Molecular Biology

DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES



Careers with a Molecular Biology Degree :

Research Scientist
(Basic, Pharmaceutical Biotech, and Biomedical Fields)
Forensic Scientists
Clinical Research Associates
Scientific Laboratory Technician
Geneticist
Toxicologist
Microbiologist
Biochemist
Molecular Biologist
Pathologist
Physician*
Physician's Assistant*
Teacher

Typical Employers:
Research Institutes & Universities
Pharmaceutical and Biotech Companies
Government Agencies (NIH, CDC, EPA)
Forensic & Diagnostic Laboratories

*Biology degree prepares students to apply for advanced degrees

Show Me the Money!

Graduates with a Molecular Biology degree typically earn between $49,000 and $67,000 for entry-level jobs. As a college graduate, you can earn an average of 75% more than those with only a high school degree per

The Chicago Tribune!
(NACE 2022 Salary Report)

› What is Molecular Biology?

Molecular Biology is the study of life in its smallest forms. It looks at the macromolecular pieces that make up what we see around us, including DNA, RNA, proteins and lipids. Molecular biologist study the mechanisms governing molecular control of cellular processes and the interactions between various cell systems. From the study of life, to the application of cutting-edge technologies to the life sciences, molecular biologists provide the link and tie between multiple branches of the STEM fields.

› Faculty Mentors

Students in the Biology program at ECU work alongside faculty within the Biological and Environmental Sciences department. For more information on the Molecular Biology concentration, please contact these faculty members:



anesbit@ecok.edu
580-559-5501
PES 170

Dr. Nesbit's research includes studying how *E.coli* gene expression changes when grown in a variety of sugar sources.



andldun@ecok.edu
580-559-5549
PES 102

Histological and molecular analysis of abnormal phenotypes in mammalian models. Additional interests in educational research and herpetology.



gsanchez@ecok.edu
580-559-5657
PES 148

Expertise in sequencing techniques and expressional analysis applied across diverse fields such as epigenetics, cancer biology, waste water viral tracking and soil/water quality monitoring.



ahoward@ecok.edu
580-559-5792
PES 160

Dr. Howard's research projects span viral manipulation of transcription machinery, genetic linkage to disease and *in vitro* biochemistry of virus-host interactions.

East Central University
1100 E. 14th St.
Ada, Oklahoma 74820

www.ecok.edu/Bio • 580-559-5792

Campus Tour:
ecok.edu/take-a-tour
580-559-5628
ecutiger@ecok.edu

Molecular Biology

PROGRAM INFORMATION

The Molecular Biology Program is for those students looking for careers in research or biotech. Additionally, those taking standardized admittance exams (DCAT, MCAT) may find the content more aligned to content preparation and higher scores. Techniques focus on the "small" part of biology and curriculum contains more rigorous integrations from required related STEM fields.

› What do Molecular Biologists do?



DRUG MANUFACTURE & DESIGN

Development of targeted drugs based on molecular mechanism and production of vaccines. Design of new or improved tools for diagnosis and detection of disease.

MEDICINE & HEALTH

May go on to train as physicians, dentists, veterinarians or genetic counselors. Molecular Biology provides a basis for understanding signaling and therapeutics in disease.

FORENSICS

Work on criminal investigations through examination of various biologicals.

BIOTECHNOLOGY

Development of genetically modified organisms such as crops that are more resistant to frost, drought, disease or pests. Developing bioremediation tools and transgenic organisms through pathway biosynthesis.



Techniques of Molecular Biology

- DNA Sequencing
- Gene Quantification
- Protein Engineering
- Molecular Cloning
- Genome Editing
- Forensic Biologics
- Immunoprecipitation
- Western Blotting
- PCR & DNA/RNA sequencing
- Site-directed Mutagenesis



Applied Learning

CURL Research Laboratory





The Center for Undergraduate Research and Learning (CURL) houses a collaborative network of laboratories utilized for mentored undergraduate research projects.

BES Department:

Dean: Dr. Ken Andrews
Chair: Dr. Alisha Howard
Degree: Bachelor of Science
Programs: 2
Concentrations: 7
Minors: 2
Faculty: 11 full-time & 3 part-time
Organizations: 4
Scholarships: 28
Location: 160 PES Building

ECU at a Glance:

Undergraduate Enrollment: 3,000+
Undergraduate Majors: 60+
Student to Faculty Ratio: 17 to 1
Average Class Size: 22
Faculty with PhDs: 65%
States Represented: 28
Countries Represented: 30+
Year Founded: 1909
Campus Size: 140 acres
Area Location: Ada, Oklahoma

Tiger Spirit:

Mascot: Roary the Tiger
School Colors: Orange & Black
Student Organizations: 35+
Athletics: NCAA Division II

Check out our Master's of Biological Sciences

To prepare students for tomorrow's world through a dynamic & diverse learning experience.