

# Georgia Tech Administrative Retreat

President G. Wayne Clough



Callaway Gardens

August 28, 2005

# Year in Review

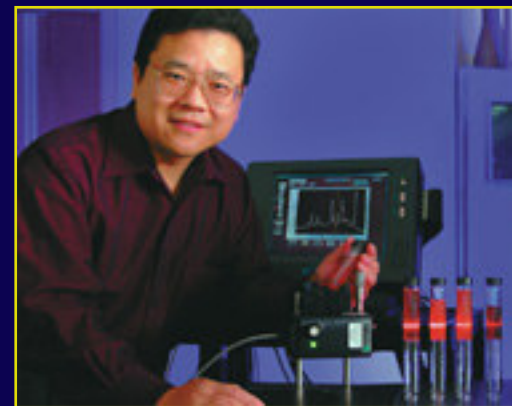


National leader in  
graduating African  
American engineers.

Going global:  
Programs and  
partnerships expand.



Campus Rec  
Center and  
Technology  
Square win  
awards.



Nanomedicine research takes off.

# Incoming freshman class

- 4.5% increase in apps
- 73% applied online
- Average SAT of 1340
- IAC up 50%
- 2,465 deposits:

- ▷ 61% in state

- ▷ 3% international

- ▷ 29% women

- ▷ 6.5% African American

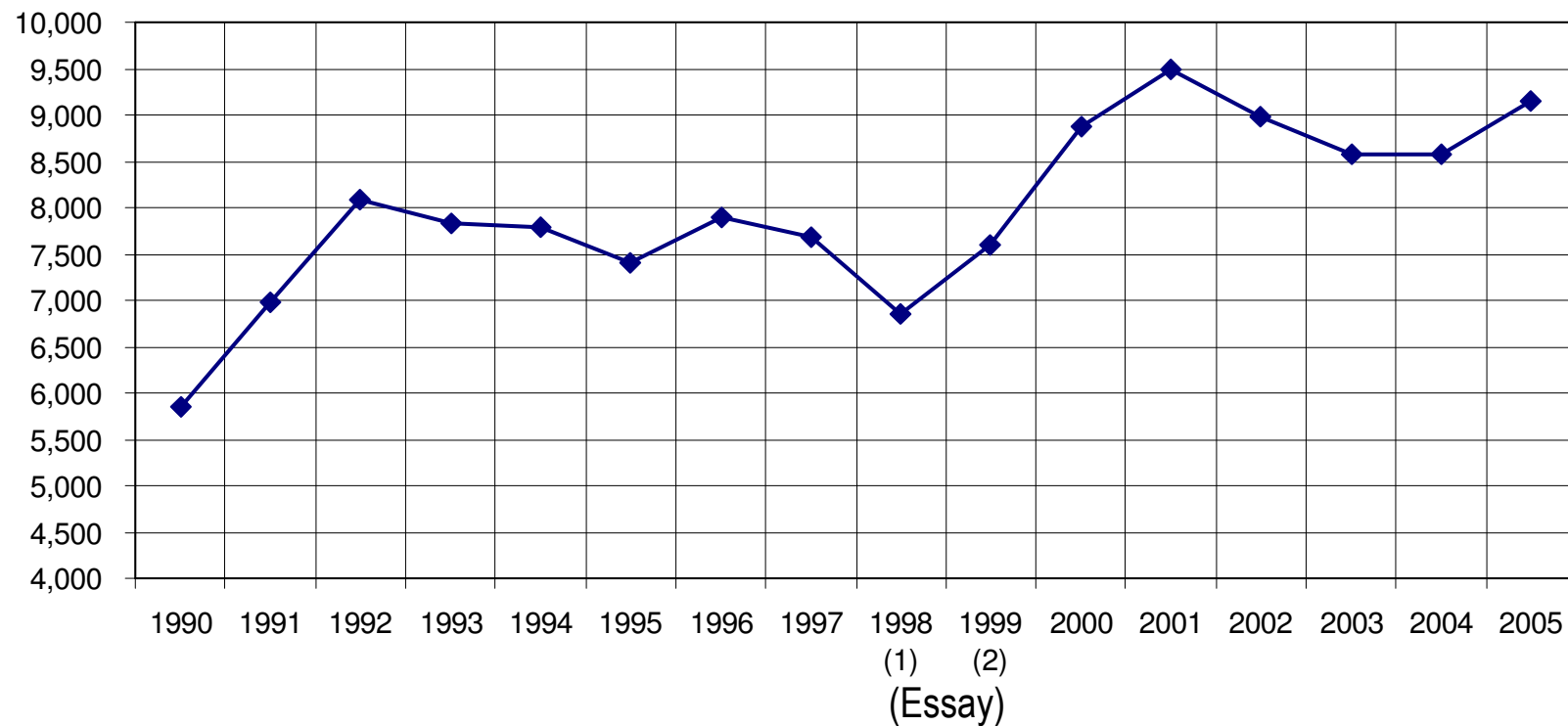
- ▷ 4.5% Hispanic



IAC recruits

# Trend line for applications

Georgia Institute of Technology  
Freshman Applications  
Fall 1990-Fall 2005





# Students honored



Jeremy Farris heads for  
Oxford as Tech's 2<sup>nd</sup>  
Rhodes Scholar in 3 years.



Goldwater Scholar Ambika  
Bumb wins a Marshall  
Scholarship to pursue a  
Ph.D. at Oxford.

Goldwater Scholar  
John Parrish  
continues undergrad  
studies at Tech.



Gates Scholar  
Anthony Hylick will  
pursue a Ph.D. at  
Cambridge.

# Strong rankings hold

CHOOSING A SCHOOL

GEORGIA TECH

E  
A

BY ALEX KINGSBURY

Szymon Swiatun likes his video games to be realistic. But he says most video game creators "cheat" by not showing colliding objects as dented and deformed. Presenting his senior project at a symposium for undergraduate computing research, he tries to explain the problem. "There are lots of computer games, but none of them model impact using actual physics," he says, launching into a detailed explanation of how his program works. Swiatun then taps a key on his computer. Three-dimensional colored blocks that had been rotating lazily on the screen pause and then smash into each other, fracturing in a shower of digital fragments. Look to see similarly accurate collisions in the next generation of video games: Swiatun, a computer science major, has parlayed his project into a postgraduation job with leading video game maker Electronic Arts. "It'll be a sweet job," he says, "and I was doing this stuff in my spare time anyway."

The distance seems vast between Swiatun's physics on a computer screen and the factory-based engineering jobs that the first graduates of the Georgia Institute of Technology were educated to fill. When the school opened its doors 120 years ago, it was more trade school than university, the kind of place that long required every graduate to be able to construct a working electric motor. But even then, the school had an ethos of innovation. That hasn't changed. "No generation of Tech students has ever been educated for their parents' jobs," says President Wayne Clough.

The brothers of Phi Kappa Psi may fly rivalry with the University of Georgia by its side, but Georgia Tech's sign from their fraternity's school's real academic rivals are top set Ensony and Duke. After all, the university aerospace, civil, industrial, and mechanical rank among the best, luring recruits from I.T.I., Hewlett-Packard, and Exxon Mobil. "I've brought students and a young faculty with me," says Assistant Prof. David Starmer, one of the top engineering experts in the field of "wearable computers." And since the creation of the HEPF scholar covers tuition at in-state public universities, kids who graduate with at least a B average, they have gotten even better. Each year, incoming freshmen has jumped more than 100 point school has the nation's second-highest percentage of Merit scholars among public institutions; percent of Tech's students come from the Peach State, these kids are serious about their studies—they'll

In a classroom DESIGNED FOR PROBLEM SOLVING, biomedical engineering students cover the floor-to-ceiling white boards with notes as they wrestle with an ethical issue.

HOPF scholar

EXCLUSIVE RANKINGS OF OVER 1,400 SCHOOLS

#1 BESTSELLER

U.S. NEWS & WORLD REPORT

2006 EDITION

America's Best COLLEGES

Getting In—the Latest Tips Targeting the Right Schools How to Find the Money

BONUS! PULLOUT PLANNER & CALENDAR

www.usnews.com

year, forcing it to ration newly constructed lab space. "We are in the middle of a very difficult period," says a major growing pains," says of learning sciences research if it's not the only new program to keep up with technological additions include nanotechnology group, which is re-evaluating, a student of Starnate a potentially revolutionary. "I'm going to add my own money—needed great answers now. The paper says it's a big step forward."

BY THE NUMBERS

Georgia Institute of Technology	
Location:	Atlanta
Undergrad enrollment:	11,546;
72% male, 28% female	
Tuition, 2005-06:	\$4,628; out of state, \$18,990
Room and board:	\$6,150
Scholarship aid:	\$26,790
Graduate enrollment:	12,500-14,300
Acceptance rate:	70%

That's true for every aspect of life at Tech. Look closely at the kids coming out in front of Bobby Dodd Stadium on Technwood Drive, waiting in line for the next day's football game. The sports fans (and at Tech, with its winning teams in basketball, baseball, and football) have set up their lawn chairs and coolers, of course, but how are they killing time? In true Tech fashion, they've rigged a network of laptops for some off-the-shelf computer gaming.

ing card of the undergrad, but Georgia Tech doesn't completely fit the stereotype. For one thing, there are girls at this school. The university awarded more engineering B.A.'s to women than any other school in 2003-2004, and the engineering faculty has the second-largest number of tenure-track female professors in the country. Granted, 71 percent of the 11,546 undergraduates are male, but that number is inching down as more women are attracted by programs like biomedical engineering.

Tech has also expanded the idea of what a technical education is by beefing up its offerings beyond science and engineering. "Engineers shouldn't just be geeks; they should be people who understand how technology works and how technology is used in the real world," says Clough. To that end, in 1989, Tech created the Ivan Allen College, a liberal arts division with a techie twist. History majors take classes in the School of History, Technology, and Society, while English majors attend the School of Literature, Communication, and Culture. Students have a different outlook as well. They bring a very logical approach to studying historical issues, while others might be focused on the individual personalities involved," says teaching assistant Alexandra Pajak. And classes in the college are increasingly popular. Says Andrew Staibler, an aerospace engineering student who signed up for courses in literature, "The more I got into the technical stuff, the more I wanted to balance the equation with liberal arts classes."

Last year, he edited the literary magazine. "Students here want to use their right brain," says Thomas Lux, the school's first poet in residence. "Some of them are starving for it." Some have even switched their majors. Jeremy Parra came to Georgia Tech determined to study biology, math, and computer science. But after a study-abroad trip to Argentina, he changed his major to international affairs. While it's not an obvious field for a Tech student, Parra—who won a Rhodes scholarship to study political philosophy at Oxford University this fall—is pleased with his education: "Tech students think about everything in terms of the scientific method, and that can be very useful when applied to subjects that are non-scientific."

And since the creation of the HEPF scholar covers tuition at in-state public universities, kids who graduate with at least a B average, they have gotten even better. Each year, incoming freshmen has jumped more than 100 point school has the nation's second-highest percentage of Merit scholars among public institutions; percent of Tech's students come from the Peach State, these kids are serious about their studies—they'll

34 AMERICA'S BEST COLLEGES

AMERICA'S BEST COLLEGES 35

- No. 9 among public universities (+1)
- No. 37 among all universities (+4)
- 5 engineering programs rank among the top 5 of their specialty.
- Co-op program featured among “Academic Programs to Look For.”

# Faculty achievements recognized

## PECASE Awards



Ali Adibi, ECE  
William King, ME  
David Anderson,  
ECE

## Sloan Research Fellows

Alex Kuzmich, physics  
Todd Streelman, bio  
Marcus Weck,  
chem & biochem





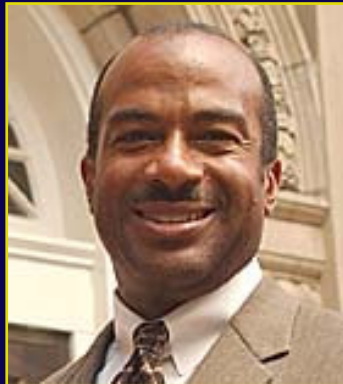


Mei-Yin Chou,  
Physics



Chip White, ISyE

## New chairs



Gary May, ECE



Sam Nunn:  
Benjamin  
Franklin  
Award

## *Atlanta Woman Magazine* Top 10 Inventors

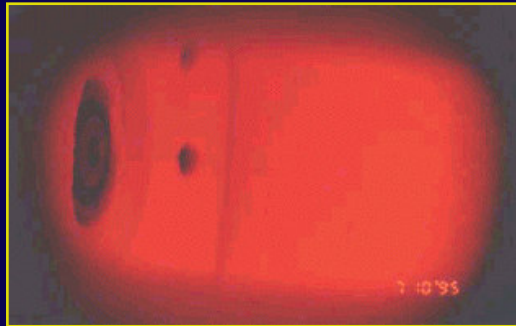


Barbara Boyan, BME  
Beth Mynatt, computing

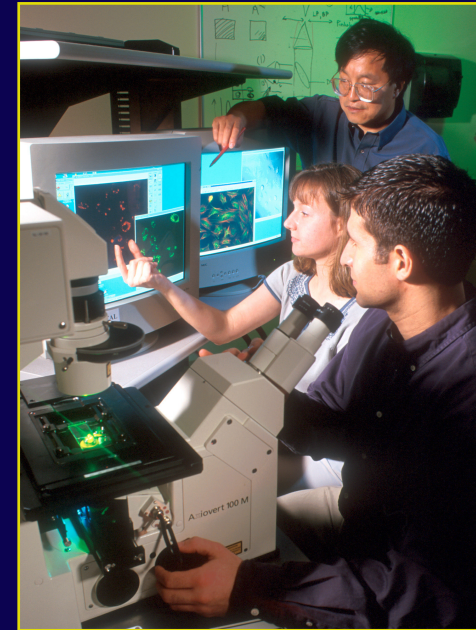


# Research

## Flameless combustion



Analyzing the formation of cardiovascular plaque at the molecular level.



Aug 17 ribbon-cutting for Samsung RFIC Design Center at the Technology Square Research Building.



# Athletes excel



Chaunte Howard won 3<sup>rd</sup> straight indoor NCAA high jump title; sets new Tech record.



Women's tennis team 2005 ACC champs; in NCAA Sweet 16 for first time ever.



Baseball team captured ACC title, hosted NCAA regional.



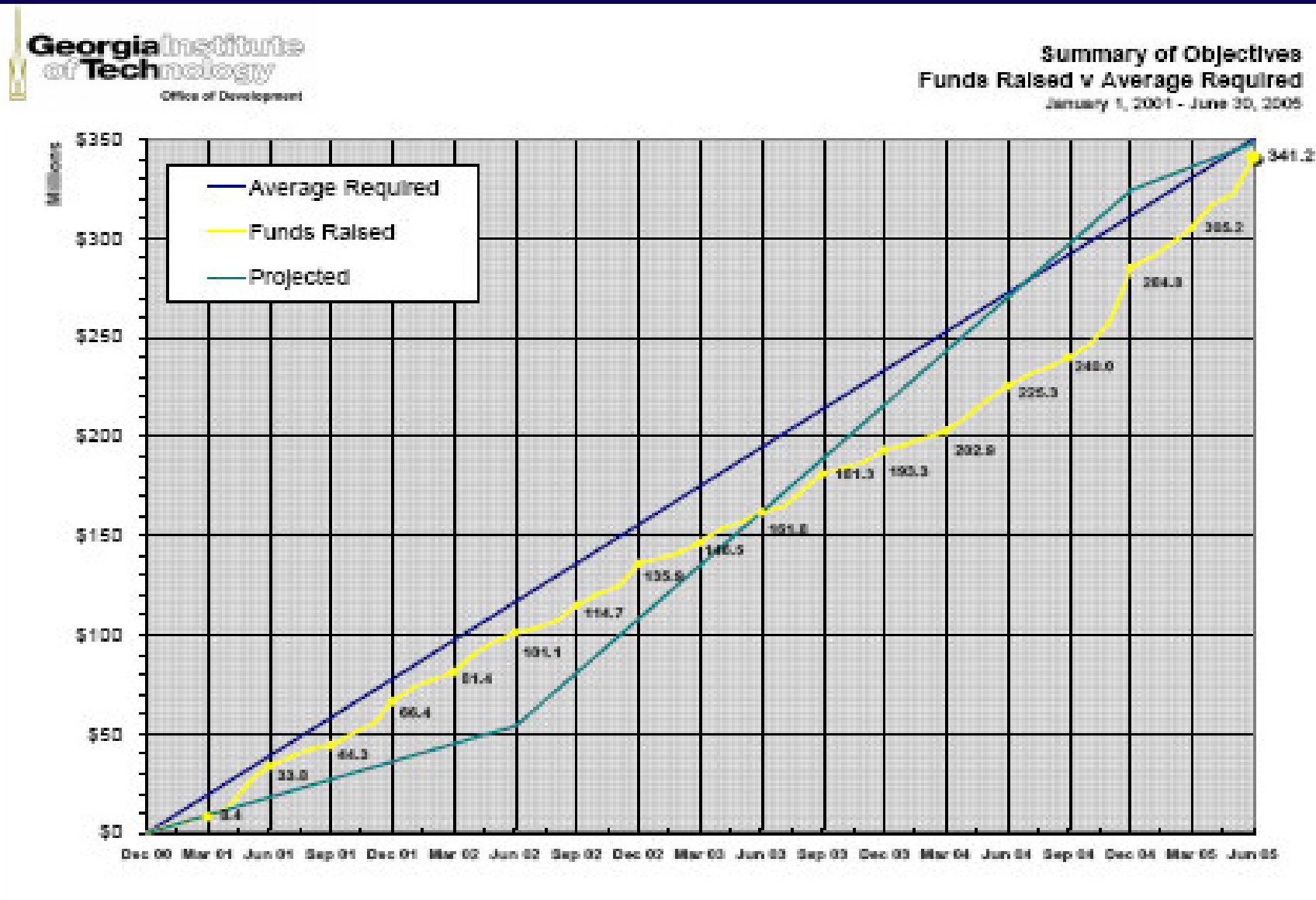
Golf team finished #2 nationally; 4<sup>th</sup> top-5 finish in 5 years. Named No. 1 program in nation by *Golf Digest*.



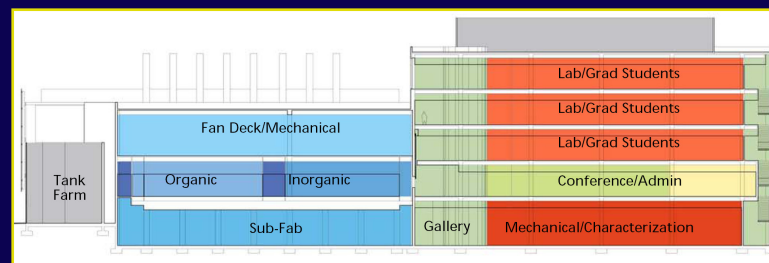
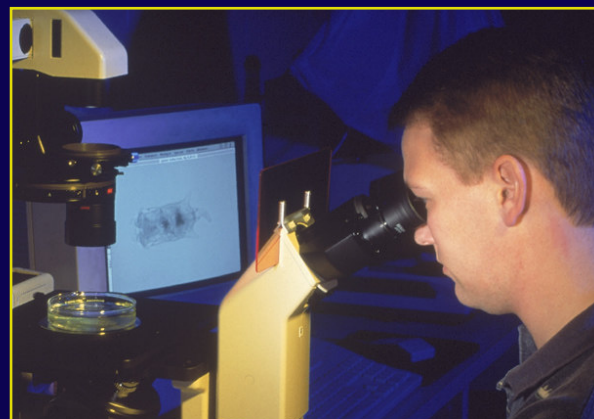
# Athletes also excel academically

- Recipients of ACC postgraduate scholarships:
  - ▷ Volleyball All American Jayme Gergen
  - ▷ Football standout Nate Curry
  - ▷ ACC track champion Zeb Sion
  - ▷ Honorable mention: All American golfer Nicholas Thompson
- Six Tech teams earned perfect scores in the new NCAA Academic Progress Rate Report.

# Strong fundraising between campaigns



# Looking ahead...



# ... to the coming year and beyond.

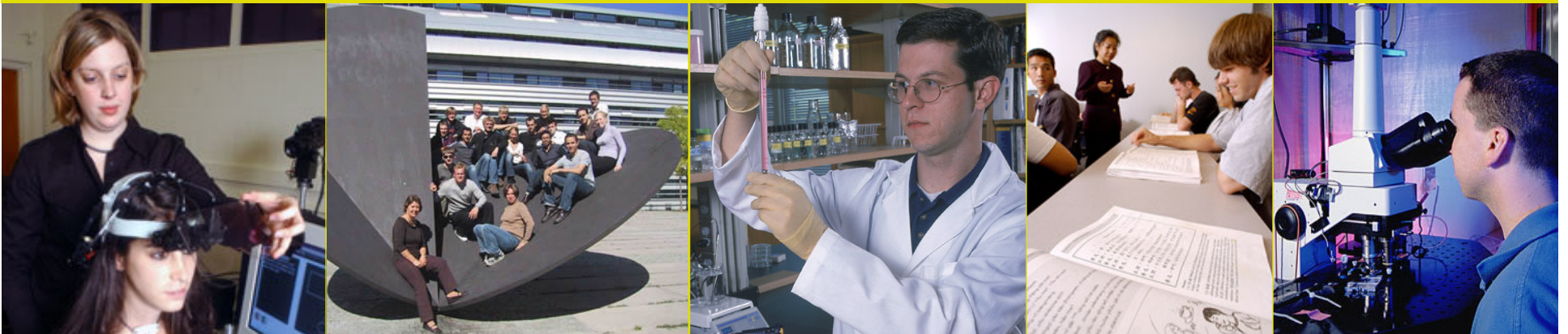
# Extending our international reach

- Expanding partnerships in China
- Undergrad semester abroad in Singapore
- International degree designation allows students to integrate an international focus into their program of study.
- GTRI preparing final proposal for applied research program in Ireland.



# Expanding academic programs

- Interdisciplinary degrees:
  - ▷ International economics and modern language
  - ▷ International affairs and modern language
  - ▷ Digital media
- Research degree designation for undergrads





# Emerging new research thrusts



Energy



Health  
systems



Preventive  
medicine





# New facilities coming online

Swann Building



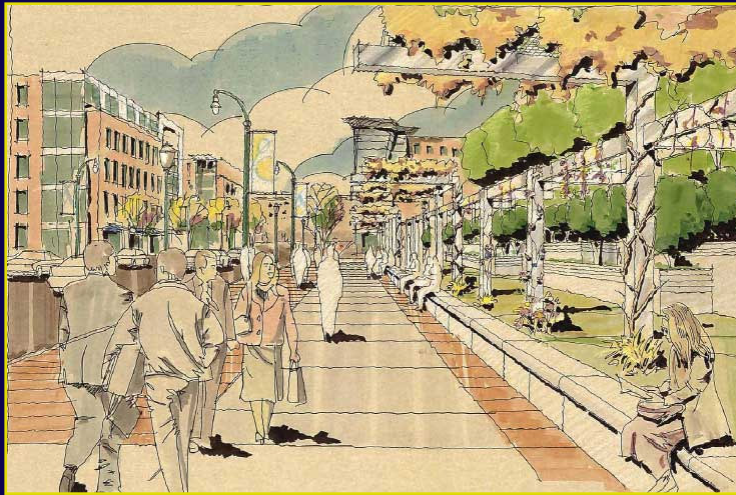
Klaus Advanced Computing Building



Molecular Science & Engineering Building



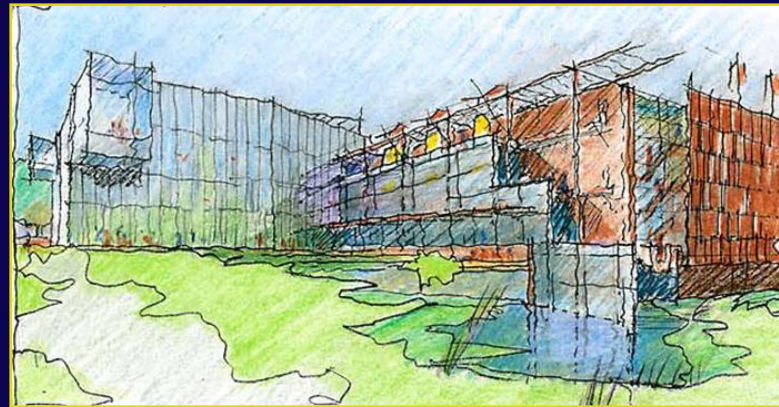
# Campus gateway takes shape



Fifth Street

# Nanotechnology Research Center

- 188,000 gross sq ft facility.
- 30,000 sq ft of cleanroom space.
- Nation's first cleanroom facility to be deliberately designed to serve nanomedicine, biotechnology.
- Three “cleanest” classes of labs (10, 100, 1000).
- Flexible configuration will meet differing research needs.



# Coming soon...

## Undergraduate Learning Center:

Integrated classrooms, labs, team meeting space for introductory science courses; Information Commons; hub for academic support and educational innovation.



## Bio Z Building: 250,000 gsf facility for interdisciplinary research and education in:

- Fundamentals of biological systems
- Measurements and devices
- Complexity of biological processes
- Large-scale phenomena



# Technology Enterprise Park



# Billion-dollar campaigns now under way

Univ of Virginia	\$3.0 billion
Univ Michigan	\$2.5 billion
Illinois	\$2.5 billion
NYU	\$2.5 billion
UCLA	\$2.4 billion
MIT	\$2.0 billion
Johns Hopkins	\$2.0 billion
Washington	\$2.0 billion
Univ Chicago	\$2.0 billion
Univ N Carolina	\$1.8 billion
Purdue	\$1.5 billion
Wisconsin	\$1.5 billion

Cal Tech	\$1.5 billion
UC San Fran	\$1.4 billion
Vanderbilt	\$1.25 billion
Michigan State	\$1.2 billion
RPI	\$1.0 billion
Stanford	\$1.0 billion
Texas A&M	\$1.0 billion
Univ Arizona	\$1.0 billion
UC San Diego	\$1.0 billion
Univ Iowa	\$1.0 billion
Univ Miami	\$1.0 billion
Pittsburgh	\$1.0 billion

■ In Georgia Tech's peer set



# Preparing for Campaign 2010

- Goal: \$1 billion
- Quiet phase now underway.
- Planning and decision making on campaign components in process.
- Initial start-up going well.

# State/Board of Regents



- Election-year considerations
- “Big bang” idea
- Budget situation improved
- Commission for a New Georgia recommendations
- New Chancellor



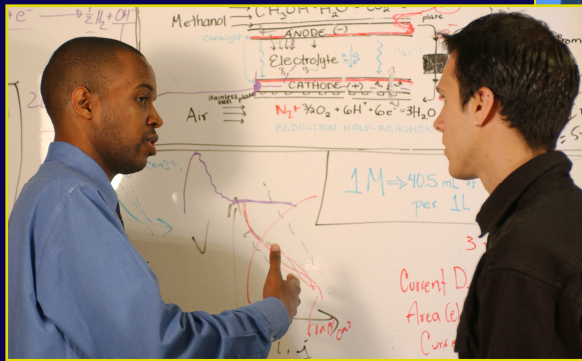
Board of Regents of the University System of Georgia  
*"Creating A More Educated Georgia"*

# Tech's economic impact

- Huron study commissioned
- 12 major corporate sponsors
- Looking 10 years back, then looking forward
- Identifying constraints that hamper Tech's efforts
- Making recommendations



Yes, you work here...



... but how much do you really know about Georgia Tech?

# Pop quiz

1. Of the 16 states in the southeast, where does Georgia rank in terms of in-state tuition? 16th
2. Which southern state is projected to be among the five fastest growing states in college-bound population? Georgia
3. How many states have two universities ranked among the nation's top 20 public universities? CA, VA, GA, PA
4. What did the state appropriate to build major capital facilities for the University System over the past 3 years?  
A) \$400 m   B) \$300 m   C) \$200 m   D) Less than \$200 m

## Pop quiz, continued

5. Which two of the 34 institutions in the University System of Georgia experienced the largest numerical growth during the past 5 years?      Georgia Tech, Kennesaw
6. How much of Georgia Tech's budget comes from the state?  
A) 75%    B) 50%    C) 25%    D) None of these
7. How much of Georgia Tech's capital construction is funded by the state of Georgia?  
A) 75%    B) 50%    C) 25%    D) Less than 20%
8. How many Georgia universities have federal research expenditures in the nation's top 30?      One: Emory



# Top 10 universities in federal research

- |                  |                  |
|------------------|------------------|
| 1. Johns Hopkins | 8. Wisconsin     |
| 2. Washington    | 9. Columbia      |
| 3. Michigan      | 10. U Colorado   |
| 4. Stanford      | <hr/>            |
| 5. UCLA          | 13. MIT          |
| 6. U Penn        | 29. Emory        |
| 7. UC San Diego  | 36. Georgia Tech |

# Top 10 universities in federal research

- |                    |                 |
|--------------------|-----------------|
| 1. Johns Hopkins   | 6. UCLA         |
| 2. Washington      | 7. U Penn       |
| 3. Michigan        | 8. UC San Diego |
| 4. Stanford        | 9. Wisconsin    |
| 5. Emory + Ga Tech | 10. Columbia    |

## Pop quiz, continued

9. Name Georgia's top 3 patent producers last year.

GE Energy, BellSouth, Georgia Tech

10. How many campuses does Georgia Tech have? Four

11. How many acres comprise Tech's Atlanta campus?

A) 335

B) 380

C) 420

D) 480

12. What are the highest ranked science programs in the state?

#32 in chemistry, #32 in physics – Georgia Tech

13. How many Nobel Prize winners are on the faculties of Georgia's research universities? Zero

## Pop quiz, continued

14. About how many faculty does Georgia Tech have?  
A) 800      B) 850      C) 900      D) 950
15. How many of them were hired within the past 10 years?  
A) 10%      B) 28%      C) 42%      D) 54%
16. How many Tech faculty are members of the National Academy of Engineering? A) 14      B) 25  
C) 37      D) 53
17. How many Tech faculty are members of the National Academy of Sciences? A) 2      B) 5      C) 8      D) 12



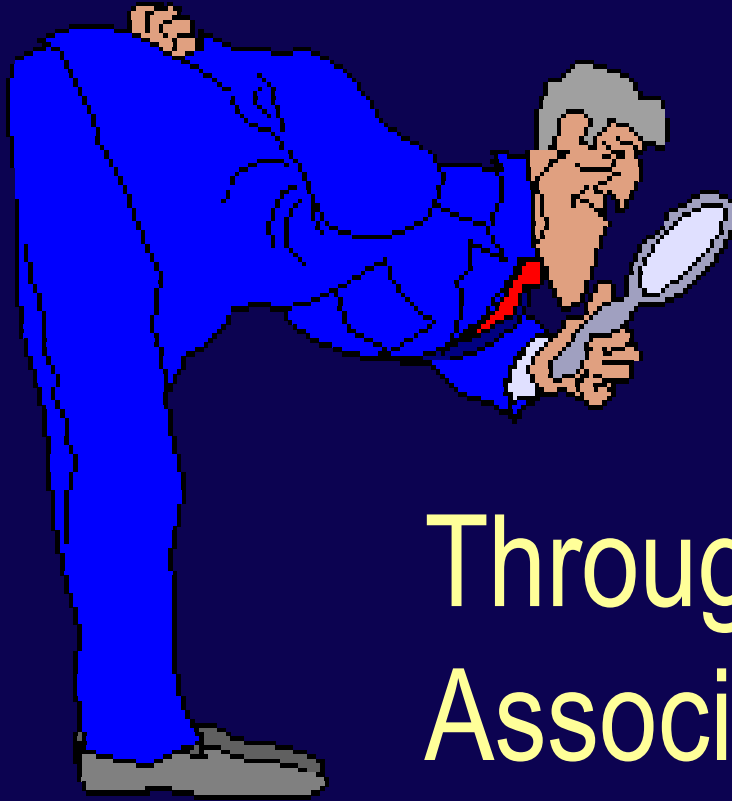
## Pop quiz, continued

18. Where does Georgia Tech rank nationally in the number of NSF CAREER Award winners?  
A) No. 1    **B) No. 2**    C) No. 4    D) No. 8
19. What is Tech's retention rate for first-year students?  
A) 85%    B) 89%    **C) 92%**    D) 94%
20. How many of our students graduate within 6 years?  
A) 60%    B) 69%    C) 72%    **D) 76%**
21. What is the total value of Georgia Tech's endowments?  
A) \$900 m    **B) \$1.16 b**    C) \$1.20 b    D) \$1.47 b

## Pop quiz, continued

22. How do we rank compared to other public universities in per student endowment value? **A) No. 5**    B) No. 9  
C) No. 14    D) No. 19

BONUS: In which two sports does Georgia Tech hold current national championships?    **men's lightweight four crew**  
**sky diving**



# Georgia Tech

Through the lens of the  
Association of  
American Universities

# What is the AAU?

- 62 member universities:
  - ▷ 34 public; 26 private, 2 Canadian
  - ▷ 37 (62%) have medical schools
  - ▷ 43 (72%) have a total to moderate life science focus
  - ▷ 3 (5%) have a strong to moderate engineering focus
- Membership by invitation based on:
  - ▷ Performance according to Membership Indicators
  - ▷ Institution's mission, characteristics, trajectory
  - ▷ Three-fourths vote of member universities



# Federal research expenditures

(FY 2003)

➤ 41 of the top 50 universities are AAU members.

➤ 9 non-members in order:

12 UC San Francisco

18 Baylor College of Medicine

26 Univ of Ala Birmingham

35 Boston University

**36 Georgia Tech**

42 Univ of Cincinnati

44 UTexas SW Medical Ctr

47 Univ of Illinois, Chicago

49 Ore Health & Sci Univ

## National Academy memberships

➤ 44 of the top 50 universities are AAU members.

➤ 6 non-members in order:

10 UC San Francisco

22 Rockefeller Univ

**34 Georgia Tech**

35 UTexas SW Medical Ctr

38 Scripps Research Inst

43 Univ of Utah

## Faculty awards, memberships

- 27 awards, fellowships, memberships considered; heavily skewed to arts and humanities.
- Georgia Tech generally does not either win or track these awards.
- To our knowledge, GT faculty have only ever won:

Humbolt Fellowship	McArthur Award
Fulbright Award	Guggenheim Memorial
NEH Fellowship	Sloan Fellowship

## *Membership Indicators*

# Journal citations

<u>Institution*</u>	<u>1998-2002</u>
UC Berkeley	172,719
MIT	147,665
Cal Tech	111,997
Case Western Reserve	68,497
Maryland	56,877
Texas A&M	56,877
Purdue	45,510
Carnegie Mellon	29,423
<b>Georgia Tech</b>	<b>21,079</b>

\* AAU members with a similar profile to Georgia Tech.



## Citations by discipline

- Of 24 disciplinary categories:
  - ▷ GT is in the 75-90 percentile in engineering, computer science, materials science, and mathematics.
  - ▷ GT is in the 25-75 percentile in chemistry, ecology/environment, geosciences, education, physics, and multi-disciplinary.
  - ▷ In the remaining 14 categories, GT is in the bottom quartile.

## Ph.D. degrees awarded

- Georgia Tech ranks 62<sup>nd</sup> nationally.
- 46 of the 62 AAU universities award more Ph.D. degrees than Georgia Tech.
- 15 other non-AAU institutions award more Ph.D. degrees than Georgia Tech.

## Postdoctoral appointments

- Georgia Tech only recently began consistently tracking and reporting our post-docs, and we have historically been assigned zeroes when we were actually not reporting data.
- We also have several years of under-reporting.
- For fall of 2003, our actual number of post-docs would have placed us 100<sup>th</sup> in the nation.

## Undergraduate education

- 42 of 51 institutions on *US News*' recent list of the top 50 universities are AAU members.

- 9 non-members include:

9 Dartmouth College

18 Notre Dame

23 Georgetown Univ

27 Tufts Univ

27 Wake Forest

31 William & Mary

32 Lehigh Univ

**37 Georgia Tech**

45 Yeshiva Univ





# Princeton Review

- “Are your instructors good teachers?”

Georgia Tech ranked 358 out of 361 institutions, ahead of Cal Tech, Stevens, New Jersey.

- “How much of your overall class time is devoted to discussion as opposed to lectures?”

Georgia Tech ranked 361 out of 361 institutions.

# Our young alumni respond

(2004 Survey of '98-'01 graduates)

- Quality of instruction from faculty:
  - ▷ 92% satisfied, very satisfied or extremely satisfied relative to faculty in their major.
  - ▷ 90% satisfied, very satisfied or extremely satisfied relative to faculty in their college.
- Overall satisfaction:
  - ▷ 92% felt prepared to practice professionally.
  - ▷ 91% felt prepared to contribute to their discipline.
  - ▷ 88% felt prepared to contribute to society.

# But we still have room to improve

- 65% were satisfied with academic advisement.
- 47% were satisfied with career planning help.
- 47% were satisfied with internship experience.
- 75% felt they understood the impact of their profession on society.
- 70% felt they could practice their discipline in other cultural settings.
- 58% felt they understood the environmental impact of their discipline.
- 53% felt they had business and finance knowledge they could apply.

So, what does it mean to be the  
institution that defines the  
technological research university  
of the 21<sup>st</sup> century?