**CAMB 7010: The Tumor Microenvironment**

**Directors:** Celeste Simon, PhD, Todd Ridky, MD, PhD, Ronny Drapkin, MD, PhD

**Thursdays 3:30-5:30 pm**

**1201 BRB II/III**

**Syllabus Spring 2024**

Class Format:

* Students present background (30-40 minutes).
* 10-minute break
* Students present key data in paper(s) (45-50 minutes).
* Feedback from Celeste, Todd, and Ronny 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 Ronny the day of class.*

(1/18/24) Class 1: Organizational Meeting

(1/25/24) Class 2: Immune Surveillance (Todd)

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

(2/1/24)Class 3: Metastatic Niche (Ronny)

Mukherjee et al. **“Adipocyte-induced FABP4 expression in ovarian cancer cells promotes metastasis and mediates carboplatin resistance”,** *Cancer Research* (2020).

(2/8/24) Class 4: Crosstalk between the Tumor and Microenvironment (Celeste)

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

(2/15/24) Class 5: Tumor Angiogenesis, Lymphangiogensis (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)

(2/22/24) Class 6: Inflammation and Tumor Progression (Ronny)

[Liudahl](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Liudahl+SM&cauthor_id=33727309) et al.“**Leukocyte Heterogeneity in Pancreatic Ductal Adenocarcinoma: Phenotypic and Spatial Features Associated with Clinical Outcome”,** *Cancer Discovery* (2021)

Cappellesso et al. “**Targeting the bicarbonate transporter SLC4A4 overcomes immunosuppression and immunotherapy resistance in pancreatic cancer”,** *Nature Cancer* (2022)

(2/29/24) Class 7: Systemic Factors and Tumor Progression (Celeste)

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)

Spring Break: March 4-8, 2024

(3/14/24) Class 8: The Tumor Stroma, Cancer Associated Fibroblasts (Todd)

**“Antiandrogen treatment induces stromal cell reprogramming to promote castration resistance in prostate cancer”,** *Cancer Cell* (2023)

(3/21/24) Class 9: Stressful Tumor Microenvironments (Hypoxia and Nutrient Scarcity) (Celeste)

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)

(3/28/24) Class 10: Tumor-Nervous System Interactions (Ronny)

Kamiya et al. **“Genetic manipulation of autonomic nerve fiber innervation and activity and its effect on breast cancer progression”,** *Nature Neuroscience* (2019).

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

(4/4/24) Class 11: The Influence of Microbiome on Tumor Growth (Todd)

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

(4/11/24) Class 12: Tumor Metabolism (Celeste)

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

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

(4/18/24) Class 13: Tumor Dormancy (Ronny)

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

Correia et al. **“Hepatic stellate cells suppress NK cell-sustained breast cancer dormancy”,** *Nature* (2021)

(4/25/24) Class 14: Sex as a Biological Variable in Tumor Progression (Todd)

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

Aguirre-Portoles et al. **“ZIP9 is a druggable determinant of Sex DIffrerences in Melanoma”,** *Cancer Research*  (2021)

(5/2/24) Class 15: Cancer Heterogeneity, Plasticity, and Tumor Evolution (Celeste)

Dentro et al. **“Characterizing genetic intra-tumor heterogeneity across 2,658 human cancer genomes”,** *Cell*(2021)

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

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

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| **Date** | **Background Presenter** | **Paper Presenter** |
| 1/25/24 | Erik Williams | Morgan Kuczler |
| 2/1/24 | Taku Harada | Jayne McDevitt |
| 2/8/24 | Diana Cruz | Joe Tandurella |
| 2/15/24 | Daniel Boehmler | Shira Rosengerg |
| 2/22/24 | Kayla Rose | Sarah Acolatse |
| 2/29/24 | Nivitha Murali | Alexandra Neeser |
| 3/7/24 | *NO CLASS* | *NO CLASS* |
| 3/14/24 | Andrea Valdespino | Anna Thickens |
| 3/21/24 | Joe Tandurella | Erik Williams |
| 3/28/24 | Morgan Kuczler | Taku Harada |
| 4/4/24 | Alexandra Neeser | Diana Cruz |
| 4/11/24 | Shira Rosenberg | Nivitha Murali |
| 4/18/24 | Jayne McDevitt | Daniel Boehmler |
| 4/25/24 | Anna Thickens | Kayla Rose |
| 5/2/24 | Sarah Acolatse | Andrea Valdespino |