



# ILLINOIS

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

| NAEP Grade 8                               | IL    | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Science Average, 2005                      | 147.7 | 147.1     | 25         |
| Science, 2005 (% at or above "proficient") | 27.5% | 27.3%     | 25         |
| Life Sciences Average, 2005                | 149.2 | 148.2     | 25         |

| ACT   | IL   | U.S. Avg. | State Rank |
|---|------|-----------|------------|
| Science Average, 2008                                 | 20.5 | 20.8      | 36         |
| Biology, 2008 (% of students ready for college level) | 27%  | 28%       | 34         |

| AP   | IL    | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Science Scores, 2008 (% with a score of 3 or higher) | 64.2% | 55.4%     | 6          |
| Science Exams, 2008 (Exams as % of all H.S. grads)   | 10.1% | 10.5%     | 18         |
| Biology Scores, 2008 (% with a score of 3 or higher) | 57.1% | 49.8%     | 9          |
| Biology Exams, 2008 (Exams as % of all H.S. grads)   | 3.9%  | 4.6%      | 25         |

### SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT

|  | IL  | U.S. Avg. | State Rank |
|--|-----|-----------|------------|
| Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12) | 85% | 77%       | 6          |
| Science Teachers Certified, 2006 (% , Grades 7–8)                        | 70% | N/A%      | 16         |
| Biology Teachers Certified, 2006 (% , Grades 9–12)                       | 79% | 88%       | 25         |

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

## Key Organization(s) Promoting Bioscience Education

**iBIO Institute**, an affiliate of iBIO, was created specifically to expand on the educational activities previously undertaken by iBIO, including in the K-12 realm. The iBIO Institute sponsors the Science Career Investigation (SCI) Web site, which should be available in the first half of 2009.

## IL STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **2005**
- Next scheduled update: **2009**
- Research scientists provided input in development of standards

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

Biology is not specified in science requirements

79.1% of 6th through 9th graders and 51.2% of 10th through 12th graders met "proficient" level under No Child Left Behind (NCLB) Adequate Yearly Progress test



## Examples of Bioscience Education Activities

### Teacher Preparation and Professional Development

iBIO Institute has provided **professional development and small materials grants** to teachers to assist in implementation of biotech activities. Among iBIO board member companies also supporting professional development are Abbott Laboratories, Astellas Pharma US, Baxter International, and Takeda Pharmaceuticals North America.

In 2008 the state created the **Illinois Innovation Talent (ILIT) Program**, which connects private-sector partners including iBIO and other industry associations with 23 Illinois high schools to create problem-based curricula through which students work as teams alongside industry, government, and community experts to solve real-world problems. Professional development for teachers is provided by the **Illinois Mathematics and Science Academy (IMSA)**, a “teaching and learning laboratory” created by the State of Illinois in 1985.

The **High School Transformation Project**, funded by the Bill and Melinda Gates Foundation to bring new science curricula (among other core subjects) to Chicago Public Schools (CPS), draws support for curriculum and professional development from math and science education centers at the Illinois Institute of Technology, University of Illinois at Chicago, Loyola University, and Northwestern University. CPS also maintains a **Chicago Math and Science Initiative** that directs teachers to various professional-development options.

In 2008, Baxter International donated \$5 million to CPS for **SCIENCE@WORK: Expanding Minds with Real-World Science**. The project

will support development of a Biotechnology Center of Excellence at Lindblom Math and Science Academy (below); launch of two new schools through the Renaissance 2020 charter school program; and Illinois Institute of Technology’s (IIT’s) teacher professional development programs in biotechnology, which are targeted to reach 450 teachers and 75,000 students with newly trained teachers, new materials, and curricula.

Sixteen Illinois institutions offer **alternative teacher certification programs** for individuals with a bachelor’s degree and related work experience, including in biology.

The Illinois Biotechnology Education Initiative of the Biotechnology Institute has identified teacher leaders in the CPS system and has connected them with iBIO members to begin developing a biotechnology education program statewide.

### Experiential Learning and Outreach

Supported by the Abbott Fund, the “**science37**” **program** within the After School Matters consortium connects teens with bioscientists at Abbott and other sites, through a series of after-school activities and apprenticeships.

IMSA offers a **Student Inquiry and Research Program**, through which students conduct research with master scholars and scientists at more than 100 institutions including Argonne National Laboratory, the Field Museum, and the Loyola Medical Center.

IMSA also offers the **Summer Enrichment for Academics in Mathematics and Science program**, a residential program targeted at underrepresented minority students entering 9th grade.

**Northwestern University’s Office of Science, Technology, Engineering and Math Education**



**Partnerships** support researchers at Northwestern in integrating K-12 educational components into their federally funded projects.

Roosevelt University offers a **Summer Biotech Institute** for high school juniors and seniors, in partnership with Xomix and the state Department of Commerce and Economic Opportunity.

Supported by the Motorola Foundation, DePaul University's **Inquiry-Based Science and Technology Enrichment Program** specifically targets urban 7th-grade female students.

### **Bioscience-focused Schools and Programs**

Lindblom Math and Science Academy will obtain a **Biotechnology Center of Excellence** through the Baxter grant noted above.

IIT cosponsors a charter school, the **IIT Math and Science Academy**.

The **Chicago Mathematics and Science Academy** is another STEM-focused charter school.





## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

| NAEP Grade 8                               | IL    | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Math Average, 2007                         | 280.5 | 280.2     | 32         |
| Math, 2007 (% at or above "proficient")    | 30.8% | 31.0%     | 31         |
| Reading Average, 2007                      | 262.8 | 261.0     | 28         |
| Reading, 2007 (% at or above "proficient") | 29.8% | 29.2%     | 29         |
| Writing Average, 2007                      | 159.9 | 154.3     | 8          |
| Writing, 2007 (% at or above "proficient") | 37.2% | 30.6%     | 8          |

| ACT                            | IL   | U.S. Avg. | State Rank |
|--------------------------------|------|-----------|------------|
| Percentage of Graduates Tested | 98%  | 43%       | 3          |
| Math Average, 2008             | 20.7 | 21.0      | 36         |
| Reading Average, 2008          | 20.6 | 21.4      | 45         |
| English Average, 2008          | 20.4 | 20.6      | 39         |

| SAT                            | IL  | U.S. Avg. | State Rank |
|--------------------------------|-----|-----------|------------|
| Percentage of Graduates Tested | 8%  | 48%       | 38         |
| Math Average, 2008             | 601 | 515       | 5          |
| Critical Reading Average, 2008 | 583 | 502       | 7          |
| Writing Average, 2008          | 578 | 494       | 4          |

| AP   | IL    | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Math Scores, 2008 (% with a score of 3 or higher)    | 73.8% | 65.2%     | 6          |
| Math Exams, 2008 (Exams as % of all H.S. grads)      | 8.4%  | 8.7%      | 23         |
| English Scores, 2008 (% with a score of 3 or higher) | 66.6% | 59.2%     | 17         |
| English Exams, 2008 (Exams as % of all H.S. grads)   | 15.2% | 18.9%     | 25         |

### SUMMARY STATE EDUCATION METRICS

| Selected Indicators                              | IL      | U.S. Avg. | State Rank |
|--|---------|-----------|------------|
| High School Graduation Rate, 2005–06             | 79.7%   | 73.4%     | 17         |
| Student/Teacher Ratio, 2006–07                   | 15.0    | 15.5      | 30*        |
| Low-income Students, 2006–07 (% of all students) | 40.8%   | 41.6%     | –          |
| Expenditure per Student (\$), 2005–06            | \$9,113 | \$9,154   | 23         |

**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).