

Chemistry 7440-01
Chemistry of Nucleic Acids
Spring Semester 2016

Lecturer: Dr. Janan Jayawickramarajah / Cooper Battle
Office: Percival Stern Hall 5027 / Flowers 103
Office hours: walk in anytime
Email: jananj@tulane.edu / cbattle@tulane.edu

Lectures: MWF 9:00 – 9:50 am
Room: Richardson Building 101
Credits: 3 hours

Main text: Nucleic Acids in Chemistry and Biology, third edition, Michael Blackburn (Editor), RSC publishing

Chapters covered for Lecture Portion (MW): 1, 2, 3, 4, 7, 9

Reading for Lab portion of Course (F): 5, 10.

Additional readings for Lab Portion will be taken from papers, as well as the following sources, and will be made available on BlackBoard or in class.

- a) Biosafety in Microbiological & Biomedical Laboratories (5th Ed), CDC/NIH
- b) Cell Proliferation & Apoptosis, D. Hughes & H. Mehmet (Eds)
- c) Practical Cell Analysis, Dimitri Pappas
- d) Cell Biology Protocols, Robin Harris, John Graham & David Rickwood (Eds)
- e) MicroRNA Interference Technologies, Zhiguo Wang
- f) Spectrophotometry & Spectrofluorimetry, Michael G. Gore (Ed)

Other texts: a) DNA Structure and Function, Richard R. Sinden; b) Biochemistry, second edition, Moran and Scrimgeour; c) The Chemical Biology of Nucleic Acids, Gunter Mayer.

Course Description

This course will examine the chemical principles behind DNA and RNA structure and function. Emphasis will be placed on the following topics: chemical synthesis of nucleic acids and their analogues, non-covalent interactions of nucleic acids with small-molecules. There will also be a laboratory module that focuses on nucleic acid synthesis/analysis, and cell culture.

A solid background in organic chemistry and biochemistry is required (prerequisites: CHEM 2410/2430, 2420/2440, 3830).

Exams

There will be one midterm that will count 40%. In class discussions (including literature discussions) will count 20%. The Lab portion (learning of successful technical skills) will count 40%.

Midterm 1: March 6 (Sat)

Literature Discussions

The instructor will set articles (from the primary literature) as reading assignments. You will be expected to read these assignments and discuss their impact on the field of nucleic acids chemistry and the general innovativeness of the research described.

Laboratory Portion

Basic background on techniques and an understanding of how results can be presented in literature will be presented in class through articles selected from the primary literature as well as other reference sources. You will be expected to read these assignments and be able to discuss them in class, as well as apply the techniques presented in lab.

Timing for experiments in the lab will depend on cell growth, and as such, will be at constantly changing times during the week, pending availability. You are expected to come to lab having studied the necessary techniques, and to maintain the highest standards of safety and cleanliness while working in the lab.

Academic Honesty. Tulane University upholds high standards of honesty and academic integrity. Any violation of the code of academic conduct will result in serious consequences, with possible suspension.