



Major/ Career Connections

Major Profile: **Biotechnology** (RIS)

School of Science

Realistic Interest Cluster

Is Biotechnology for me?

Find out by answering the following questions. If you answer yes to most of them, read on to learn more. If not, try one of the other **Major Profiles** (<http://uc.iupui.edu/students/academics/mccs.asp>).

	No	Yes
Are you realistic, investigative, or social (see Interest Cluster sheets)?	<input type="checkbox"/>	<input type="checkbox"/>
Are you productive in environments that are typically laboratory or office settings?	<input type="checkbox"/>	<input type="checkbox"/>
Are you curious, a risk-taker, and interested in life sciences and technology?	<input type="checkbox"/>	<input type="checkbox"/>
Do you value science, goal-directed work, and challenges?	<input type="checkbox"/>	<input type="checkbox"/>
Do you enjoy working with tools or your hands?	<input type="checkbox"/>	<input type="checkbox"/>
Do you excel in gathering, analyzing, and interpreting information?	<input type="checkbox"/>	<input type="checkbox"/>

What is Biotechnology?

Biotechnology is the application of biology knowledge and techniques to develop products that improve human health, animal health and agriculture. Students will develop a sound base of chemistry, genetics, biochemistry and biochemical engineering together with the experience of manipulative skills essential for future research. The skill set this program develops and related internships are designed collaboratively, with four of Indiana's top life science employers (*Dow AgroSciences LLC, Eli Lilly and Co., Roche Diagnostics Corp, and Baxter Pharmaceutical Solutions*) to meet their employment needs in specialized areas such as molecular biology, cell culture and fermentation, and protein purification.

What Courses Will I Take?

- Biochemistry
- Principles of Biotechnology
- Business & Regulatory Practices
- Biotechnology Analytical Practices
- Cell Culture & Fermentation
- Genetics & Molecular Biology
- Microbiology
- Protein Purification
- Internship- 6 credit hours required

What are Some Related Majors?

- Computer Engineering (RIS)
- Environmental & Pollution Control Technology (RIS)
- Surgical/Operating Room Technician (RIS)
- Architectural Engineering (IRS)
- Biochemistry (IRS)
- Geology (IRS)
- Medicine (IRS)

What Skills Will I Develop?

You will develop technical and analytical skills which may include abilities in the following areas: selection and breeding; chromosome analysis, such as those used to diagnose genetic disorders; tissue culture for growing tissues or cells, like those used in plant propagation and in producing drugs such as penicillin and monoclonal antibodies; and DNA analysis, for example, DNA fingerprinting, or massive DNA sequencing efforts such as the Human Genome Project (<http://www.biotech.wisc.edu/Education/wholesome.html>).

Where Could I Work?

Jobs are available to Biotechnology graduates as entry-level careers in gene sequencing, drug testing and development, immunology, agriculture, and in all molecular, cellular and developmental areas (*Careers in Biology at IUPUI* - www.biology.iupui.edu/undergrad/careers.html). Pharmaceutical firms, research corporations, environmental agencies, hospitals, and other companies use cells and biological molecules for applications in medicine, agriculture, food processing, industrial manufacturing and environmental management (*Guide to Biotechnology* - www.bio.org/speeches/pubs/er/).

What Job Opportunities Exist?

Biotechnology majors might choose to pursue one of the following career options (*Guide to College Majors*, 2008). Those with an * may require further experience, training, or education.

- Biologist*
- Ecologist*
- Environmentalist
- Environmental Scientist
- Pharmaceutical Sales Representative
- Professor*
- Researcher

Employment Outlook

Biological technicians will experience the fastest employment growth in professional, scientific, and technical services and in educational services. Also, an aging population and stronger competition among pharmaceutical companies are expected to contribute to the need for innovative and improved drugs, further spurring demand. Employment of biological technicians is expected to grow faster than average as the growing number of agricultural and medicinal products developed with the use of biotechnology techniques boosts demand (*Occupational Outlook Handbook*, 2008-09).

Salary Expectations

Median annual earnings of biological technicians were \$35,714 (OOH, 2008-09). According to the National Association of Colleges and Employers, graduates of bachelor degree programs in the Biological and Life Sciences had average yearly salaried job offers of \$35,522 in 2008.

What Graduate/Professional School Opportunities Exist?

Biotechnology graduates may choose to pursue advanced degrees in one of the following areas:

- Biotechnology or Related Sciences
- Biomedical or Biochemical Engineering
- Business Administration
- Law

Where Can I Get More Information?



IUPUI Purdue School of Science Biology Department	www.biology.iupui.edu Office: SL322 Phone: (317) 274-0589
Academic Advising at IUPUI	http://uc.iupui.edu/students/academics/index.asp
Career Counseling at IUPUI	http://uc.iupui.edu/students/career/index.asp
Biotechnology – programs at IUPUI	http://www.science.iupui.edu/programs/dl/biotechnology.pdf
National Center for Biotechnology Information	http://www.ncbi.nlm.nih.gov/
Biotechnology Industry Organization	http://www.bio.org/
Access Excellence: National Health Museum, Career Center	http://www.accessexcellence.org/RC/CC/