

## Biochemistry of Nucleic Acids CHEM684 (Spring 2011)

Instructor: Professor Zhihao Zhuang

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Office hours: Thursday 3:30 – 5:00

Lectures: Tuesday & Thursday 2:00-3:15 pm

Classroom: BRL 116

Listed below is an outline of the topics that will be covered in the lectures. The number of lectures for each topic may be adjusted as we progress. Presentation is an important part of this class. Each student will choose a recently published paper from a collection of high-impact papers that are selected from primary literatures. The selected papers are related to the topics covered by the lectures. The purpose is to help students relate what is learned from lecture to the real-world research problems.

1. Introduction to the chemistry and biology of nucleic acids
2. DNA & RNA structures
3. Biosynthesis of nucleosides/nucleotides
4. Synthesis of oligonucleotides
5. Nucleic acids in biotechnology
6. Genes and genomes
7. RNA structure & function
8. Covalent modifications of nucleic acids and DNA repair
9. Reversible small molecule-nucleic acid interactions
10. Protein-nucleic acids interactions
11. Physical and structural techniques applied to nucleic acids

Textbook:

1. "Nucleic acids in chemistry and biology" 3rd edition by G Michael Blackburn, Michael J Gait et al, RSC Publishing
2. "Biochemistry" 3rd edition by Voet & Voet, Wiley

Evaluation:

Class participation: 10%

Presentation: 30%

Examination: 60%

Examination includes Middle term exam (30%) & Final exam (30%)