IMMU 418: Cancer Immunology

Cancer immunotherapy is a rapidly advancing field in research and in the clinic, which focusses on the interface between the immune system, inflammation and cancer biology. To advance research in this field an understanding of each of these systems and how they interact to suppress or promote cancer progression is vital. Students taking this class will gain an understanding of how the tumor microenvironment alters and evades the immune system and the contribution of inflammation in promoting cancer progression. This course will serve as an introduction to further studies in cancer immunotherapies.

Topics covered:

- Tumor microenvironment – the interactions between immune cells and cancer cells.
- Polarization of Macrophages and Recruitment of Inflammatory Cells by Cancer Cells.
- Mechanisms of Tumor- Induced Tolerance/Escape from the Immune System.
- Immunosuppression by Myeloid-Derived Suppressor Cells (MDSCs)
- Innate immune system in cancer and therapies utilizing cytokines and interferons.
- Cancer Vaccines: preventative and therapeutic.
- Viruses and cancer: cancer-causing viruses (eg HPV, HTLV1), oncolytic viruses and use of viruses in gene therapy.
- Anti-cancer antibodies (including ADCs) to target cancer cells.

Learning Objectives

- Students will list the mechanisms by which cancer cells evade the immune system.
- Students will describe the relationships between viruses and cancer, and give examples of cancer vaccines.
- Students will explain how cancer cells interact with and 'corrupt' immune cells in the tumour microenvironment.
- Students will demonstrate how the innate immune system can be utilized in cancer therapy.

Credits: 1
Class Type: Graduate Course
Program: Immunology and Microbiology
Availability Fall 2021
Session Session B