

GS03 1021

Emerging Fields in Biochemistry and Molecular Biology: *Translational Science and Molecular Medicine* (1hr)

Course Description: The goal of this Minicourse is for students to *develop grant writing and peer review skills* in the context of learning cutting edge Translational Science. The class will be divided into 11 modules (twice per week) that are each 1 hour and 15 minutes long focused on new topics in Molecular Medicine: hemolytic disorders, hypertension and autoimmunity, aneurysms, Lyme disease, and pulmonary disorders. The fourth and eleventh class will be discussion-based and will be focused on writing a grant proposal. The first of those two discussions will focus on the development of the Specific Aims in class and the expectations for the final grant. The last class will be a “mock study section” moderated by Dr. Boehning to review proposals. Students are required to write a 2-page, NIH style proposal based upon the papers discussed in class. After the students turn in their proposals, Dr. Boehning will de-identify and redistribute the proposals back to the students. The students will then be required to present NIH-style critiques randomly assigned proposals and present these at the peer review held during the last class. This experience is meant to build upon the skills developed in Emerging Fields in Biochemistry and Molecular Biology: *RNA Biology*, but taking this course is not a prerequisite unless you wish to take these two courses to fulfill the GSBS writing requirement (see below).

Course Objectives

- A) Understand the conception and application of translational research
- B) Explore emerging topics in Translational Medicine including: hemolytic disorders, hypertension and autoimmunity, aneurysms, Lyme Disease, and pulmonary diseases
- C) Learn to conceive, assemble, and articulate an NIH-style proposal
- D) Learn to peer review a colleague's proposal

Course Requirements: This course is graded A-F, which will be evaluated as follows:
50% Attendance and class participation.
30% Final grant, with an emphasis on timely submission and completeness.
20% Peer review critique and defense.

Note regarding the GSBS writing requirement: The course *GS03 1011 Emerging Fields in Biochemistry and Molecular Biology: RNA Biology* is a **required** course for students who wish to take this course to satisfy the GSBS writing requirement. It must be taken either previously or in the same semester.

Preliminary Course Schedule

Class 1 (Xia): **Introduction to translational science and molecular medicine.**

Class 2 (Xia): Literature discussion: Translational studies in **hemolytic disorders** and **Metabolomic profiling studies** in blood disorder and novel pathogenic biomarkers and therapeutic targets

Class 3 (Xia): **GWAS studies in blood disorder** and **novel therapies**

Class 4 (Boehning): **Development of the Specific Aims**

Class 5 (Kellems): **Overview of hypertension and autoimmunity**

Class 6 (Kellems): Literature Discussion: **Autoimmunity and inflammatory response in hypertension (animal studies) and translational aspects (Human studies)**

Class 7 (Milewicz): Translational studies in cardiovascular diseases: **Aneurysm**

Class 8 (Norris): Translational studies in infection disease: **Lyme disease**

Class 9 (Blackburn): **Translational potential** (human studies and pharmacological studies)

Class 10 (Blackburn): **Pulmonary fibrosis** and potential therapies

Class 11 (Boehning): Discussion-based. Mock study section.