Course Syllabus

BIOL 3900.001 Advanced Research in Life Sciences FALL SEMESTER 2013

Research Topic: Cell Biology, Biochemistry and Molecular Biology—LIFE A217

Instructor: KD Chapman, Office, LSB414, 940-565-2969, chapman@unt.edu

Assistants: Yingqi Cai, Ph.D. student, Office LSB440, yingqicai@my.unt.edu
          Kevin Mutore, HHMI Undergraduate Fellow, kevinmutore@my.unt.edu

Times: Tues/Thurs-12:30-3:20 (5:00 pm), and other times as needed (THIS IS RESEARCH!!!)

Objective
The objective of this course is to provide undergraduate students the opportunity to conduct research in the areas of Cell Biology, Biochemistry and Molecular Biology. Experimental methodology to evaluate eukaryotic cellular organization and compartmentation will be emphasized. The research course will explore and test the extent of conservation of the regulation of lipid storage in eukaryotes at the cellular level. Approaches will involve the expression of mammalian “lipodystrophy” proteins in yeast and plant systems, and the evaluation of lipid droplet biogenesis by confocal fluorescence microscopy and lipid profiling. During the course, students will read the scientific literature, design experiments and evaluate/interpret their own results. Emphasis will be placed on critical thinking, data analysis and presentation of their scientific findings.

This course is based on real-world experimentation and will provide first-hand knowledge of the process of scientific discovery with its triumphs and frustrations. Students will be part of research teams and responsible for their own experimental results. It is expected that findings from student research will be of the highest quality and suitable for research publication.

Prerequisites: Elementary biochemistry, Cell Biology, Genetics, two semesters of Organic Chemistry and/or approval by the Instructor.

Expectations:
1. Attendance and participation are required.
2. Keep accurate, detailed lab notebook- Will be checked periodically for accuracy and completeness.
3. Read assigned papers and protocols (KEEP UP WITH READING)
4. Conduct experiments and collect data and record detailed observations—Prepare a report of progress/results at two times during semester—discussion and feedback
5. Prepare group power point presentation of research results at end of semester
6. Write a scientific paper describing your findings and turn in lab notebooks- due Finals week.

Grade will be based on:
1. Attendance and participation- 20%
2. Lab Notebook - 20%
3. Lab Progress Reports and Meetings- 20% (10% each)
4. Group presentation - 20%
5. Final Paper - 20%

**Website:** Use of Blackboard for this course will be minimal. Instead, the tentative schedule, protocols, resources and background literature will be found on class website, hosted by Erin O’Toole, Science Librarian. Reading assignments, sections for data viewing, important links and messages are on the website, so visit early and often.

[http://guides.library.unt.edu/biol3900](http://guides.library.unt.edu/biol3900)

**Safety:** Observe proper laboratory safety and techniques at all times.

- No food or drink in the lab.
- No sandals, no gum, minimize jewelry and accessories.
- Wear gloves, safety glasses when handling toxic/harmful chemicals. Be especially careful with ethidium bromide (known carcinogen).
- Stay alert and be aware of your surroundings.
- Dispose of biohazard and other hazardous wastes in appropriate containers.
- Observe aseptic techniques and conditions when appropriate.
- Wash hands with soap and water often.
- Always ask, if you have any questions.