CB7410 / IM7410 Cancer Immunology and Immunotherapy, 3 credits (Winter 2017)

Pre-requisite

- IM7010 Fundamentals of Immunology, or
- An equivalent course in basic immunology

Time

- Lecture (session a): Friday 10:00–11:15a
- Journal club (session b): Tuesday 10:00–11:15a

Venue

Scott Hall 7th Floor
Immunology Library

Session	Dates		Module and Topic	Instructor and Affiliation
1a, 1b	1/13	1/17	1. Endogenous and induced tumor immunity a. Introduction	Gilda Hillman, Radiation Oncology
2a, 2b	1/20	1/24	b. Innate immunity (Myeloid cells, NK cells)	Prahlad Parajuli, Neurosurgery
3a, 3b	1/27	1/31	c. Innate lymphocytes ($\gamma\delta$ T cells, NKT cells, MAIT cells, ILCs) d. Adaptive T cells e. Antibodies	Qing-Sheng Mi, Henry Ford Health System
4a, 4b	2/3	2/7	2. Inflammation and the tumor microenvironment	Gilda Hillman, Radiation Oncology
5a, 5b	2/10	2/14	3. Tumor immune evasion and suppression a. Passive immune evasion b. Active immune suppression – immune checkpoints	Prahlad Parajuli, Neurosurgery
6a, 6b	2/17	2/21	c. Regulatory T cells and regulatory B cells d. Myeloid-derived suppressor cells (including mast cells and eosinophils) e. Angiogenesis and immune suppression	Prahlad Parajuli, Neurosurgery
7a, 7b	2/24	2/28	4. The microbiota and cancer immunity a. Mucosal immunity b. Bacteria, viruses and protozoa in cancer immunity	Kang Chen, Obstetrics and Gynecology
8a, 8b	3/3	3/7	5. Biologics-based therapies a. Immune checkpoint modulators b. Cytokines c. Epigenetic immune modifiers	Amy Weise, Hematology/Oncology
9a, 9b	3/24	3/27	d. Bi-specific antibodies 6. Cell-based therapies a. CART	Abhinav Deol, Oncology
10a, 10b	3/31	4/4	b. Dendritic cell immunotherapy c. Vaccines 7. Cancer immunotherapy in the era of precision medicine	Heather Gibson, Oncology
11a, 11b	4/7	4/11	8. Advanced biomaterial-based cancer immune modulation	Haipeng Liu, Chemical Engineering
12a, 12b	4/14	4/18	9. Imaging cancer immunotherapy	Nerissa Viola-Villegas, Oncology
13a, 13b	4/21	4/25	10. Synergizing radiotherapy and immunotherapy	Gilda Hillman, Radiation Oncology

Assessment / Grading information

- Continuous assessment (30%), based on
  - Class attendance
  - Written summary of the article(s) each week
  - Journal club presentation and participation in discussion
- Final exam (70%), in the week of 5/1/17
  - Short and long essay questions, 2 hours

Inquiry

- Course directors: Kang Chen kang@wayne.edu
  Gilda Hillman hillmang@karmanos.org
- Teaching assistant: Matthew Fountain mfountai@med.wayne.edu
- Coordinator: Nadia Daniel danieln@karmanos.org
- Course website: Available in the Blackboard

Leaning Outcome

The purpose of this course is to introduce students to fundamental concepts and methodologies in cancer immunology and immunotherapy as well cutting-edged developments in the academia and the industry in this rapidly progressing field. Upon the completion of the course, the students will become familiar with principles of

- how the immune system limits and eradicates cancer
- how cancer cells evade immune recognition
- how cancer immunity is influenced by host genetics and environmental factors
- how cancer immunotherapies are currently performed and monitored in the clinical settings
- what are the future developments expected in cancer immunotherapy
- how to critically review the basic and clinical literature in cancer immunology and immunotherapy