



# BIOCHEMISTRY

College of Agriculture and Life Sciences

*Degree Types: B.S., M.S.L.F.S, Ph.D.*

Biochemistry is the branch of the life sciences devoted to understanding the molecular mechanisms by which life's processes take place. Across disciplines, scientists work to answer questions about life and the world around us. Biochemists are unique in that they find themselves asking the question HOW?

- How is food converted to energy?
- How does a cell know when it is time to divide or differentiate?
- How can we block the transmission of malaria?
- How can we inhibit the growth of pathogens such as *Mycobacterium tuberculosis*?
- How do microbes "harvest" nitrogen from the atmosphere?



## INTERESTING FACT:

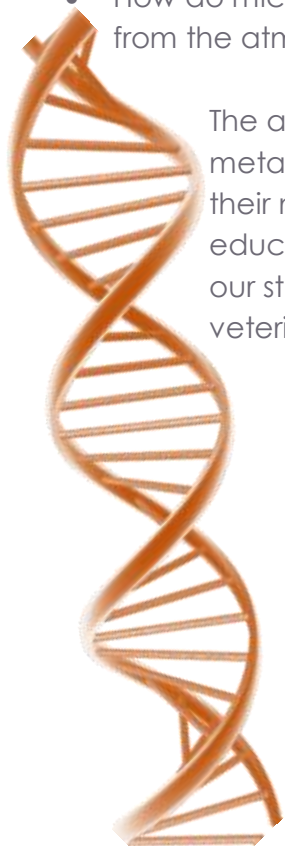
Virginia Tech's undergraduate program in Biochemistry is one of the largest and most highly respected programs of its kind in the country, with over 600 undergraduates currently enrolled.



The answers to these questions involve the identification of the proteins, genes, or metabolites involved; the determination of their physical structures; and the analysis of their molecular mechanisms of action. Students in our department receive fundamental education in biochemistry, biology, chemistry, physics and mathematics and many of our students go on to pursue post-baccalaureate studies in graduate, medical, veterinary, dental, nursing, and pharmacy school.

## RESEARCH

Qualified undergraduate students of all academic levels are strongly encouraged to participate in undergraduate research with faculty members. Research interests in our department include: the regulation of gene expression by hormones and microRNAs, genetic engineering of plants and insects, dissecting the mechanism of metalloprotein assembly, identifying new drug targets to fight malaria, tuberculosis, and Chagas disease, and mapping out the metabolic pathways and sensor-response machinery of extremophilic microorganisms.





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## SAMPLE CAREERS

Biochemists are employed in many sectors of the economy, including medicine and pharmaceuticals, infectious diseases and drug development, food and consumer products, chemicals and energy, environmental analysis and remediation, agriculture, biotechnology, forensics, etc.

## CURRICULUM

This major allows 24-30 credit hours to be constructed with courses specializing in the area of veterinary, medical, or other area of specialization or interest.

Core areas of study include:

- Biochemistry
- Chemistry
- Biology
- Physics
- Math
- Statistics

## SKILLS

- Strong in math and science
- Inquisitive about biochemical processes
- Good communication and organization
- Decision making and problem solving

## RESOURCES

- Department of Biochemistry website <http://www.biochem.vt.edu/>
- University Catalog <http://www.undergradcatalog.registrar.vt.edu/>
- Services for Students with Disabilities (SSD) <http://www.ssd.vt.edu/students.htm>
- Student Advising Handbook, 2017-2018 edition <http://www.advising.vt.edu/images/pdfs/HandbookFinal17.pdf>
- Hokie Handbook [www.hokiehandbook.vt.edu/](http://www.hokiehandbook.vt.edu/)
- University Advising at Virginia Tech [www.advising.vt.edu](http://www.advising.vt.edu)
- The Student Success Center, tutoring and academic success <http://www.studentsuccess.vt.edu/>
- Study Skills Help [http://www.ucc.vt.edu/academic support students/study skills information/index.html](http://www.ucc.vt.edu/academic_support_students/study_skills_information/index.html)
- Cook Counseling Center <http://www.ucc.vt.edu/>
- Honor System <http://www.honorsystem.vt.edu/>
- Career Services <http://www.career.vt.edu/>
- Global Education, study abroad <http://www.educationabroad.vt.edu/>
- The Writing Center <http://www.composition.english.vt.edu/writing-center/>
- Language and Culture Institute <http://www.lci.vt.edu/>

For more information, please contact the undergraduate advisors in the Department of Biochemistry.

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