



GEORGIA

Sciences & Life Sciences Achievement

STUDENT ACHIEVEMENT

NAEP Grade 8	GA	U.S. Avg.	State Rank
Science Average, 2005	143.9	147.1	34
Science, 2005 (% at or above "proficient")	25.4%	27.3%	28
Life Sciences Average, 2005	144.7	148.2	34

ACT	GA	U.S. Avg.	State Rank
Science Average, 2008	20.3	20.8	41
Biology, 2008 (% of students ready for college level)	23%	28%	40

AP	GA	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	50.7%	55.4%	35
Science Exams, 2008 (Exams as % of all H.S. grads)	12.7%	10.5%	9
Biology Scores, 2008 (% with a score of 3 or higher)	43.7%	49.8%	37
Biology Exams, 2008 (Exams as % of all H.S. grads)	5.2%	4.6%	14

SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT	GA	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	73%	77%	31
Science Teachers Certified, 2006 (% , Grades 7–8)	61%	N/A%	19
Biology Teachers Certified, 2006 (% , Grades 9–12)	92%	88%	17

Note: NAEP = National Assessment of Educational Progress, AP = Advanced Placement
N/A = Data not available.

Key Organization(s) Promoting Bioscience Education

Georgia Bio (GaBio) has undertaken a strategic initiative in education and workforce development that has included providing training for teachers and administrators in biotechnology instruction, helping to develop biotech-related curricula at the middle and high school levels and connecting scientists with

GA STATE SCIENCE STANDARDS & REQUIREMENTS

STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **2006**
- Next scheduled update: **2010**
- Research scientists provided input in developing standards
- Science standards do not specifically mention applied laboratory or other tools for biotechnology or biosciences

BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

Biology is required for graduation as of the 2008–2009 class



teachers and students to enhance career awareness.

Georgia Bioscience Technology Institute, a partnership of Athens and Gwinnett Technical Colleges, offers Biotechnology Summer Academies that provide training in biotechnology equipment and techniques for middle and secondary school teachers. They manage an equipment loan program, sending kits throughout the state, and provide outreach scientists to visit classrooms to assist in labs and provide demonstrations.

NESPAL, located on the **Tifton Campus of the University of Georgia (UGA)**, provides Summer Biotechnology Workshops designed to update middle and high school teachers on genomics and biotechnology and to train teachers how to conduct DNA-related classroom activities. It also loans equipment kits to teachers to use during the academic year and offers Biotechnology Internships during the summer to teachers in partnership with the GIFT program at Georgia Tech.

Examples of Bioscience Education Activities

Teacher Preparation and Professional Development

GaBio has received funding from the Governor's Office of Workforce Development (GOWD) to provide a combination of support to teachers in 13 counties, known as the Innovation Crescent, to launch biotechnology career pathways linking high school programs to 2- and 4-year institutions. The funding, which flows to teachers, includes professional development to incorporate biotechnology tasks and career information into existing middle and high school science curricula, and training and equipment to implement high school biotechnology courses in 10 schools in

four counties next year. Hands-on activities have been developed and extensive training of teachers is being conducted to prepare teachers to launch a new biotechnology course developed by the state and approved in 2008. Nine schools will begin offering the class in 2009; another three are expected to do so in 2010. Since 2007, the GaBio initiative has provided \$678,000 to enhance bioscience professional development, equipment, and career pathways in the state. GOWD recently awarded additional funds to the Valdosta region to implement bioscience career pathways.

Multiple Georgia universities offer programs to prepare biology majors to become teachers. These include the following:

- Kennesaw State University (KSU) offers a B.S. in Biology Education and an M.A. in Teaching aimed at attracting biology majors.
- Georgia Tech Student and Teacher Enhancement Partnership (STEP) Program teams science graduate students with classroom teachers to expose them to the teaching field.
- UGA and Augusta State University offer dual degree programs that confer a bachelor's degree in biology and a teaching certificate.
- UGA Project FOCUS places undergraduates in classrooms to encourage them to enter teaching.
- Georgia State University (GSU), in partnership with Atlanta Public Schools, has an Advanced Academy for Future Teachers to expose high school students to science, technology, engineering, and mathematics (STEM) teaching fields.
- GSU will begin offering a Bachelor of Science in Education degree in middle childhood education focused on science education in the fall of 2009.



The **Center for Behavioral Neuroscience** (multiple universities) offers a Teacher Professional Development Workshop to improve neuroscience literacy and teaching methods for metro Atlanta high school educators.

Additional universities that provide professional development for biology teachers include the following:

- Emory University Center for Science Education
- Fort Valley State University Center for Biotechnology
- GSU
- UGA
- Georgia Tech
- Morehouse School of Medicine
- University of West Georgia
- Skidaway Institute of Oceanography, a unit of the University System of Georgia
- Georgia Southern University Molecular Biology Initiative.

Georgia has a number of programs that provide avenues for obtaining teacher certification:

- The **Georgia Teacher Alternative Preparation Program** (Georgia TAPP) is a classroom-based program for individuals that have the basic qualifications to teach at the P-12 level but have not completed a teacher preparation program.
- The University System of Georgia offers an **online Master in Teaching degree** that can provide certification in math, biology, chemistry, physics, and/or earth/space sciences. The degree became available in January 2009.
- Multiple universities offer M.A. in Teaching for existing B.S. bioscience degree-holders.

- Post-baccalaureate certification programs in biology are offered at various institutions.

Georgia Intern Fellowships for Teachers (GIFT), a program of Georgia Tech's Center for Education Integrating Science, Mathematics, and Computing (CEISMC), offers paid 4- to 7-week company internships for science, math, and technology teachers. GIFT places teachers in 70 to 100 positions annually, many of which are in biosciences.

GaBio has partnered with five school districts to provide hands-on opportunities for teachers through lab training and development and training on hands-on activities aligned with current science curricula and standards.

Experiential Learning and Outreach

GaBio holds an annual **Life Science Workforce Forum**, which brings together educators, employers, and economic developers to discuss needs and best practices in preparing students for the bioscience workplace.

U.S. Centers for Disease Control and Prevention has an extensive education outreach program.

The **Georgia Statewide Area Health Education Centers Network**, a partnership coordinated between the Medical College of Georgia and Mercer University School of Medicine, works with elementary, middle, and high school youth to expose them to careers in health care.

The following programs provide outreach to underserved populations in Georgia:

- Fort Valley State University Center for Biotechnology
- Morehouse School of Medicine's Benjamin Carson Science Academy, which seeks to interest minority students in science, health, math, and communications skills
- UGA Young Dawgs Program





- Peach State Louis Stokes Alliance for Minority Participation Scholars Program
- Medical College of Georgia Summer Educational Enrichment Program

Additional programs offered by:

- Emory University
- Clark Atlanta University
- UGA
- Spelman College
- Atlanta Metropolitan College
- University of West Georgia
- Georgia Tech.

Numerous institutions in Georgia provide experiential learning activities in the biosciences, including the following:

- GaBio
- Biotechnology Institute
- U.S. Centers for Disease Control and Prevention
- Fernbank Science Center
- Georgia Tech (multiple programs including Institute for Bioengineering and Bioscience and CEISMC)
- GSU (multiple programs, including Center for Behavioral Neuroscience)
- UGA STARS (Students & Teachers Applying Real-Life Science) Program
- UGA Tifton Campus
- Georgia Statewide Area Health Education Centers Network
- Yerkes National Primate Research Center
- Emory University

- Morehouse School of Medicine
- Southern Polytechnic State University
- Georgia Youth Science and Technology Centers
- Gwinnett Environmental and Heritage Center
- Sapelo Island National Estuarine Research Reserve
- University of West Georgia
- Spelman College
- Georgia Department of Education
- Zoo Atlanta
- Georgia Aquarium
- Georgia Science Olympiad.

GSU's **Bio-Bus** is a 30-foot-long mobile lab that can accommodate up to 15 students at a time.

GaBio will launch a comprehensive bioscience education Web site in the spring of 2009.

Bioscience-focused Schools and Programs

Walton Career Academy is a publicly funded charter school serving grades 10–12 with the mission of ensuring a viable 21st century workforce. The 3-year-old school has received state funding to develop a life science wing that will house a full-time Health Care Education program and a Life Science/Biotechnology program, beginning in fall 2009.

Georgia has numerous magnet schools with a bioscience focus.



Basic Skills Achievement and Other Summary Metrics

STUDENT ACHIEVEMENT

NAEP Grade 8	GA	U.S. Avg.	State Rank
Math Average, 2007	274.8	280.2	39
Math, 2007 (% at or above "proficient")	24.7%	31.0%	39
Reading Average, 2007	258.7	261.0	38
Reading, 2007 (% at or above "proficient")	25.6%	29.2%	38
Writing Average, 2007	153.5	154.3	27
Writing, 2007 (% at or above "proficient")	29.2%	30.6%	27

ACT	GA	U.S. Avg.	State Rank
Percentage of Graduates Tested	38%	43%	28
Math Average, 2008	20.6	21.0	37
Reading Average, 2008	20.9	21.4	41
English Average, 2008	20.1	20.6	42

SAT	GA	U.S. Avg.	State Rank
Percentage of Graduates Tested	69%	48%	13
Math Average, 2008	493	515	49
Critical Reading Average, 2008	491	502	45
Writing Average, 2008	482	494	41

AP	GA	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	62.8%	65.2%	32
Math Exams, 2008 (Exams as % of all H.S. grads)	9.7%	8.7%	12
English Scores, 2008 (% with a score of 3 or higher)	57.0%	59.2%	36
English Exams, 2008 (Exams as % of all H.S. grads)	22.5%	18.9%	10

SUMMARY STATE EDUCATION METRICS

Selected Indicators	GA	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	62.4%	73.4%	48
Student/Teacher Ratio, 2006–07	14.3	15.5	22*
Low-income Students, 2006–07 (% of all students)	50.3%	41.6%	–
Expenditure per Student (\$), 2005–06	\$8,595	\$9,154	29

Note: NAEP = National Assessment of Educational Progress, AP = Advanced Placement
N/A = Data not available. * Lowest value receives highest ranking.

TABLE SOURCE NOTES:

NAEP Assessments, grade 8: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES), National Assessment of Educational Progress (NAEP), 2005; **ACT Exam:** ACT, Inc., 2008; **SAT Reasoning Test:** The College Board, 2008.

Advanced Placement (AP): Battelle analysis of data from the College Board, 2008; AP test takers as a share of high school graduates includes graduate data from U.S. Department of Education, NCES for both public (Common Core of Data) and private high schools (Private School Survey).

Science Teacher Indicators: Council of Chief State School Officers (CCSSO) analysis of State Departments of Education data on public schools, 2007; U.S. Department of Education, NCES Schools and Staffing Survey, 2003–04 as reported by CCSSO, 2007.

Summary State Education Metrics: U.S. Department of Education, National Center for Education Statistics (NCES), Common Core of Data (CCD) on public elementary and secondary education.

Note: High school graduation rates are averaged freshman graduation rates—the rate is the number of graduates divided by the estimated count of freshmen 4 years earlier. U.S. figure for share of students eligible for free or reduced-price school lunch ("low-income" students) is available for 2005–06 only (state data are for 2006–07).

