CAMB 701: The Tumor Microenvironment

Directors: Celeste Simon, PhD and Todd Ridky, MD, PhD
TA: Ariana Majer

Tuesdays 3:30-5:30 pm
BRB II/III

Syllabus Spring 2023

Class Format:
- Students present background (30-40 minutes).
- 10-minute break
- Students present key data in paper (45-50 minutes).
- Feedback from Celeste and Todd to presenters only (10 minutes).

Reminder: each week, students that are not presenting that week will submit two questions they would like to discuss concerning impact/novelty/implications and/or general questions about the papers to Celeste, Todd, and Ariana the day of class.

Class 1: (1/17/23). Organizational Meeting: Intro to Immunology, Tumor Microenvironment, etc. (Ariana)

Class 2: (1/24/23) Crosstalk between the Tumor and Microenvironment (Celeste)

Class 3: (1/31/23) Immune Surveillance (Ariana)

Class 4: (2/7/23) Cancer Heterogeneity, Plasticity, and Tumor Evolution (Celeste)
Concepcion et al. “SMARCA4 inactivation promotes lineage-specific transformation and early metastatic features in the lung”, Cancer Discovery (2021)

Class 5: (2/14/23) Metastatic Niche (Ariana)

Class 6: (2/21/23) Tumor Angiogenesis, Lymphangiogenesis (Todd)
Garcia Silva et al. “Melanoma-derived small extracellular vesicles induce lymphangiogenesis and metastasis through an NGFR-dependent mechanism” Nature Cancer (2021)
Stella Stasso “Lymphangiogenesis-inducing vaccines elicit potent and long-lasting T cell immunity against melanomas” Science Advances (2021)

Class 7: (3/1/23) Mock Study Section (Celeste)

Spring Break: March 6-10, 2023

Class 8: (3/14/23) Systemic Factors and Tumor Progression (Celeste)
Queiroz et al. “Blocking ActRIIB signaling and restoring appetite reverses cachexia and improves survival in mice with lung cancer” Nature Communications (2022)

Class 9: (3/21/23) The Tumor Stroma, Cancer Associated Fibroblasts (Todd)
Katarkar et al. “NOTCH1 gene amplification promotes expansion of Cancer Associated Fibroblast populations in human skin” Nature Communications (2020)
Zhang et al. “Macropinocytosis in Cancer-Associated Fibroblasts Is Dependent on CaMKK2/ARHGEF2 Signaling and Functions to Support Tumor and Stromal Cell Fitness” Cancer Discovery (2021)

Class 10: (3/28/23) Stressful Tumor Microenvironments (Hypoxia and Nutrient Scarcity) (Celeste)
Ubellacker et al. “Lymph protects metastasizing melanoma cells from ferroptosis” Nature (2020)

Class 11: (4/4/23) The Influence of Microbiome on Tumor Growth (Todd)
Lam et al. “Microbiota triggers STING-type I IFN-dependent monocyte reprogramming of the tumor microenvironment” Cell (2021)

Class 12: (4/11/23) Inflammation and Tumor Progression (Celeste)
Liudahl et al. “Leukocyte Heterogeneity in Pancreatic Ductal Adenocarcinoma: Phenotypic and Spatial Features Associated with Clinical Outcome” Cancer Discovery (2021)

Class 13: (4/18/23) Tumor-Nervous System Interactions (Ariana)

Class 14: (4/25/23) Sex as a Biological Variable in Tumor Progression (Todd)
Aguirre-Portoles et al. “ZIP9 is a druggable determinant of Sex Differences in Melanoma” Cancer Research (2021)

Class 15: (5/2/23) Tumor Dormancy (Ariana)


Mock Study Section: each student submits a one page Specific Aims on an assigned paper from class. Each student will be assigned as the primary reviewer of someone else’s aims page to present that day.

Course Grade: 40% assigned presentations, 40% overall class participation (and weekly questions), and 20% Specific Aims for Mock Study Section.