

## **CAMB 7010: The Tumor Microenvironment**

**Directors:** Ahmed Diab, PhD, Guilherme Nader, PhD, Ronny Drapkin, MD, PhD

**Thursdays 3:30-5:30 pm**  
**Stellar Chance 204**

### **Syllabus Spring 2025**

Class Format:

- Students can meet with the assigned faculty prior to their presentation to discuss papers, slide deck, and any questions they may have.
- Students present background (30-40 minutes).
- 10-minute break
- Students present key data in paper(s) (45-50 minutes).
- Feedback from Ahmed, Guilherme, and Ronny 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 Ronny 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.

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

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#### Classes:

(1/09/25) Class 1: Organizational Meeting

(1/23/25) 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).

(1/30/25) Class 3: Metastatic Niche (Ronny)

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

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

(2/06/25) 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).

(2/13/25) Class 5: Crosstalk between the Tumor and the Microbiome (Ronny)

Yi et al. **“Multimodal Immune Phenotyping Reveals Microbial-T cell Interactions That Shape Pancreatic Cancer”**, *Cell Reports Medicine* (2024).

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

(2/20/25) Class 6: Immune Surveillance (Ahmed)

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

Li et al., **“IGSF8 is an Innate Immune Checkpoint and Cancer Immunotherapy Target”**. *Cell* (2024).

(2/27/25) 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).

(3/06/25) 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 8-16, 2025 ---

(3/20/25) Class 9: Stressful Tumor Microenvironments (Hypoxia and Nutrient Scarcity) (Ahmed)

Lien et al. **“Low glycaemic diets alter lipid metabolism to influence tumour growth”**, *Nature* (2021).

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

(3/27/25) Class 10: Tumor-Nervous System Interactions (Ronny)

Balood et al. **“Nociceptor neurons affect cancer immunosurveillance”**, *Nature* 2022

Banh et al. **“Neurons release serine to support mRNA translation in pancreatic cancer”**, *Cell* (2020).

(4/03/25) Class 11: The Influence of Age on Tumor Growth (Ronny)

Rossetti et al., **“In Vivo DNA Replication Dynamics Unveil Aging-Dependent Replication Stress”**. *Cell* (2024).

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

(4/10/25) Class 12: Tumor Metabolism (Ahmed)

Xiao et al. **“Emerging therapies in cancer metabolism”**, *Cell Metabolism* (2023).

Tang et al. **“Immunogenic coevolution defines unique microenvironmental niches in ccRCC”**, *Cell Metabolism* (2023).

(4/17/25) Class 13: Tumor Dormancy (Guilherme)

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

Montagner et al., **“Crosstalk with lung epithelial cells regulates Sfrp2-mediated latency in breast cancer dissemination”**, *Nature Cell Biology* (2020).

(4/24/25) 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).

(5/01/25) 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).

**Presentation Schedule:**

<b>Date</b>	<b>Background Presenter</b>	<b>Paper Presenter</b>
1/23/25	Shirley Sun	Owen Koucky
1/30/25	Hira Khattak	Beatrice Goncalves
2/06/25	Grace Hinds	Madison Wahlsten
2/13/25	Jinfan Zhang	Shirley Sun
2/20/25	Mehrnaz Zakershaharak	Megan Costa
2/27/25	Bhargavi Subramanian	Jinfan Zhang
3/06/25	Owen Koucky	Grace Hinds
3/13/25	<i>NO CLASS</i>	<i>NO CLASS</i>
3/20/25	Beatrice Goncalves	Hira Khattak
3/27/25	Madison Wahlsten	Kim Manning
4/03/25	Megan Costa	Bhargavi Subramanian
4/10/25	Kim Manning	Mehrnaz Zakershaharak
4/17/25	<i>Grace Hinds</i>	<i>Beatrice Goncalves</i>
4/24/25	<i>Kim Manning</i>	<i>Bhargavi Subramanian</i>
5/01/25	<i>Hira Khattak</i>	<i>Owen Koucky</i>