Biological Sciences

Discovery and Diversity

Corwin Sullivan

Associate Professor & Associate Chair, Department of Biological Sciences

UNIVERSITY OF ALBERTA

Corwin Sullivan

- Associate Professor and Associate Chair, Department of Biological Sciences
- Vertebrate palaeontologist
- Study dinosaurs and their relatives
- Teach comparative anatomy

About Us

- Within the Faculty of Science
- 54 faculty members
- Research subjects range from molecules to ecosystems
- Major and honours undergraduate programmes in Biological Sciences, and different areas of biology
- Graduate programmes at MSc and PhD levels

Department of Biological Sciences

- Large and diverse department
- Many resources and facilities
- Many undergraduate courses and opportunities

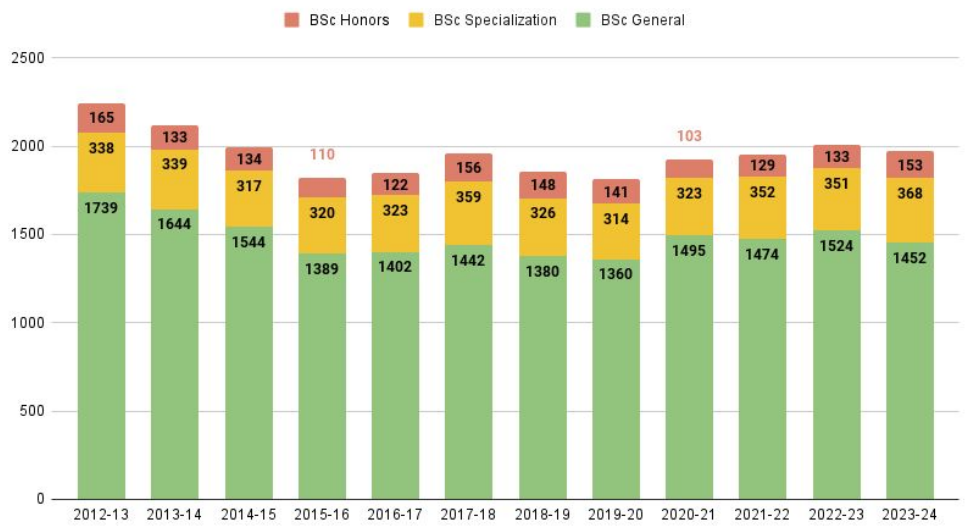
Provides an outstanding education for undergraduate students

"Our Department uniquely and fearlessly encapsulates almost all disciplines within biology and is rife with opportunity to produce challenging and integrated research." Z. Hall

We are committed to maintaining an engaging, rigorous and inclusive learning environment

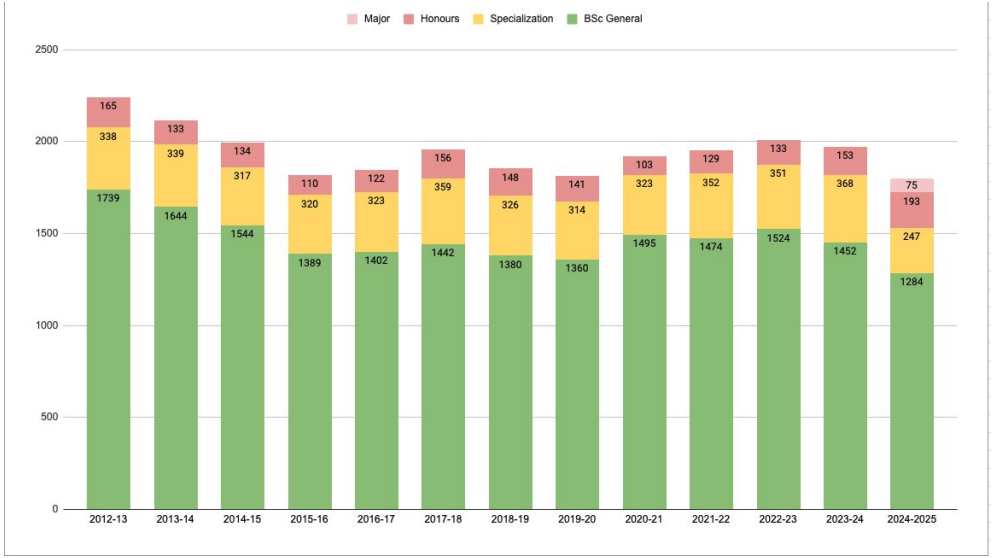
Our Students

Old Programme Structure (Prior to 2024-2025)



Our Students

New Programme Structure



www.ualberta.ca/biological-sciences

Department of Biological Sciences

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/ Undergraduate Studies

Undergraduate

- Programs
- Courses
- Research Project Courses
- Research Certificate in Science
- Awards and Scholarships
- Field School - Marine Science
- Forms
- Student Groups
- Contact

Undergraduate Studies

The Department of Biological Sciences offers more than 100 courses to undergraduate students with areas of concentration in:

- Animal Biology,
- Bioinformatics,
- Ecology,
- Evolutionary Biology,
- Microbiology,

Apply Now

Events

Ecology & Evolution (BIOL 631) Seminar Series: Dr. Tolulope Morawo, Assistant Professor, Dept of Entomology and Nematology, University of Florida: "Response of parasitic wasps to host-associated plant odors: A tale of two braconid species"
October 16, 2020 12:00 PM - 1:00 PM

Molecules, Cells and Systems Biology Seminar: Dr. Paul Shaw, Professor of Neuroscience, Washington University School of Medicine: "How does sleep fix a broken brain?"
October 22, 2020 11:00 AM - 12:00 PM

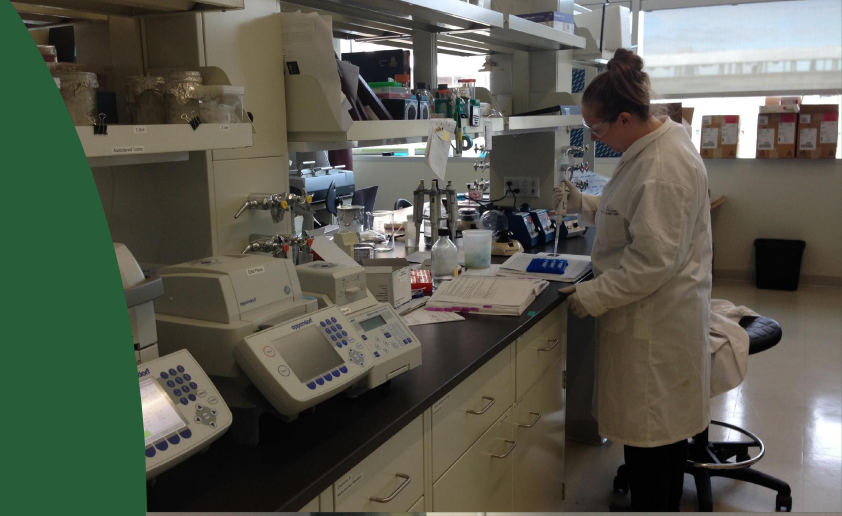
Ecology & Evolution (BIOL 631) Seminar Series/Adjunct Seminar: Dr. Murray Humphries, Associate Professor of Wildlife Biology, McGill University: "The traditional food systems of Indigenous Peoples: biocultural diversity, replacement valuation, and knowledge co-production in wildlife research"
October 23, 2020 12:00 PM - 1:00 PM

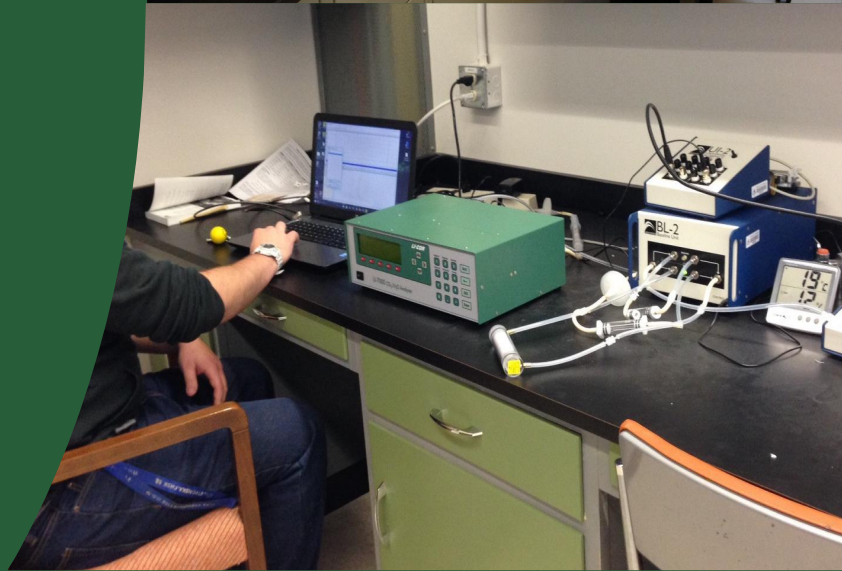
More Events »

Lab Experiences

- Lab courses in every discipline
- Research project courses
- Volunteer lab work
- Summer employment as lab assistants
- NSERC* summer studentships
    - Excellent grades required

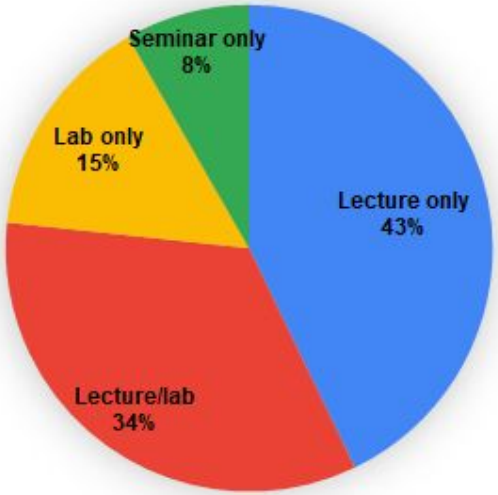
*Natural Sciences and Engineering Research Council





Hands-on Learning

- ~½ of our courses have a laboratory component, with topics including but not limited to:
  - Conservation
  - Biodiversity (plant, microbes, animal)
  - Physiology
  - Genetics
  - Palaeontology



Field Experiences

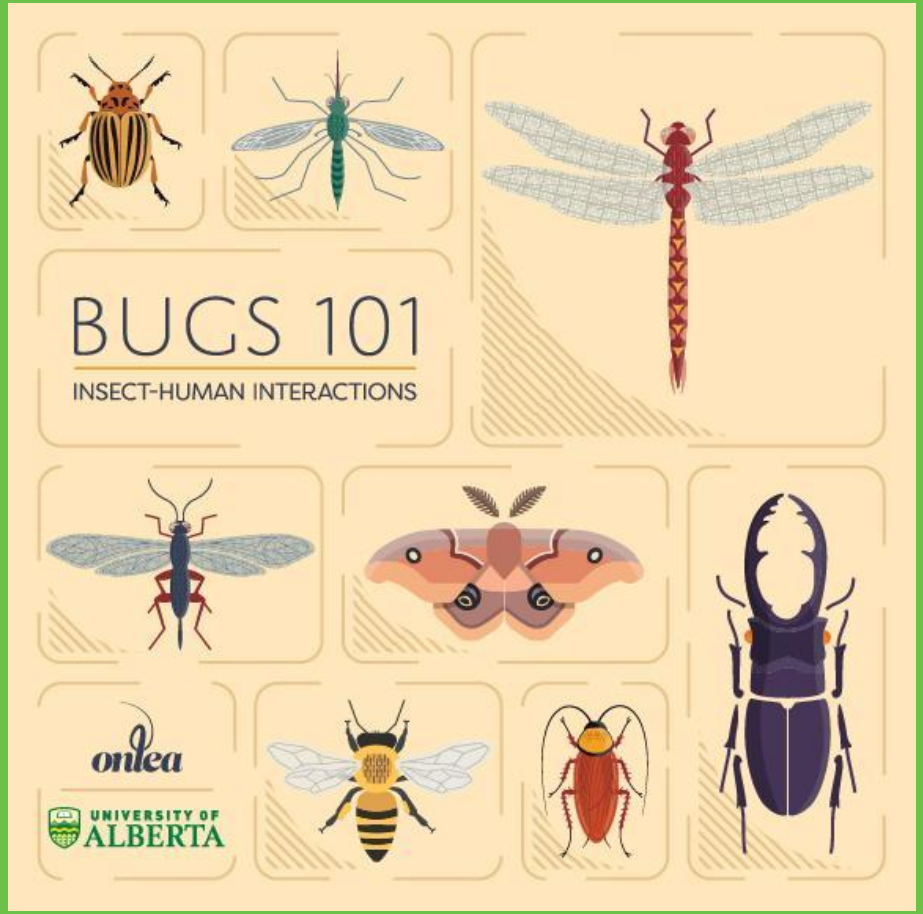
- Field courses in plant & animal ecology
- Field courses in freshwater and marine ecology
- Field course in vertebrate palaeontology (PALEO 400)
- Research project courses
- Volunteer field work
- Summer employment as field assistants
- NSERC summer studentships
    - Excellent grades required

Bamfield Marine Sciences Station

- Shared facility with other universities
- West coast of Vancouver Island
- Wide variety of Summer and Fall courses
  - Marine Science
  - Biology of Fishes
  - Marine Invertebrate Zoology
  - And More!
- Field, lab, discussions, seminars

Museum Collections

- Key resources for teaching & research
- > 400,000 specimens of mosses, ferns and seed plants
- 200,000 fish specimens
- > 1,000,000 insect specimens
- 50,000 vertebrate fossils ranging from 450 million to 10,000 years old

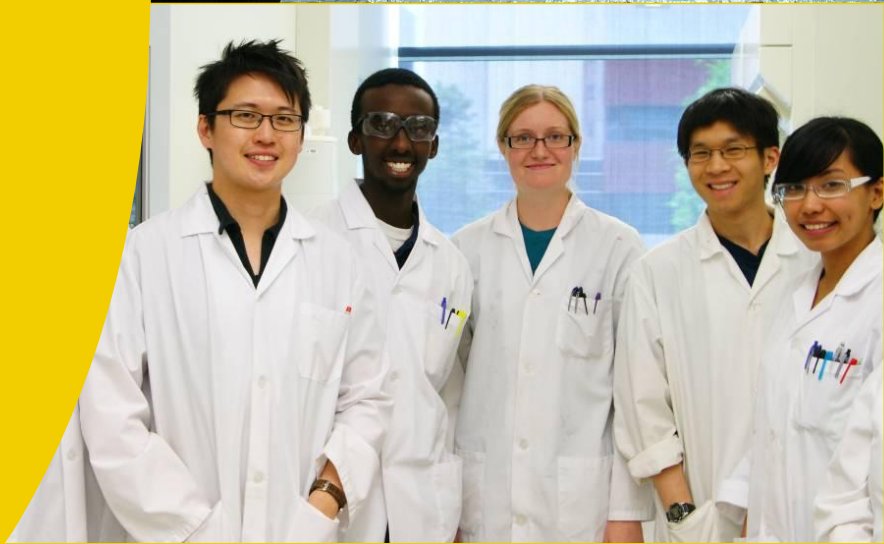


Online Learning

- Hybrid courses
- **MOOCs** designed for online learning
  - ENT 101 (Bugs 101)
  - PALEO 200 (Dino 101)
    + additional PALEO courses
  - INTD 280 (Mountains 101)

Advanced Research Project Courses

- Third year:
  - BIOL 390 (1 term, literature review)
  - BIOL 398 (1 term, hands-on research)
  - BIOL 399 (2 terms, hands-on research)
- Fourth year:
  - BIOL 490 (1 term, literature review)
  - BIOL 498 (1 term, hands-on research)
  - BIOL 499 (2 terms, hands-on research), required for Honours programmes



Undergraduate Research

Undergraduate research is often highly successful: many publications with undergraduate co-authors

Undergraduate students play a key role in many professors' research programmes

Science Internship Program

4-16 months of paid full-time work for an employer based in Canada

Enrich your education
Obtain practical experience
Prepare for your future

Our Programmes:

- Provide students with exemplary education
- Prepare students for successful careers in the Biological Sciences
- Help students become (even) more informed and thoughtful citizens
- Cultivate general skills and capabilities desired by employers
    - Creativity, oral and written communication, critical thinking, persuasion, collaboration, adaptability, software proficiency, graphic design, time management

The University of Alberta Calendar

Calendar Search

Entire Calendar

Search Calendar

Whole Word/Phrase

Advanced Search

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- Academic Schedule
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University of Alberta Calendar 2024-2025

University of Alberta Calendar 2024-2025

UNIVERSITY OF ALBERTA

Welcome! Please use the search and navigation menu on the left, or click on one of our frequently visited pages below.

Academic Schedule
Important dates & deadlines during the Academic Year

University Regulations
General Policies & academic regulations for all students

Undergraduate Programs
Find program requirements for an undergraduate degree

Graduate Programs
Find program requirements for a graduate degree

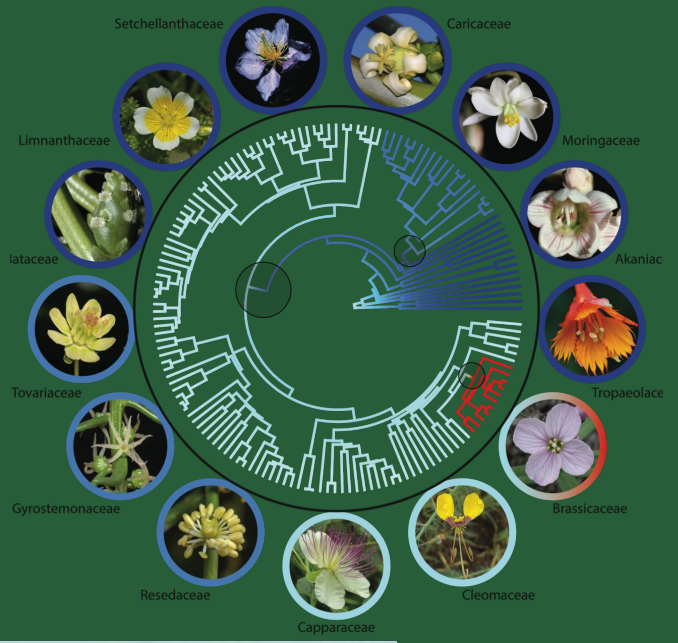
Where to find our >150 courses in the Calendar

Topic	Description	Designator
Bioinformatics	Manipulation of molecular data	BIOIN
Biology	Everything that doesn't fit elsewhere!	BIOL
Botany	Study of plants	BOT
Entomology	Study of insects	ENT
Genetics	Study of heredity and its molecular basis	GENET
Immunology and Infection	Biology of disease and resistance	IMIN
Marine Science	Biology of the ocean (at Bamfield Marine Station)	MA SC
Microbiology	Study of microbes and cells	MICRB
Palaeontology	Study of fossils	PALEO
Zoology	Study of animals	ZOOL

Major and Honours Programmes

- Honours requires:
  - Higher grades (maintain GPA of at least 3.0, equivalent to B)
  - Completion of additional courses including BIOL 499

- Subject areas:
  - Biological Sciences
  - Ecology, Evolution & Environmental Biology
  - Immunology and Infection (with MMI)
  - Integrative Physiology
  - Molecular, Cellular & Developmental Biology
  - Palaeontology (with EAS)



Programme Requirements

- 120 units of courses (40 standard one-term courses, or equivalent) in total
- Common course requirements
  - 6 units of English (ENGL) and/or Writing Studies (WRS)
  - 3 units with indigenous content
  - 6 units outside Science, with two of the following represented by 3 units each
    - Applied Sciences; Business; Humanities, Fine Arts, Performing Arts; Social Sciences
  - 3 units from each of Basic Sciences, Formal Sciences, and Specialized Sciences
  - 3 units with lab and/or field experience

Programme Requirements (continued)

- Science and Senior Level Course Requirements
  - 72 units in Science
  - 78 units at the 200-level (i.e. 2nd-year level) or higher
  - 36 units (Major) or 42 units (Honours) at the 300-level or 400-level
- Programme-Specific Requirements
  - Foundation courses (100-level)
  - Senior courses (200-level and higher)
  - Options

Foundation Courses

- BIOL 107 - Introduction to Cell Biology
- BIOL 108 - Introduction to Biological Diversity
- CHEM 101 - Introductory University Chemistry I
- MATH 134 - Calculus for the Life Sciences I (See Note 1)
- STAT 151 - Introduction to Applied Statistics I

Senior Courses

- BIOL 207 - Molecular Genetics and Heredity
- BIOL 208 - Principles of Ecology

3 units from:

- Ecology, Evolution or Diversity List (See Note 2)

3 units from:

- Genetics, Molecular Biology or Microbiology List (See Note 2)

3 units from:

- Physiology, Cell Biology or Developmental Biology List (See Note 2)

Combo Options

- **Minor**
  - Additional 24-30 units
  - Discipline within or outside Science
  - Has own programme-specific requirements
- **Double Major**
  - Complete programme-specific requirements for two majors (within 120 units)
  - Not available to Palaeontology or Immunology and Infection Majors
  - Not available to Honours students
- **Combined BSc/BEd**
  - Both BSc and BEd degrees in 5 years

Ecology, Evolution and Environmental Biology (EEEB)

- Biodiversity, interactions between organisms and their environment, and evolutionary change

- **Course offerings**
  - Biological Diversity
  - Biological Processes
  - Ecology and Environmental Biology
  - Evolution and Systematics
  - Scientific Methodology

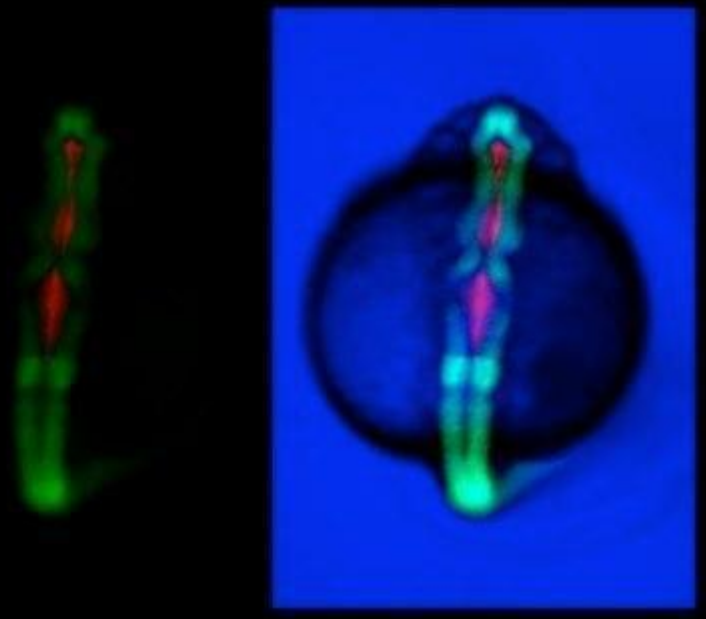
Career Options: Ecology, Evolution & Environmental Biology

- Aquatic technician
- Environmental consultant
- Eco-tourism
- Pest management
- Field or curatorial technologist
- Laboratory technologist
- Environmental law enforcement
- Naturalist
- Forensic biologist
- Park interpreter
- Science writer
- Professional school (health, law, veterinary, graduate studies)

Integrative Physiology

- Processes that occur within living organisms, and how these processes interact

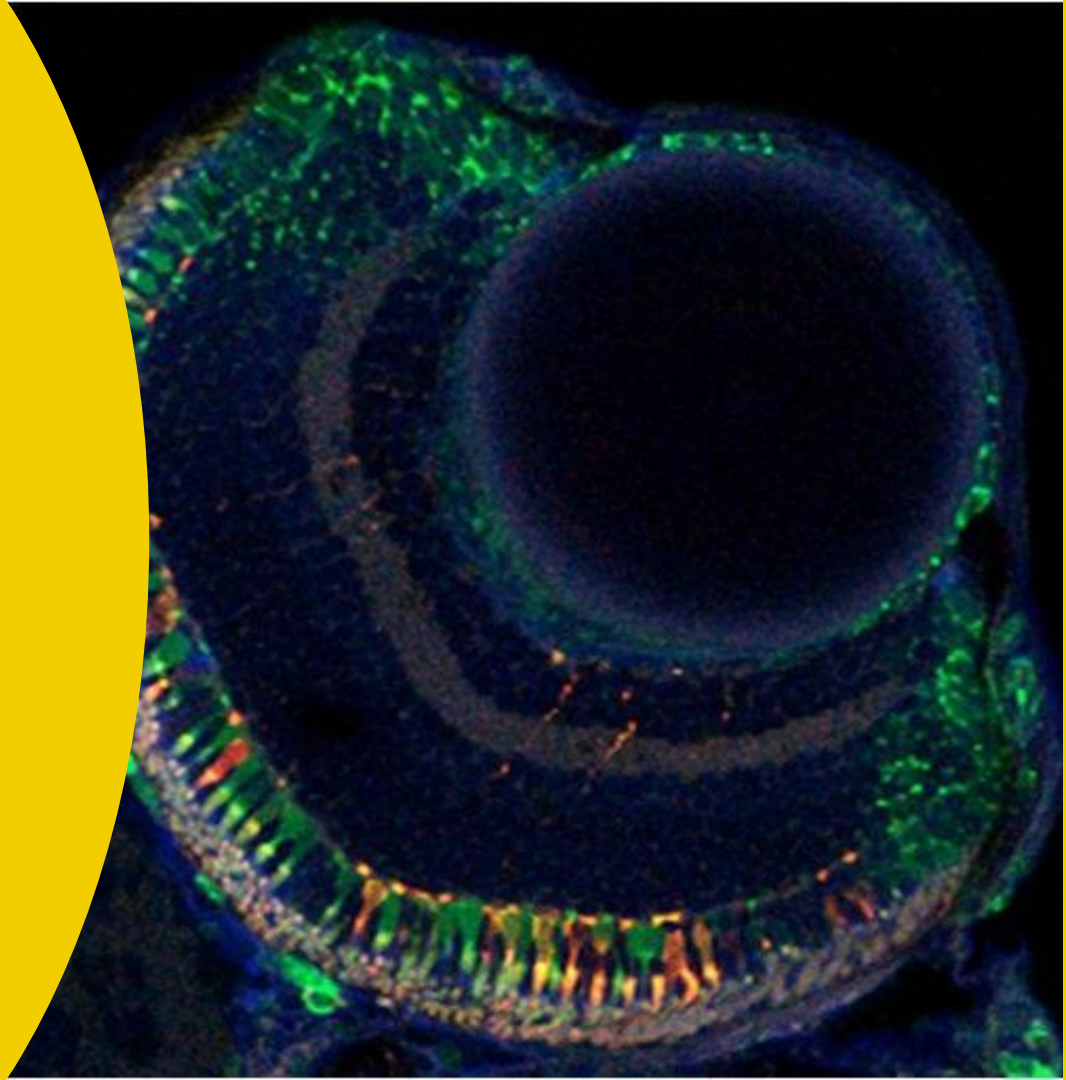
- **Course offerings**
  - Endocrinology
  - Neurophysiology
  - Developmental Biology
  - Immunology
  - Cell Signalling
  - Toxicology
  - Environmental Physiology



Career Options:

Integrative Physiology

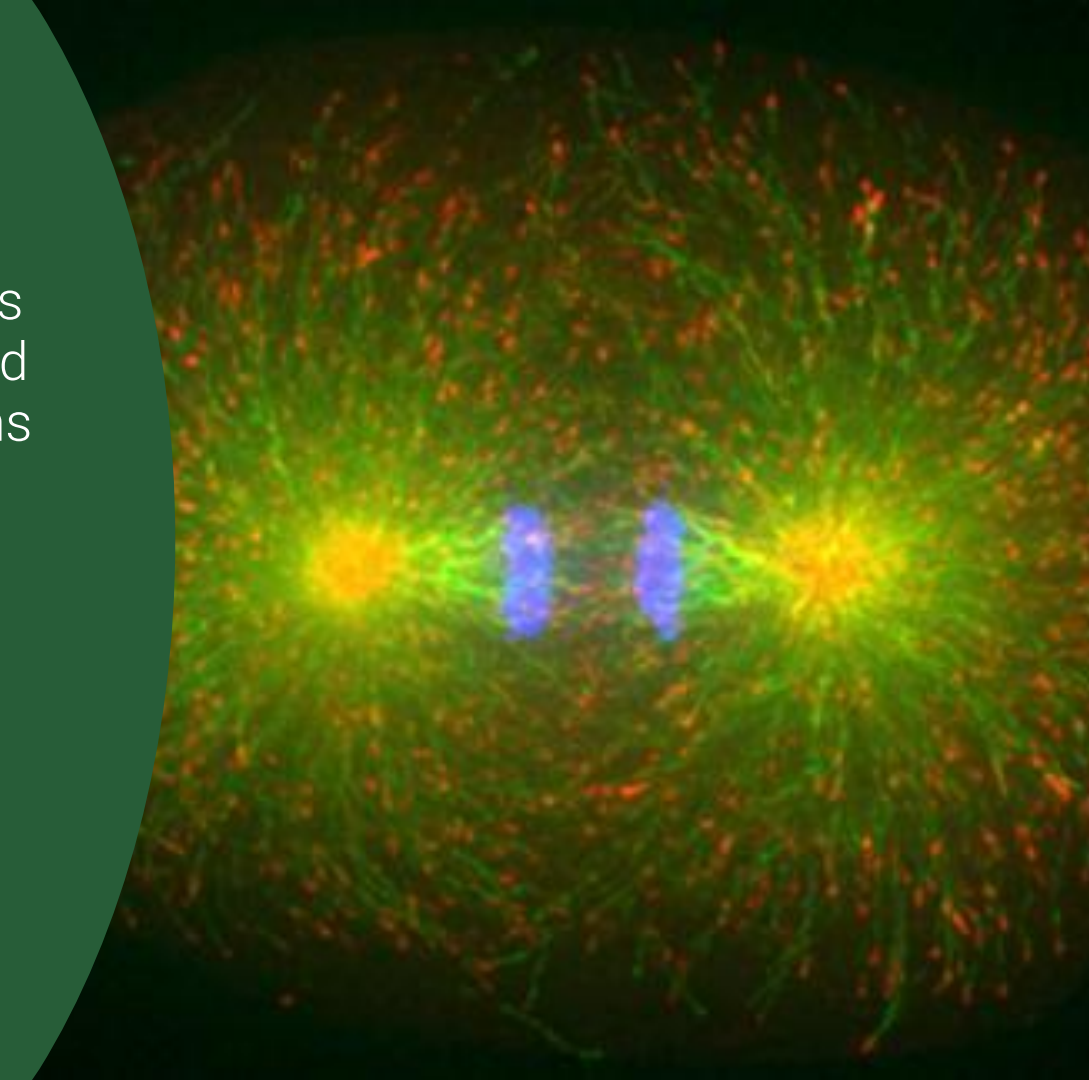
- Agriculture and food industry
- Biomedical technologist
- Biotechnology
- Brewing industry
- Government or industrial consultant
- Laboratory technologist
- Medicine and health science
  - Neuroscience
  - Pharmaceutical industry
  - Veterinary medicine
- Science writer
- Professional school (health, law, veterinary, graduate studies)



Molecular, Cellular and Developmental Biology (MCDB)

- The roles of cells and molecules in the function, reproduction and development of living organisms

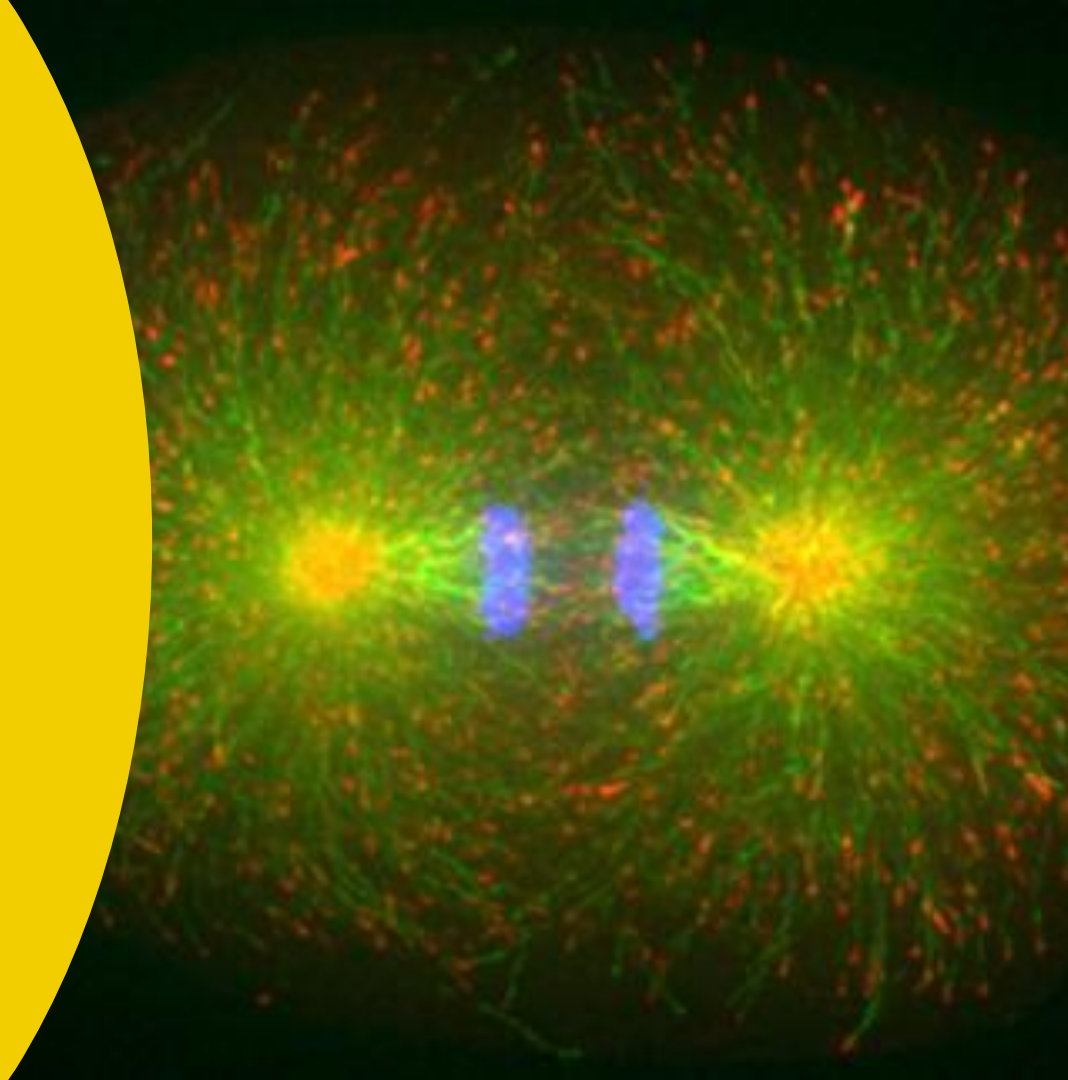
- **Course offerings**
  - Molecular Biology
  - Genetics
  - Genomics
  - Bioinformatics
  - Cell Biology
  - Developmental Biology
  - Microbiology



Career Options:

Molecular, Cellular, and Developmental Biology

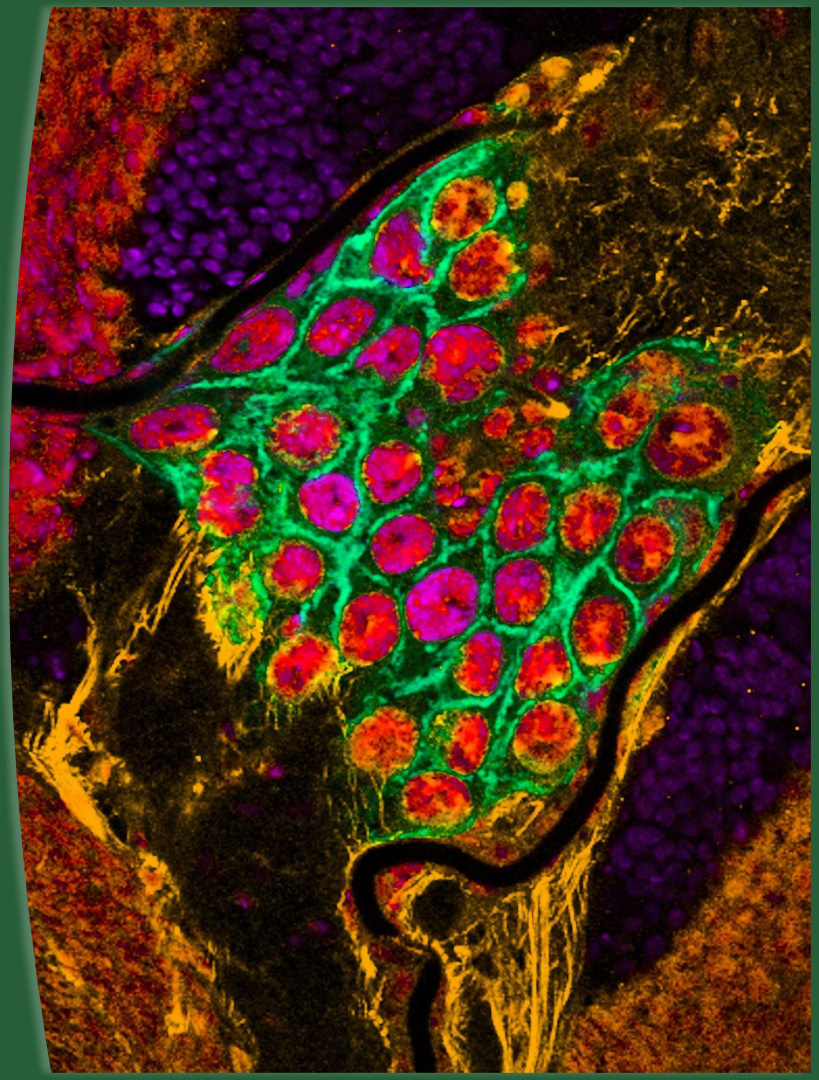
- Biotechnologist
- Scientific writer
- Biotechnology manufacturing/sales
- Medical research
- Consultant
- Laboratory technologist
- Pharmaceutical industry
- Food and water quality technician
- Environmental/bioremediation
- Government laboratories
- Professional schools (health, law, graduate studies)



Immunology and Infection

- Pathogens, and how they cause disease in other organisms

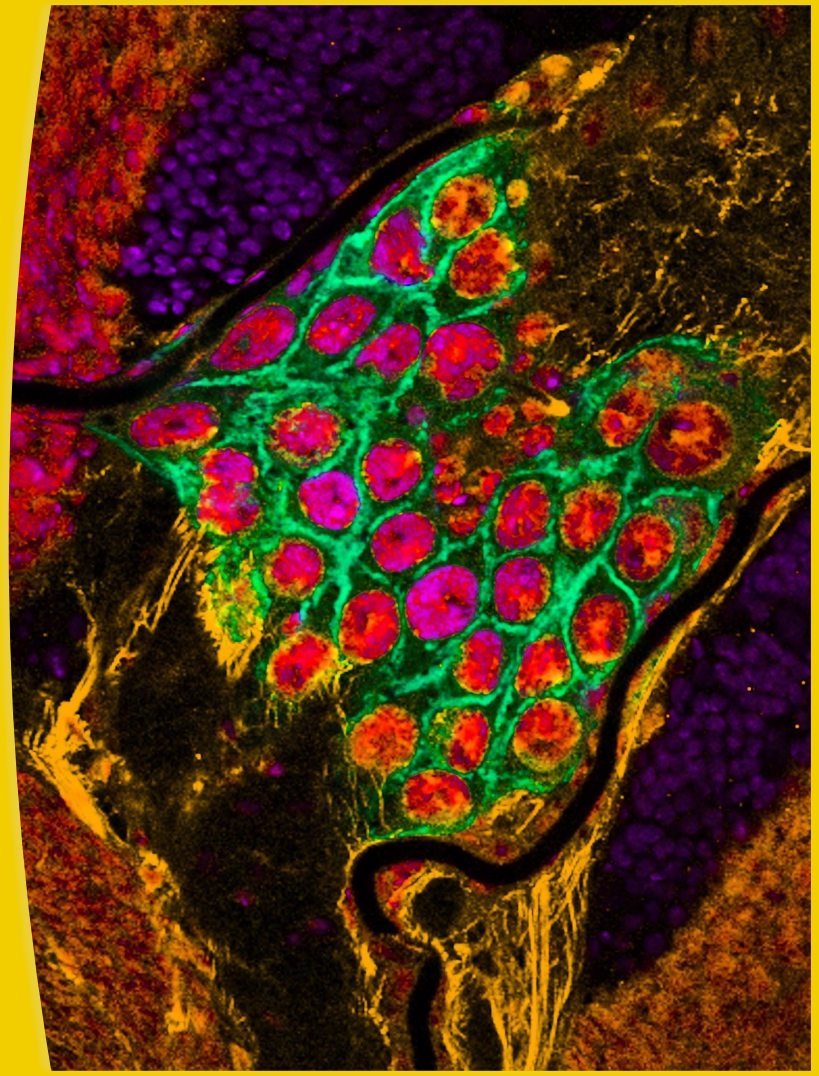
- **Course offerings**
  - Cell Biology
  - Immune System Physiology
  - Pathogen Biology
  - Biology of host-pathogen interactions
  - Bioinformatics
  - Molecular Genetics



Career Options:

Immunology and Infection

- Bacteriologist
- Epidemiologist
- Forensic pathologist
- Geneticist
- Immunologist
- Laboratory technologist
- Medical librarian
- Molecular biologist
- Parasitologist
- Research scientist
- Respiratory specialist
- Virologist
- Professional schools (health, law, graduate studies)



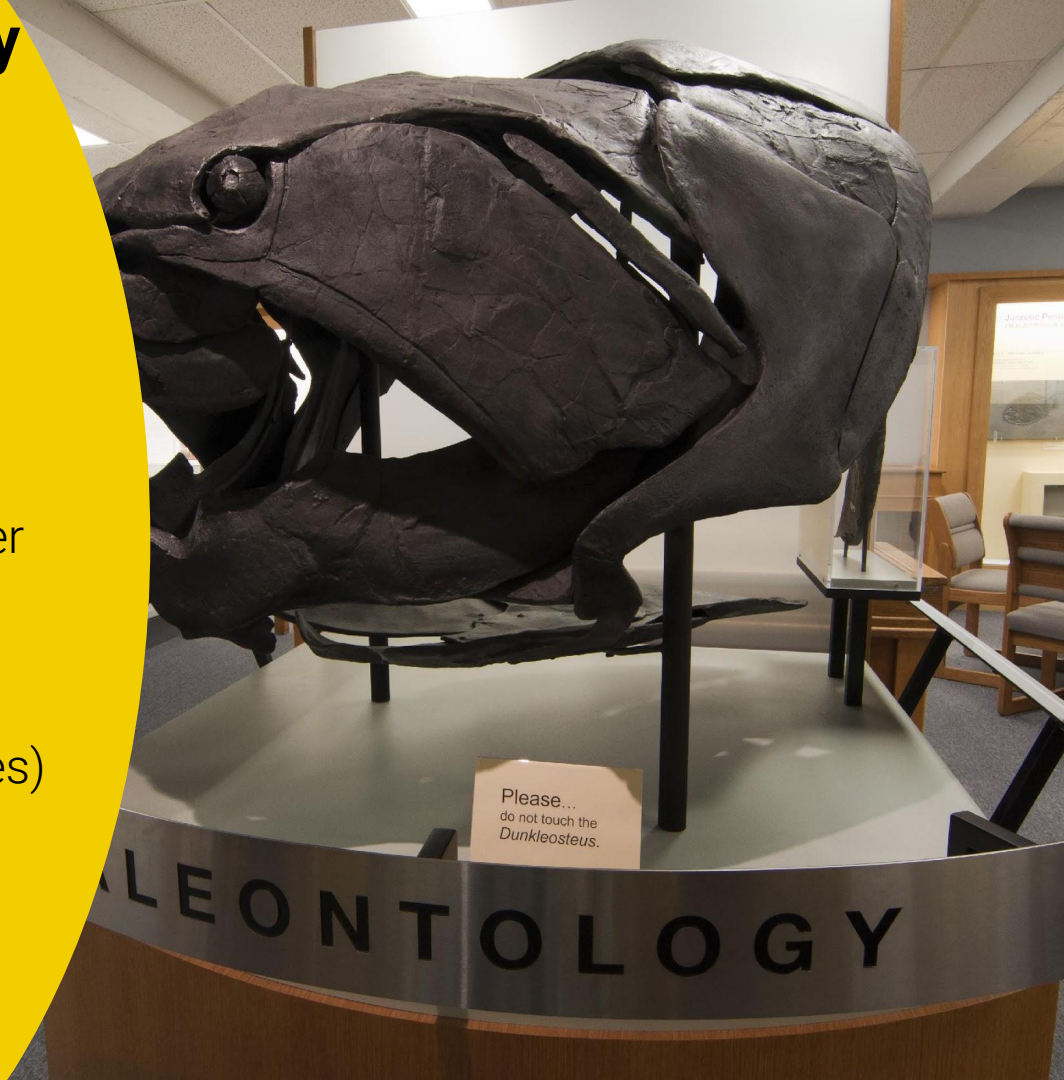
Palaeontology

- History of life through geological time, as seen in the fossil record

- **Course offerings**
  - Vertebrate palaeobiology
  - Invertebrate palaeobiology
  - Palaeobotany
  - Evolutionary biology
  - Systematics
  - Sedimentology

Career Options: Palaeontology

- Consultant
- Curator or curatorial assistant
- Fossil preparation technician
- Environmental law enforcement
- Naturalist
- Micropalaeontologist
    - Petroleum
- Museum or science centre interpreter
- Science education/outreach
- Science illustrator
- Science writer
- Professional school (graduate studies)



Common First Year Biological Sciences Course Selections

Course Title	Course Number	Credits	Lab
Introduction to Cell Biology	BIOL 107	3	✔
Introduction to Biological Diversity	BIOL 108	3	✔
Introductory Chemistry	CHEM 101	3	✔
Organic Chemistry	CHEM 261	3	✔
Calculus for the Life Sciences	MATH 134 (or 117 or 144 or 125)	3	X
Introduction to Applied Statistics	STAT 151	3	X
Two Arts Options	ENG or junior WRS	6	X
Two Science Options	Various	6	?

Undergraduate Student Associations

- Can participate in activities, build community, and form lasting friendships
  - See links on Biological Sciences website
- Biology Students' Departmental Association
- Molecular Biology Student Association
- Zoomaniacs
- Organization of Botany Students
- University of Alberta Palaeontology Society
- Wildlife Society UAlberta Chapter

Thank you for your attention!

biougrad@ualberta.ca

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