LEARN MODERN BIOTECHNOLGY

AND DEVELOP IMPORTANT TEACHING SKILLS

Become the Teaching Associate in 7.371,

Biological and Engineering Principles Underlying Novel Biotherapeutics

The class meets Mondays and Wednesdays, 3:00 – 5:00, during the Fall Term in the Whitehead Institute 7th floor classroom

This is a seminar and paper-reading course for ~15 senior MIT undergraduates who have already taken Genetics, Cell Biology, and Biochemistry and who have had extensive laboratory experiences. We read and discuss key basic and clinical research papers underlying many of the recent advances in biotechnology, and the course is taught at a very high level.

Topics this fall will include:

* Therapeutic recombinant proteins
* AAV gene therapies and directed evolution of AAV capsids for cell-specific gene delivery
* Oligonucleotide therapies for protein inhibition and for splicing activation
* CRSPR and Base Editing therapies for beta-thalassemia and sickle cell disease
* Retroviral vector therapies for immune disorders
* Monoclonal antibodies and antibody therapeutics: Anti-TNF therapeutics for rheumatoid arthritis and anti-IgE for treating allergy and asthma
* Antibody-drug conjugates
* Cancer immunotherapy: Checkpoint inhibitors, CAR-T cells, and cancer vaccines
* Microbiome and its applications
* iPS- derived cell therapies: Pancreatic islets and cardiomyocytes
* Ultrasensitive DNA and RNA diagnostics

Responsibilities include helping evaluate student class participation; joining in all class discussions; teaching one or more classes using papers of your choosing; working with students to develop their final class project; and helping evaluate the written and oral final projects.

If interested please contact either Professor Jianzhu Chen ([jchen@mit.edu](mailto:jchen@mit.edu)) or Harvey Lodish ([lodish@wi.mit.edu](mailto:lodish@wi.mit.edu))