

## 21. Introduction to Cancer Biology

2 units, Pablo Sanchez Vela, March 2 and 3, 2026

March 2, 2026

- o Understand the history behind the development of the field of oncology.
- o Understand the current burden of cancer as a disease.
- o Understand how we classify and treat cancers.
- o Understand how tumor cells evolve and adapt.
- o Understand the molecular and environmental basis of cancer.

March 3, 2026

- Please, read the papers attached. Once reviewed, please, complete the take-home activity. Bring your answer to class, we will discuss your choices during the session.
- In 1 to 2 phrases, propose a model, an observational, and a functional experiment to evaluate each of the following cancer hallmarks and enabling characteristics:
  - Sustaining proliferative signaling
  - Evading growth suppressors
  - Resisting cell death
  - Enabling replicative immortality
  - Inducing angiogenesis
  - Activating invasion and metastasis
  - Reprogramming cellular metabolism
  - Avoiding immune destruction
  - Unlocking phenotypic plasticity
  - Epigenetic reprogramming
  - Polymorphic microbiomes
  - Genomic instability
  - Tumor promoting inflammation

Discussion Papers:

Hanahan D, Weinberg RA. The hallmarks of cancer. *Cell*. 2000 Jan 7;100(1):57-70. doi: 10.1016/s0092-8674(00)81683-9. PMID: 10647931.

Hanahan D, Weinberg RA. Hallmarks of cancer: the next generation. *Cell*. 2011 Mar 4;144(5):646-74. doi: 10.1016/j.cell.2011.02.013. PMID: 21376230.

Review:

Hanahan D. Hallmarks of Cancer: New Dimensions. *Cancer Discov*. 2022 Jan;12(1):31-46. doi: 10.1158/2159-8290.CD-21-1059. PMID: 35022204.