



# INDIANA

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

NAEP Grade 8	IN	U.S. Avg.	State Rank
Science Average, 2005	150.3	147.1	24
Science, 2005 (% at or above "proficient")	28.9%	27.3%	24
Life Sciences Average, 2005	151.2	148.2	24

ACT	IN	U.S. Avg.	State Rank
Science Average, 2008	21.5	20.8	20
Biology, 2008 (% of students ready for college level)	32%	28%	20

AP	IN	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	42.5%	55.4%	43
Science Exams, 2008 (Exams as % of all H.S. grads)	10.1%	10.5%	20
Biology Scores, 2008 (% with a score of 3 or higher)	38.3%	49.8%	42
Biology Exams, 2008 (Exams as % of all H.S. grads)	4.2%	4.6%	23

### SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT

	IN	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	87%	77%	4
Science Teachers Certified, 2006 (% , Grades 7–8)	89%	N/A%	10
Biology Teachers Certified, 2006 (% , Grades 9–12)	95%	88%	13

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

## Examples of Bioscience Education Activities

### Teacher Preparation and Professional Development

Through the **I-STEM Resource Network**, bioscience teachers will be provided tuition reimbursement for professional development courses in the summer of 2010 at local colleges and universities to be trained in the utilization of Indiana's new inquiry-based science curriculum which will be adopted in 2011. This is a part of

## IN STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

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

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

One unit of biology is required

64% of 6th–9th graders and 50% of 10th–12th graders met "proficient" level under No Child Left Behind Adequate Yearly Progress test



the recent development of a science education reform strategy led by the I-STEM Resource Network, a consortium of the Schools of Science of 15 institutions of higher education in Indiana funded by Lilly Endowment, the Lumina Foundation, the Governor's Office and sponsored by BioCrossroads.

Indiana is also a pilot state for the new **Project Lead the Way BioSciences** curriculum. Teachers for this program receive professional development stipends for training sessions at Indiana University-Purdue University/Indianapolis (IUPUI).

The **New Teacher Project** (Marian University) and the **Woodrow Wilson Teaching Fellowships** (IUPUI, Purdue, and Ball State) both target mid-career science professionals who wish to become K-12 science teachers.

**Dow AgroSciences Discovery Hall** at the Indiana State Fairgrounds (opening in 2010) will be used to "teach the teacher" about science and biotechnology.

Eli Lilly Co. donates excess lab inventory to K-12 science teachers. Lilly also provides on-line lesson modules on the following biotechnology-related topics: "Epidemic Challenge" and "Virtual Drug Discovery."

#### Experiential Learning and Outreach

High school students and their teachers statewide are invited to participate in the **Indiana Junior Academy of Science**, a 1-day meeting and research-paper competition sponsored by the Indiana Academy of Science.

Indiana University sponsors **the Indiana Science Olympiad**, a competition for middle and high school students.

Deaconess Hospital in Evansville sponsors the summer **Health Science Institute** for high-achieving science students that allows these

students to shadow doctors and other healthcare professionals in a hospital setting.

The Cook Group, Eli Lilly and Co., and Dow AgroSciences sponsor the annual Science Education Foundation of Indiana's **State Science Fair**. This was hosted by Dow in 2009 and will be hosted by Lilly in 2010 and by Cook in 2011.

The Indiana University School of Medicine hosts an annual seminar for high achieving science students and their teachers at the main campus in Indianapolis called "**Molecular Medicine in Action**" with a focus on the biotechnology aspects of medical research.

The **STEMworks Scholars Program** in Indianapolis offers disadvantaged youths from the region a wide range of support services to prepare them for education and training in careers in the life and health sciences. This is in conjunction with the Indianapolis Private Industry Council.

Dow AgroSciences sponsors the **Purdue Ag Discovery Camp** which targets minority high school students to expose them to careers in agriculture and agricultural biotechnology.

Marian University houses a **Life Sciences Education Center** in Indianapolis to provide experiential learning to K-12 students with an emphasis on disadvantaged students.

Various outreach programs to K-12 exist through the biotech associates degree program at Ivy Tech Community College, the graduate certificate and masters programs in biotechnology at IUPUI, and the academic minor in biotechnology at Purdue University.

#### Bioscience-focused Schools and Programs

The **Indiana Math and Science Academy** in Indianapolis is a tuition-free charter school for



6th through 12th graders operated by Ball State University.

Indianapolis Public Schools offers a **Medical Magnet School at Crispus Attucks Middle School** in close proximity to the IUPUI and IU Medical School complex.

The Cook Group has been instrumental in opening the new **Indiana Center for the Life Sciences at Ivy Tech Community College** in Bloomington which offers dual credit programs.





## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

NAEP Grade 8	IN	U.S. Avg.	State Rank
Math Average, 2007	285.0	280.2	19
Math, 2007 (% at or above "proficient")	35.1%	31.0%	19
Reading Average, 2007	264.1	261.0	25
Reading, 2007 (% at or above "proficient")	31.1%	29.2%	25
Writing Average, 2007	154.8	154.3	21
Writing, 2007 (% at or above "proficient")	29.9%	30.6%	25

ACT	IN	U.S. Avg.	State Rank
Percentage of Graduates Tested	22%	43%	37
Math Average, 2008	22.2	21.0	15
Reading Average, 2008	22.5	21.4	15
English Average, 2008	21.4	20.6	20

SAT	IN	U.S. Avg.	State Rank
Percentage of Graduates Tested	62%	48%	17
Math Average, 2008	508	515	37
Critical Reading Average, 2008	496	502	39
Writing Average, 2008	481	494	43

AP	IN	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	47.6%	65.2%	49
Math Exams, 2008 (Exams as % of all H.S. grads)	10.2%	8.7%	11
English Scores, 2008 (% with a score of 3 or higher)	60.7%	59.2%	31
English Exams, 2008 (Exams as % of all H.S. grads)	12.9%	18.9%	34

### SUMMARY STATE EDUCATION METRICS

Selected Indicators	IN	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	73.3%	73.4%	32
Student/Teacher Ratio, 2006–07	17.1	15.5	43*
Low-income Students, 2006–07 (% of all students)	37.6%	41.6%	–
Expenditure per Student (\$), 2005–06	\$8,929	\$9,154	24

**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).