

CAMB 7010: The Tumor Microenvironment

Directors: Ahmed Diab, PhD, Guilherme Nader, PhD, Alexander Huang, MD

Wednesdays 3:30-5:30 pm

BRB 901

Biomedical Research Building II/III

Syllabus Spring 2026

Class Format:

- Students can meet with the assigned faculty prior to their presentation to discuss papers, slide deck, and any questions they may have.
- Two Student presenters per class, each assigned one paper per class
- Student present background (10-15 minutes, key data 30-45 minutes).
- Feedback from Ahmed, Guilherme, and Alex to presenters only (10 minutes).

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 Ahmed, Guilherme, and Alex before or on the day of class.

If a student misses a class they are still expected to read the papers and submit their questions. Students missing class are expected to inform instructors in writing before class.

Course Grade: 40% assigned presentations, 40% overall class participation (and weekly questions), and 20% News and Views Article.

Classes:

(1/14/26) Class 1: Organizational Meeting

(1/21/26) Class 2: Inflammation and Tumor Progression (Guilherme)

Liudahl et al. “**Leukocyte Heterogeneity in Pancreatic Ductal Adenocarcinoma: Phenotypic and Spatial Features Associated with Clinical Outcome**”, *Cancer Discovery* (2021).

Frittoli et al., “**Tissue fluidification promotes a cGAS-STING cytosolic DNA response in invasive breast cancer**” *Nature Materials* (2023).

(1/28/26) Class 3: Metastatic Niche (Alex)

Lee et al. “**Hepatocytes Direct the Formation of a Pro-metastatic Niche in the Liver**”, *Nature* (2019).

Reticker-Flynn et al. “**Lymph node colonization induces tumor-immune tolerance to promote distant metastasis**”, *Cell* 2022.

(2/04/26) Class 4: The Tumor Stroma, Cancer Associated Fibroblasts (Guilherme)

Barbazan et al., “**Cancer-associated fibroblasts actively compress cancer cells and modulate mechanotransduction**”, *Nature Communications* (2023).

Arwert et al., “**STING and IRF3 in stromal fibroblasts enable sensing of genomic stress in cancer cells to undermine oncolytic viral therapy**”, *Nature Cell Biology* (2020).

(2/11/26) Class 5: Immune Surveillance (Ahmed)

Herrera et al. “**Low dose radiotherapy reverses tumor immune desertification and resistance to immunotherapy**”, *Cancer Discovery* (2021).

Nalio Ramos et al. “**Tissue-resident FOLR2+ macrophages associate with CD8+ T cell infiltration in human breast cancer**”, *Cell* (2022)

(2/18/26) Class 6: Crosstalk between the Tumor and the Microbiome (Alex)

Lin et al, “**Microbiota-driven antitumor immunity mediate by dendritic cell migration**”, *Nature* 2025.

“**Targeting PD-L2-RGMb overcomes microbiome-related immunotherapy resistance**”, *Nature* (2023).

(2/25/26) Class 7: Systemic Factors and Tumor Progression (Guilherme)

Argiles et al. “**Cancer-associated cachexia — understanding the tumour macroenvironment and microenvironment to improve management**”, *Nature Review Clinical Oncology* (2023).

Queiroz et al. “**Blocking ActRIIB signaling and restoring appetite reverses cachexia and improves survival in mice with lung cancer**”, *Nature Communications* (2022).

(3/04/26) Class 8: Tumor Angiogenesis, Lymphangiogenesis (Ahmed)

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).

--- Spring Break: March 9-13, 2026 ---

(3/18/26) Class 9: Tumor-Nervous System Interactions (Alex)

Baruch et al. “**Cancer-induced nerve injury promotes resistance to anti-PD-1 therapy**” *Nature*, (2025)

Veena Padmanaban et al. “**Neuronal substance P drives metastasis through an extracellular RNA-TLR7 axis**”, *Nature* (2024).

(3/25/26) Class 10: Stressful Tumor Microenvironments (Ahmed)

Lyu et al. “**Evolution of myeloid-mediated immunotherapy resistance in prostate cancer**”, *Nature* (2025).

Ubellacker et al. “**Lymph protects metastasizing melanoma cells from ferroptosis**”, *Nature* (2020).

(4/01/26) Class 11: The Influence of Age on Tumor Growth (Alex)

Fane et al. “**Stromal Changes in the Aged Lung Induce an Emergence From Melanoma Dormancy**”, *Nature* (2022).

Marino-Bravante et al. “**Age-dependent Loss of HAPLN1 Erodes Vascular Integrity via Indirect Upregulation of Endothelial ICAM1 in Melanoma**”. *Nature Aging* (2024).

(4/08/26) Class 12: Tumor Metabolism (Ahmed)

Reinfeld et al. “**Cell-programmed nutrient partitioning in the tumour microenvironment**”, *Nature* (2021).

Gao et al. “**Restricting lipid accumulation in tumor-infiltrating neutrophils mediates caloric restriction-induced anti-cancer effects**”, *Cell Metabolism* (2025).

(4/15/26) Class 13: The Temporal Tumor Microenvironment (Guilherme)

Albrengues et al. “**Neutrophil extracellular traps produced during inflammation awaken dormant cancer cells in mice**”, *Science* (2018).

Wang et al., “**Circadian tumor infiltration and function of CD8+ T cells dictate immunotherapy efficacy**”, *Cell* (2024).

(4/22/26) Class 14: Cancer Heterogeneity, Plasticity, and Tumor Evolution (Guilherme)

Chia-Kuei Mo et al, “**Tumour evolution and microenvironment interactions in 2D and 3D space**”, *Nature* (2024).

Concepcion et al. “**SMARCA4 inactivation promotes lineage-specific transformation and early metastatic features in the lung**,” *Cancer Discovery* (2021).

(4/29/26) Class 15: Sex as a Biological Variable in Tumor Progression (Ahmed)

Vellano et al. “**Androgen receptor blockade promotes response to BRAF/MEK-targeted therapy**”, *Nature* (2022).

Raymond et al. “**Targeting GRPR for sex hormone-dependent cancer after loss of E-cadherin**” *Nature*, (2025)

Presentation Schedule:

Date	Paper 1 Presenter	Paper 2 Presenter
1/14/26		
1/21/26		
2/28/26		
2/04/26		
2/11/26		
2/18/26		
2/25/26		
3/04/26		
3/18/26		
3/25/26		
4/01/26		
4/08/26		
4/15/26		
4/22/26		
4/29/26		