electronic scorer, \$50. Photos by request. Call 770-928-7344 or e-mail rita.brown@edi.gatech.edu.

Tuff Stuff Muscle 3 all-in-one gym. Top of the line. Like new, kept in finished basement. Paid \$1,200, reduced to \$250 OBO. Call 894-8392 or e-mail bob.lang@police.gatech.edu.

MISCELLANEOUS

1999 Starcraft Stardust pop-up camper. Used fewer than 10 times. Sleeps eight. Excellent Condition. \$4,000. Call 770-528-7069 or e-mail al.vineyard@gttri.gatech.edu.

Four 20-inch Helo rims and Nitto 255/50/R20 tires. Asking \$1,200. Call 678-525-3191 or e-mail pcfreak@gmail.com.

Gently used Bedside CoSleeper. Cream-colored. \$75. E-mail joanie.chembars@coa.gatech.edu.

1999 Play-mor Deluxe camper. 38-foot fifth wheel model, self-contained with water and waste tanks. \$29,500 OBO. E-mail t.banks@mse.gatech.edu or call 894-6763.

The classifieds are a free service provided to members of the faculty and staff. To submit an ad, e-mail the text to editor@icpa.gatech.edu. Due to the volume of submissions, it may take several weeks for ads to appear in print.