

## **41. Breast Cancer**

**2 units, Sarat Chandarlapaty, April 27 and 28, 2026**

Cancers arising in hormone-regulated tissues are among the most common cancers observed in clinical practice and include cancers of the breast, prostate, endometrium, endocrine pancreas, ovary, and thyroid. A critical role for hormones in promoting growth and maintaining lineage and differentiated state of cancer cells from these tissues has been exploited to give rise to hormonal therapies that are among the most successful treatments still used in clinical oncology. Indeed, hormone therapy represents the form of systemic therapy that accounts for the largest improvements in survival of cancer patients in the diseases in which they are used, dwarfing the effects of chemotherapy or immunotherapy.

Despite this success, there are still large areas that are unexplored in the biology of these tumors including the mechanisms whereby hormones exert control of the genome selectively in these cell types, the specific programs that become dysregulated by oncogenes or carcinogens during transformation, and the optimal therapeutic approaches to targeting the hormone receptor and oncogene drivers of these cancers. In this session, we will utilize breast cancer as a hallmark of a hormone driven cancer to illustrate the principles of hormone regulation of cancer growth, clinical presentations of the disease, molecular tools for classification, and targeted therapy and resistance.

Outline for lecture/discussion:

1. Clinical presentation of breast cancer
2. General treatment principles
3. Molecular classification of breast cancer
4. Hormone and targeted therapy of breast cancer and resistance

### **Paper Discussion Day**

#### **Discussion Paper:**

##### **Neurofibromin Is an Estrogen Receptor- $\alpha$ Transcriptional Co-repressor in Breast Cancer**

Zheng ZY, Anurag M, Lei JT, et al. *Cancer Cell* 2020 Mar 16;37(3):387-402.e7.

#### **Background/Review Papers:**

##### **Pioneer factors in hormone-dependent cancers**

Jozwik KM, Carroll JS. *Nat Rev Cancer* 2012 May 4;12(6):381-5.

##### **Overcoming oncogene addiction in breast and prostate cancers: a comparative mechanistic overview.**

Blatt EB, Kopplin N, Kumar S et al. *Endocr Relat Cancer* 2021 Feb;28(2):R31-46.

#### **Other papers for consideration:**

##### **FOXA1 mutations alter pioneering activity, differentiation and prostate cancer phenotypes**

Adams EJ, Karthaus WR, Hoover E, et al. *Nature* 2019 Jul;571(7765):408-412.

##### **SWI/SNF complex mutations promote thyroid tumor progression and insensitivity to redifferentiation therapies.**

Saqcena M, Leandro-Garcia LJ, Maag JLV et al. *Cancer Discovery* 2020 Dec 14;cD-20-0735.