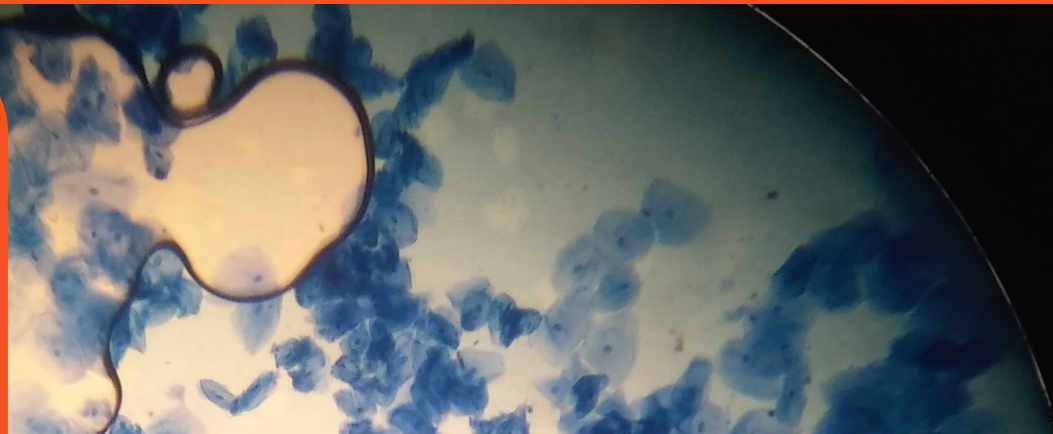


ECU MOLECULAR BIOLOGY

DEPT OF BIOLOGICAL & ENVIRONMENTAL SCIENCES



Careers with a Molecular Biology Degree:

Research Scientists
(Basic, Biomedical)
Clinical Research Associates
Forensic Scientists
Scientific Laboratory
Technicians
Toxicologists
Biotechnologists
Science Writers
...and so much more!

Typical Employers

Research Institutions
Universities
Government Offices
National Institutes of Health
Center for Disease Control
Agricultural Research
Stations & Industry
Forensic Science Services
Diagnostic Laboratories
Environmental Agencies
Pharmaceutical Companies
Biotech Companies
& Startups

Unique among universities, ECU has made a commitment to supporting undergraduate research. ECU is the only regional university in Oklahoma to have a dedicated research facility for undergraduates. The Center for Undergraduate Research and Learning (CURL) houses a collaborative network of laboratories, including the Cellular and Molecular Research Laboratory. These facilities host multiple active projects from the Molecular Biology department including research on Human T-cell Leukemia Virus type-1 proteins and regulation of sugar genes in bacteria.

> 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 biologists 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. It has been integrated in fields such as Physics and Chemistry to Field Biology, Genetics and Medicine.

> Faculty Mentorship

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



Dr. Alisha Howard
ahoward@ecok.edu
580-559-5792
Room PES 164

Dr. Howard's research concerns viral mechanisms to manipulate transcription. She works with the viral oncoprotein tax from Human T-cell Leukemia Virus to identify new host-virus interactions important in viral gene activation.



Dr. April Nesbit
anesbit@ecok.edu
580-559-5501
Room PES 170

Dr. Nesbit's research includes studying the ability of E. coli bacteria to use various sugars. She is also studying bacteria found in the Blue River.

East Central University

1100 E. 14th St.

Ada, Oklahoma 74820



www.ecok.edu/molecularbio • 580-559-5497

MOLECULAR BIOLOGY

> PROGRAM INFORMATION

What do Molecular Biologists do?

DRUG MANUFACTURE AND 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.

FORENSIC SCIENCE

Work on criminal investigations through examination of various biologicals.

EDUCATION

Science educators are in high demand in schools across the country. Or work as a curator in a museum.

OTHER INDUSTRIES

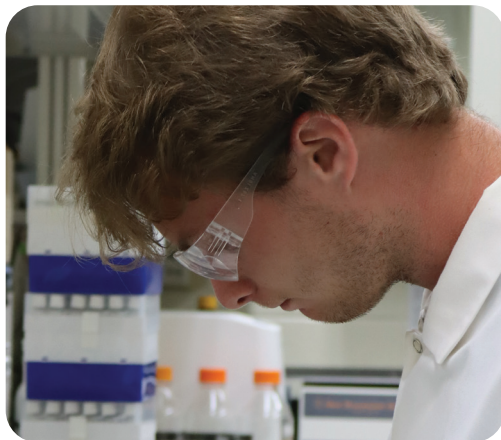
Sectors such as science policy, science writing and schematic illustration.

BIOTECHNOLOGY OR RELATED AGRICULTURAL INDUSTRIES

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

MEDICINE AND HEALTH

May go on to train as physicians, dentists, veterinarians or genetic counselors. Molecular Biology provides a basis to understanding genetic mutations, protein functions, signaling pathways and applications for disease.



Techniques of Molecular Biology

- DNA Sequencing
- Gene Quantification
- Protein Engineering
- Molecular Cloning
- Genome Editing
- RNA Interference
- Forensic Profiling
- Immunoprecipitation
- In vitro DNA Synthesis (PCR)
- Site-Directed Mutagenesis
- Directed Evolution
- Molecular Painting

Department of Biological & Environmental Science

The Department of Biology offers majors in four bachelor's degree concentrations.

- A Bachelor of Science is designed for students who plan to become practicing biologists in industry or government, or plan to pursue a graduate degree in Biology.
- This degree concentration is usually chosen by those students who need pre-professional training before entering the schools of Medicine, Dentistry, Veterinary Medicine or other health-related professional schools.
- A Bachelor of Science for Teacher Certification gives a prospective science teacher an appropriate academic background in biology and in the methods of teaching.
- The Bachelor of Science for Molecular Biology prepares students for graduate research, medical school and admission exams, and/or employment the rapidly growing fields of biotechnology agribusiness, industry, law enforcement and molecular biology.
- A Bachelor of Science for Clinical Laboratory Science prepares students to conduct and supervise complex clinical trials and research experiments and manage laboratories.

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

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Molecular Biology

Dean: Dr. Ken Andrews

Chair: Dr. Mike Bay

Degree: Bachelor of Science

Concentrations: 7

Minors: 2

Faculty: 8 full-time & 2 part-time

Organizations: 4

Scholarships: 25

Location: 158 PES Building

ECU at a Glance

Undergraduate Enrollment: 3,300

Undergraduate Majors: 58

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

Men's:

Football
Baseball
Basketball
Cross Country
Track & Field
Golf

Women's:

Basketball
Volleyball
Softball
Soccer
Cross Country
Track & Field
Golf

