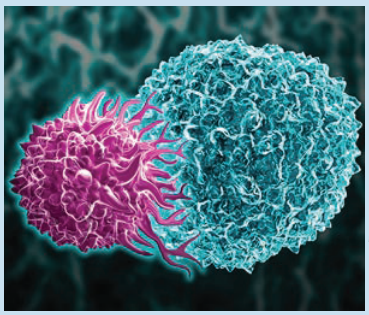
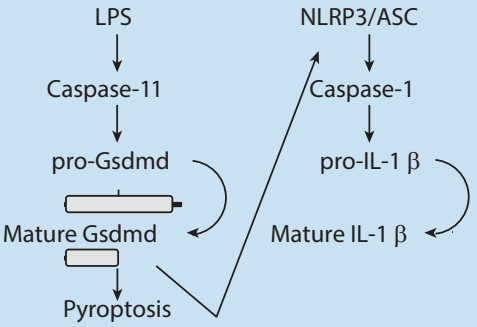
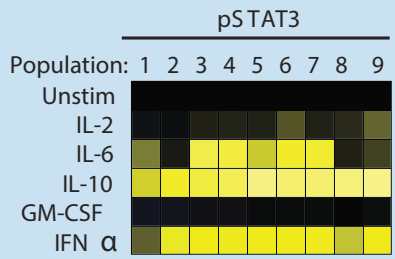
A double-edged sword: Cellular immunity in health and disease

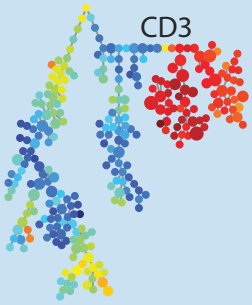
7.342 Fall 2018

An Advanced Undergradute Seminar Course









Immune cells are a diverse group of cells that function as foot soldiers to protect our bodies. These cells are equipped with a variety of powerful and adaptable mechanisms to detect and subsequently resolve a wide spectrum of insults. However, the same mechanisms can backfire under physiological stress and instead result in severe disorders, including immunodeficiency, chronic infection and inflammation, autoimmune diseases, and cancer. This course will familiarize students with the basic immunological regulatory mechanisms and examples of strategies that apply this knowledge to improve human health. More generally, students will learn how to identify relevant primary research literature, critically evaluate experimental data, and reach their own conclusions based on primary data.

Covers topics associated with cellular immunity:

- **Development of immune cells**
- **DNA rearrangements in adaptive immune cells**
- **Cytotoxic T cells, chimeric antigen receptor (CAR) T cells**
- **Cell death and immune processes**
- **Lymphocytes in disease**
- **Autoimmunity**
- **Macrophages and innate lymphoid cells (ILC)**
- **Emerging technologies in immunology**

field trip to Merck

refreshments provided in class

Students will read and discuss classic and current papers, interpret primary data and discuss implications of papers.

Class time is flexible
First class: Wed Sept 5, 11 am-1 pm, 68-150

Prereqs: See the syllabus
Units: 6
Website:
https://stellar.mit.edu/S/course/7/fa18/7.342
Contact: hma@wi.mit.edu