

Neoplasia and Cancer

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1. Introduction

- Neoplasia is abnormal, uncontrolled growth of cells forming a tumor.
- Cancer refers to malignant neoplasms that invade and spread.

2. Benign vs Malignant

- **Benign tumors:** grow slowly, remain localized, and are usually encapsulated.
- **Malignant tumors:** grow rapidly, invade tissue, and can metastasize.
- Differentiation describes how closely tumor cells resemble normal cells.

3. Carcinogenesis

- A multistep process of genetic mutation and accumulation.
- **Oncogenes:** promote uncontrolled growth when activated.
- **Tumor suppressor genes:** normally restrain growth and are lost in cancer.

4. Causes and Risk Factors

- Chemical carcinogens such as tobacco, and radiation including UV light.
- Oncogenic viruses like HPV and hepatitis B.
- Genetic predisposition, diet, and chronic inflammation.

5. Spread and Diagnosis

- **Metastasis:** spread to distant sites via blood, lymph, or body cavities.
- Grading and staging assess aggressiveness and extent.
- Diagnosis relies on biopsy, histology, and imaging.