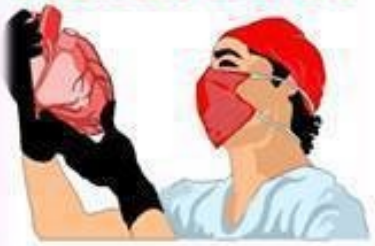
PATHOLOGY



Medical Committee
The University of Jordan

☐ SHEET

■ SIIDE

Slide : 14- Neoplasia

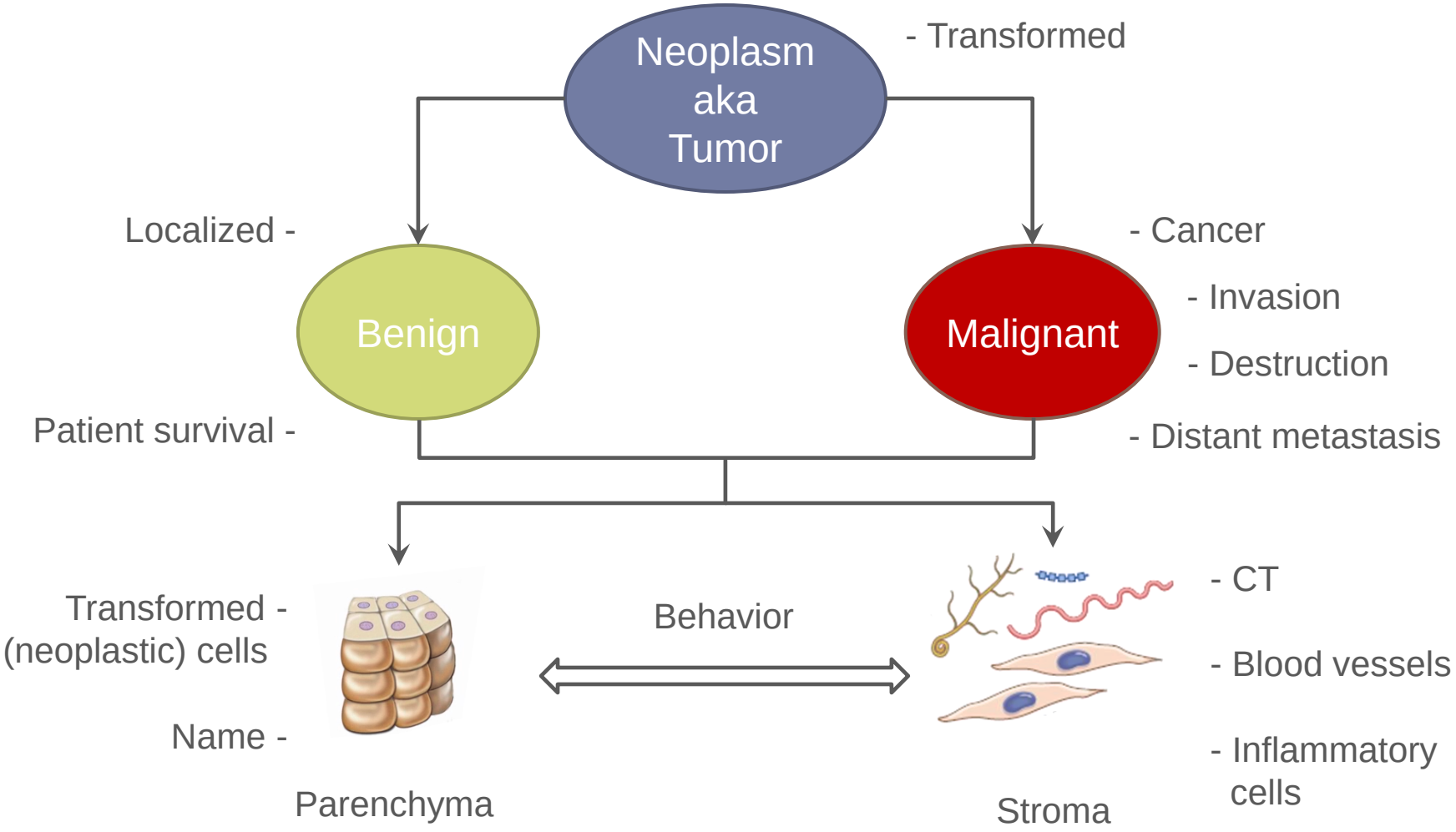
Doctor: Dr. Mazen

Designed by: Majida Al-Foqara'

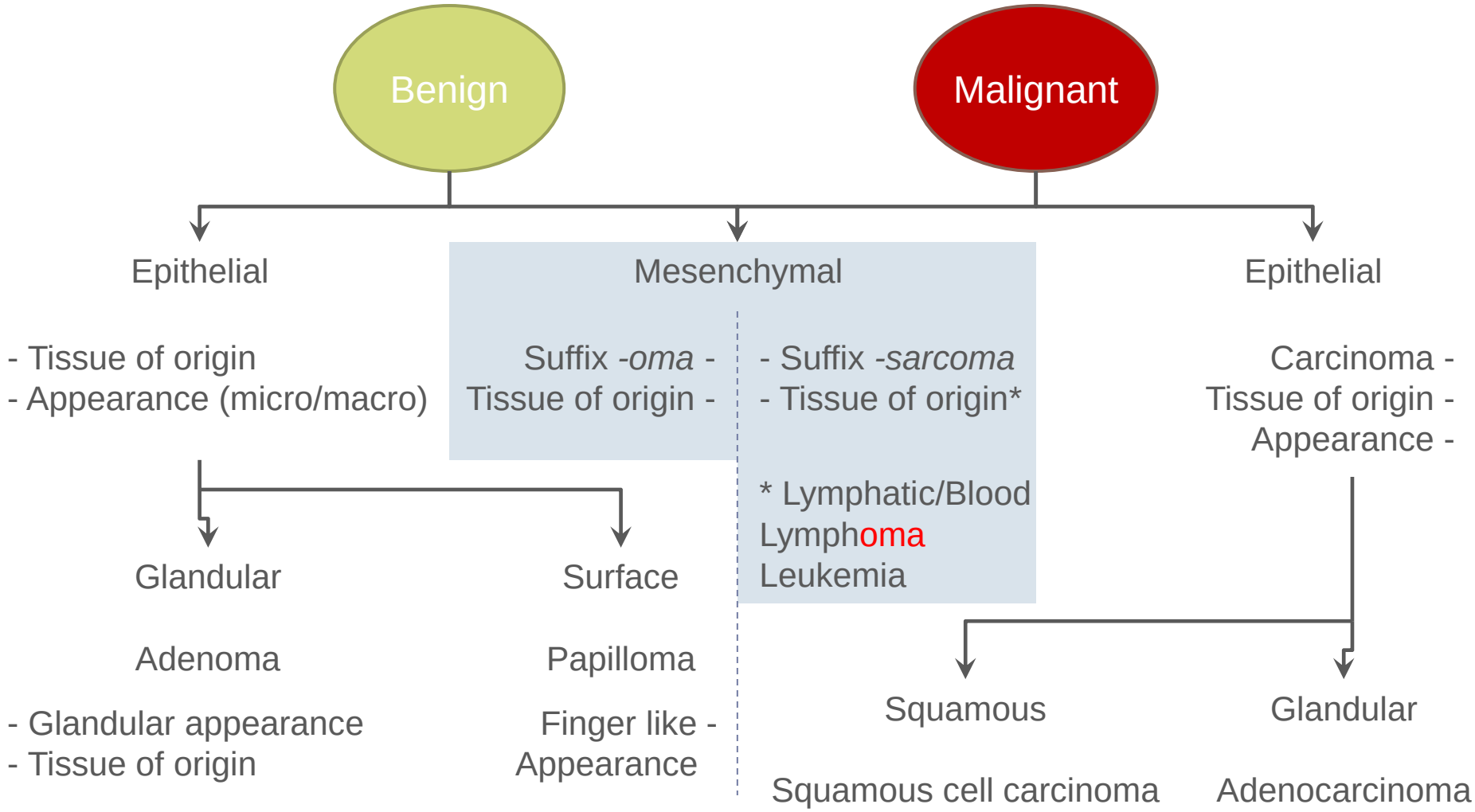
Neoplasia

Dr. Mazin Al-Salihi

Neoplasia (new growth) & Oncology



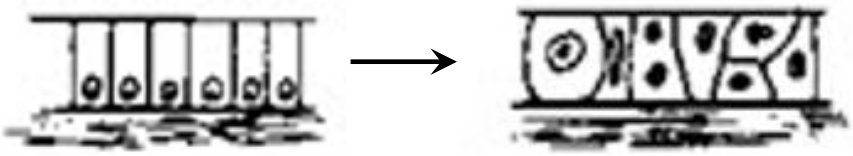
Nomenclature



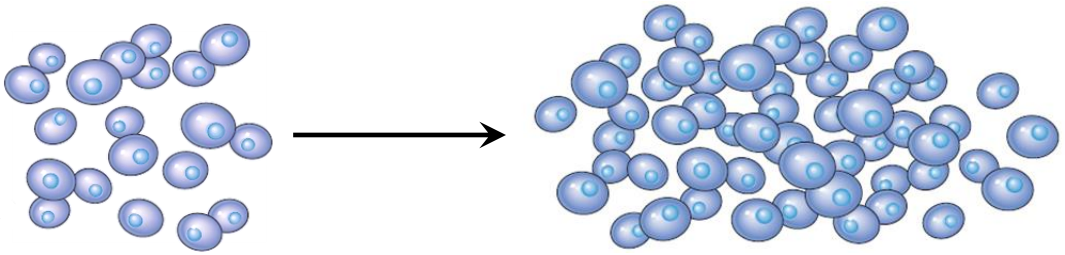
Benign or Malignant?

4 Major Criteria

1. Differentiation & Anaplasia

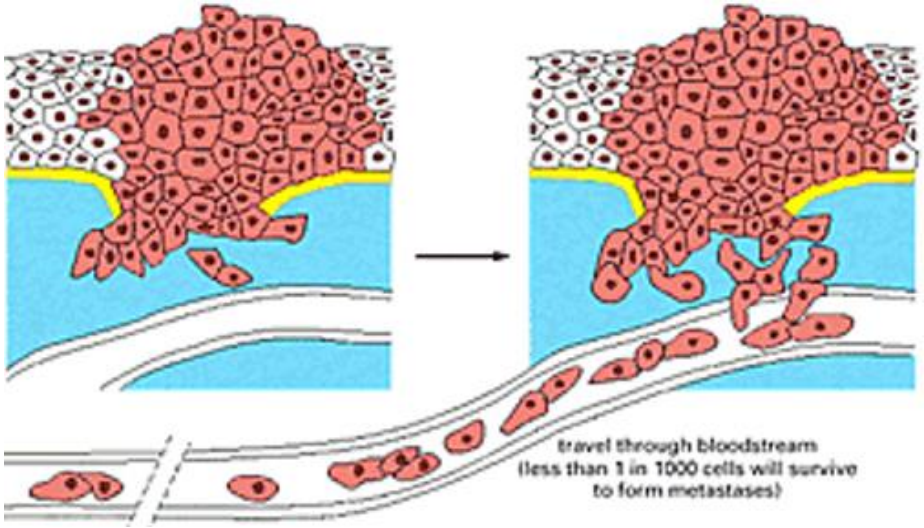


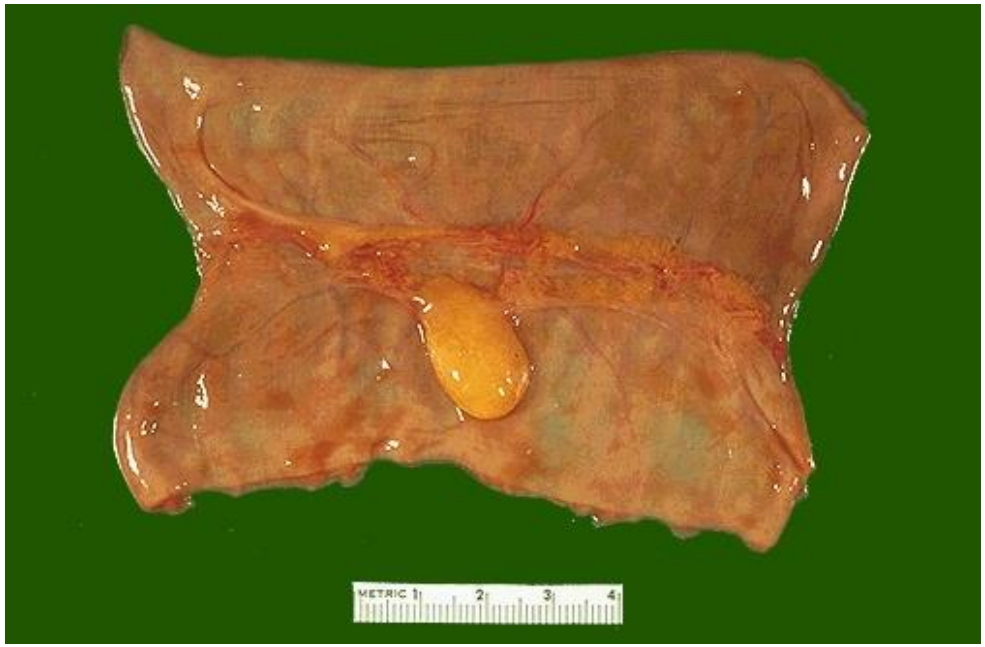
2. Rate of growth

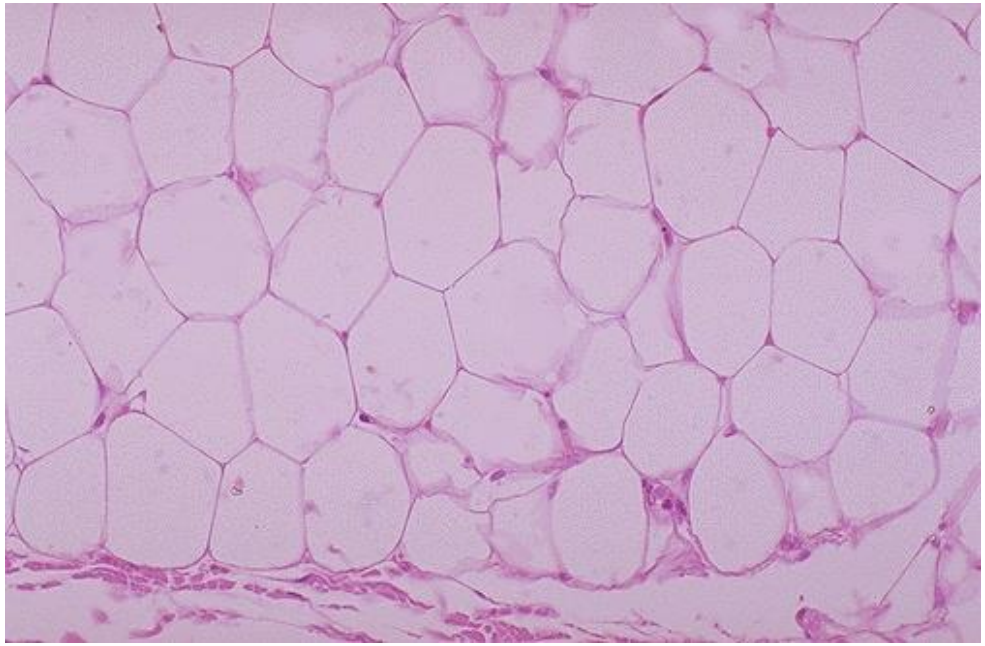


3. Local invasion

4. Metastasis







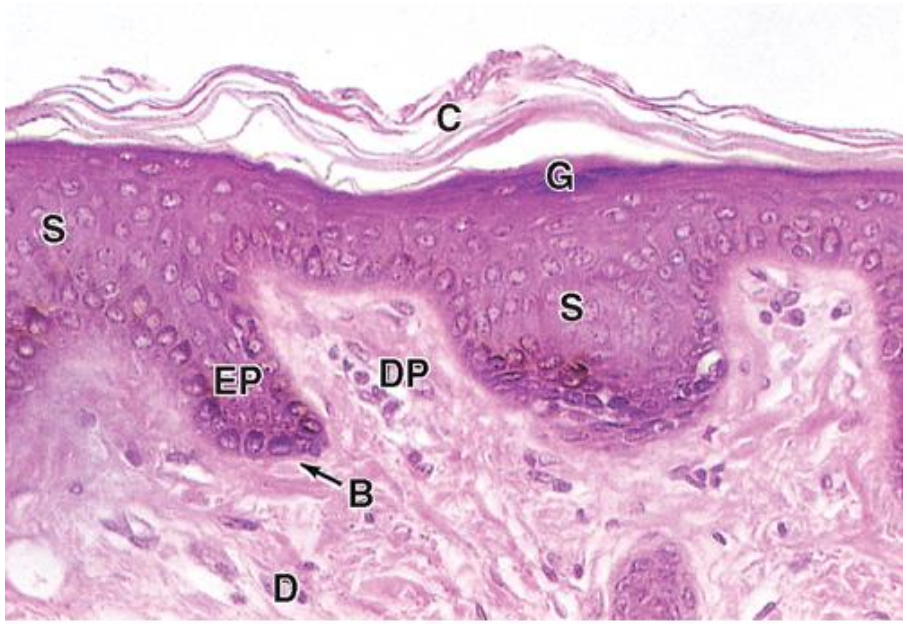
Differentiation & Anaplasia

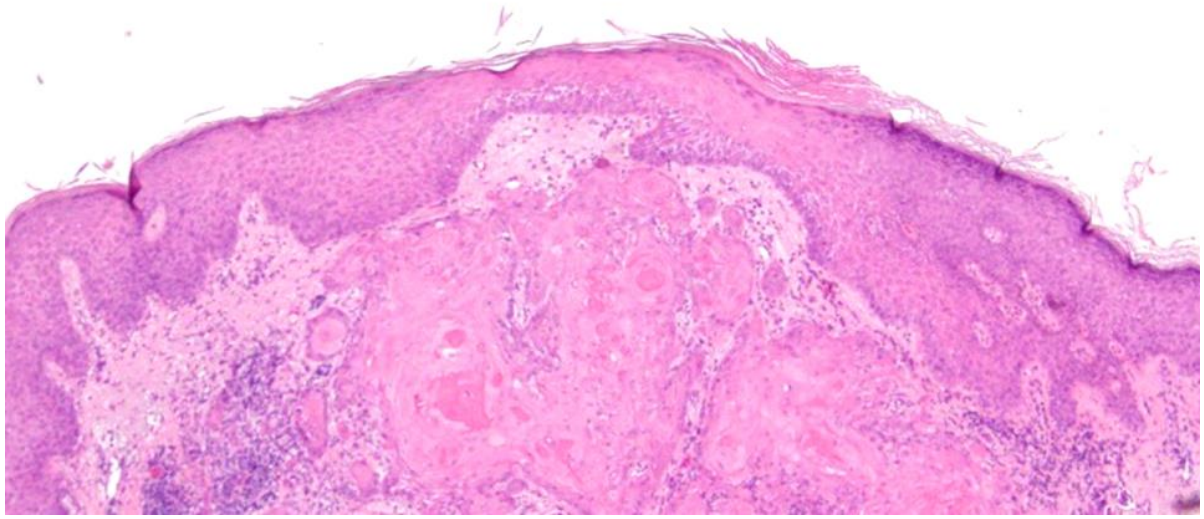
Benign neoplasia

Well differentiated

Morphological & Functional differentiation

Mitotic figures rare/normal



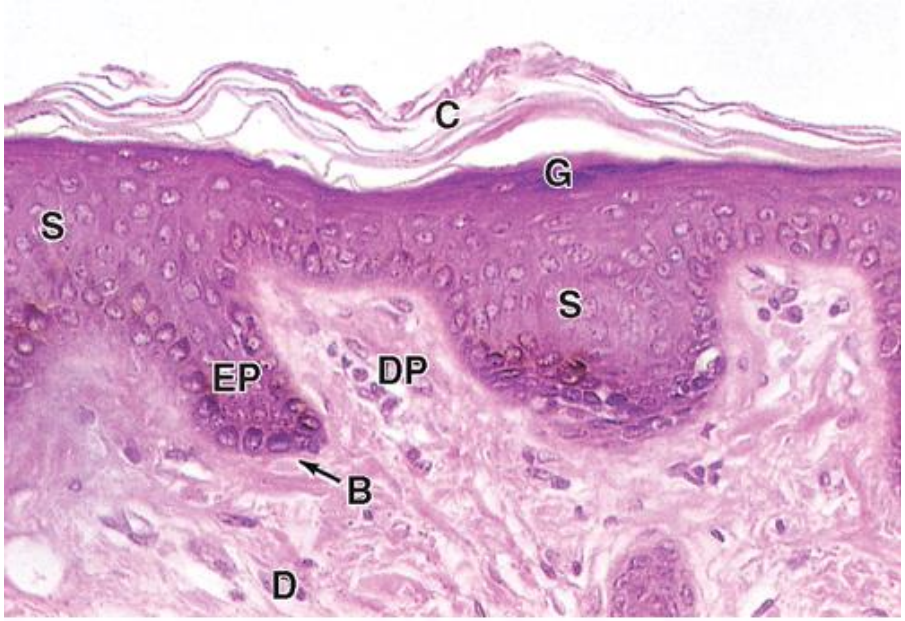


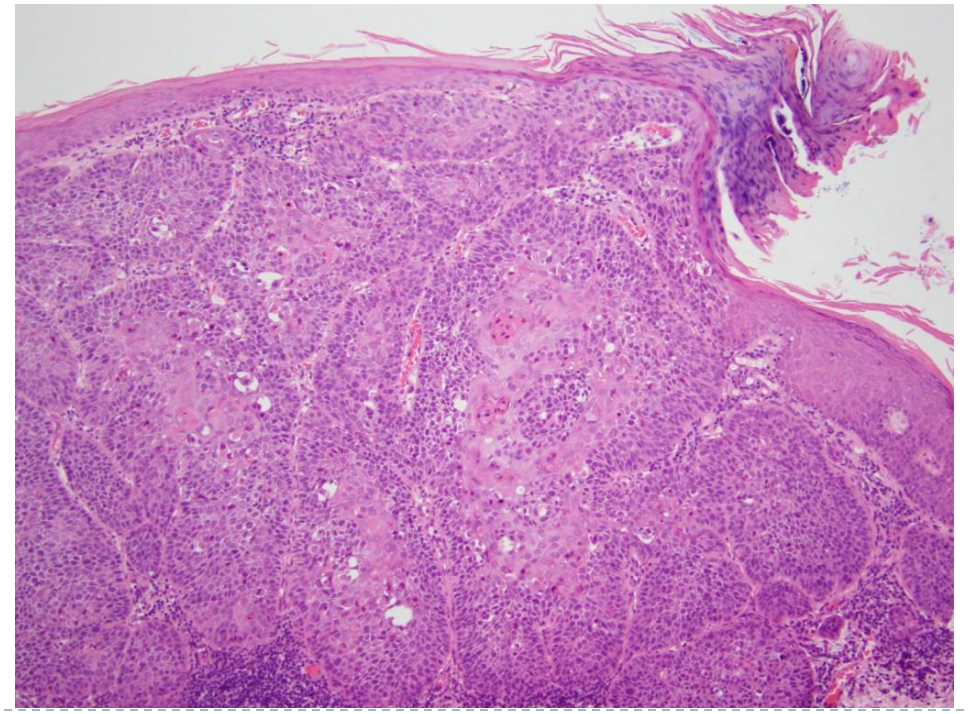
Differentiation & Anaplasia

Malignant neoplasia

Well-poorly differentiated parenchymal cells

Morphological & Functional differentiation





Differentiation & Anaplasia

Malignant neoplasia

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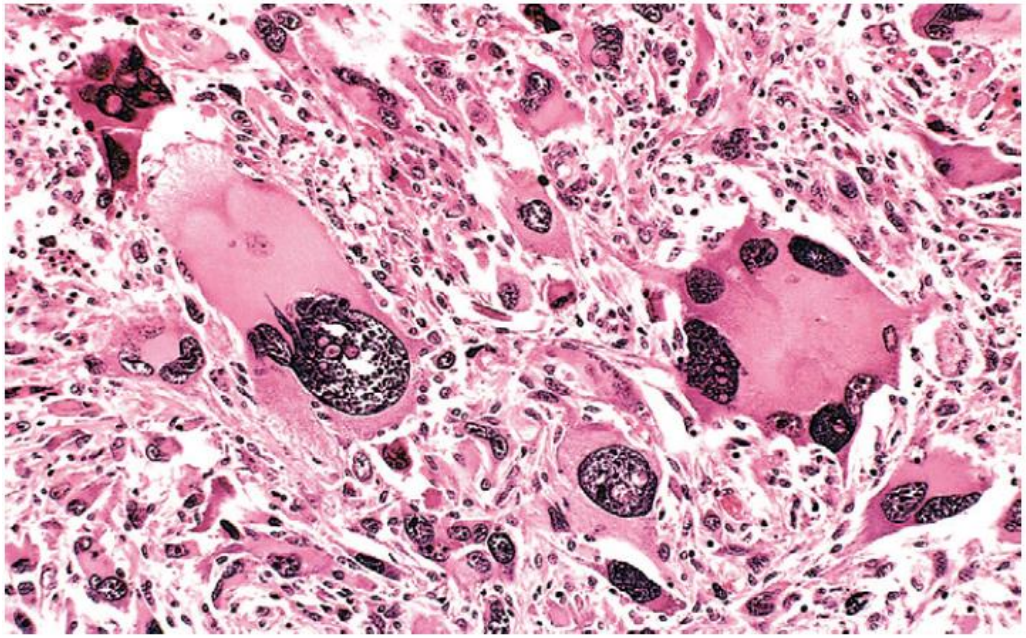
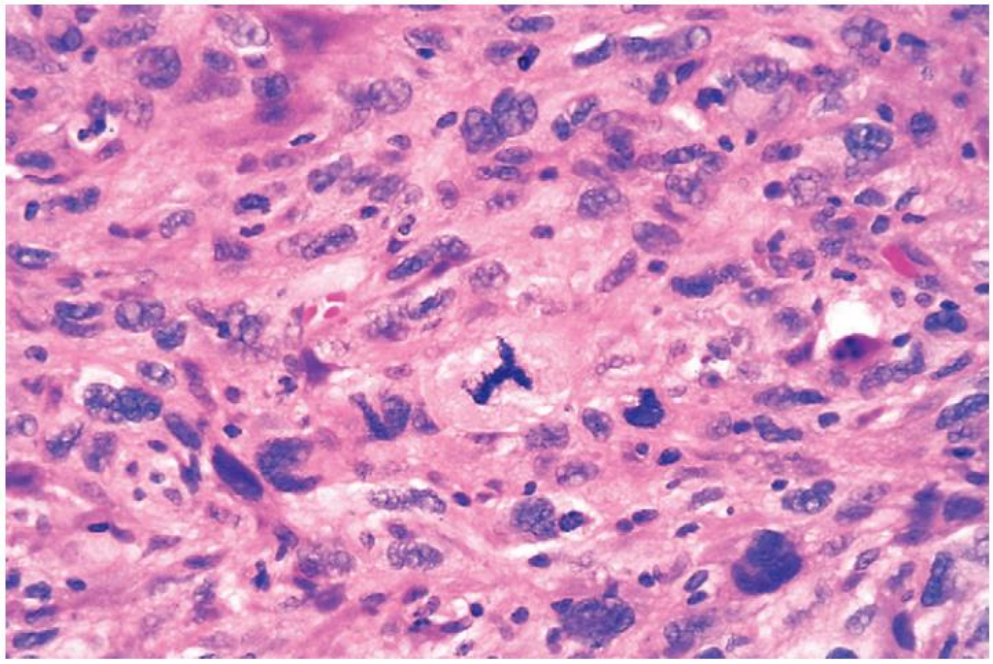




Differentiation & Anaplasia

Malignant neoplasia

Poorly differentiated = anaplastic

- Stem cells
- De-differentiation

- Pleomorphism
- Loss of polarity
- Giant cells
- Hyperchromatic Nuc.
- Large Nucleus
- Abnormal shape nuc.
- Multiple Nuclei
- Mitotic figures frequent/abnormal

Differentiation & Anaplasia

Functional Significance

Well differentiated neoplasms typically retain the original tissue function

Hormonal tissue neoplasms may still produce the relevant hormones

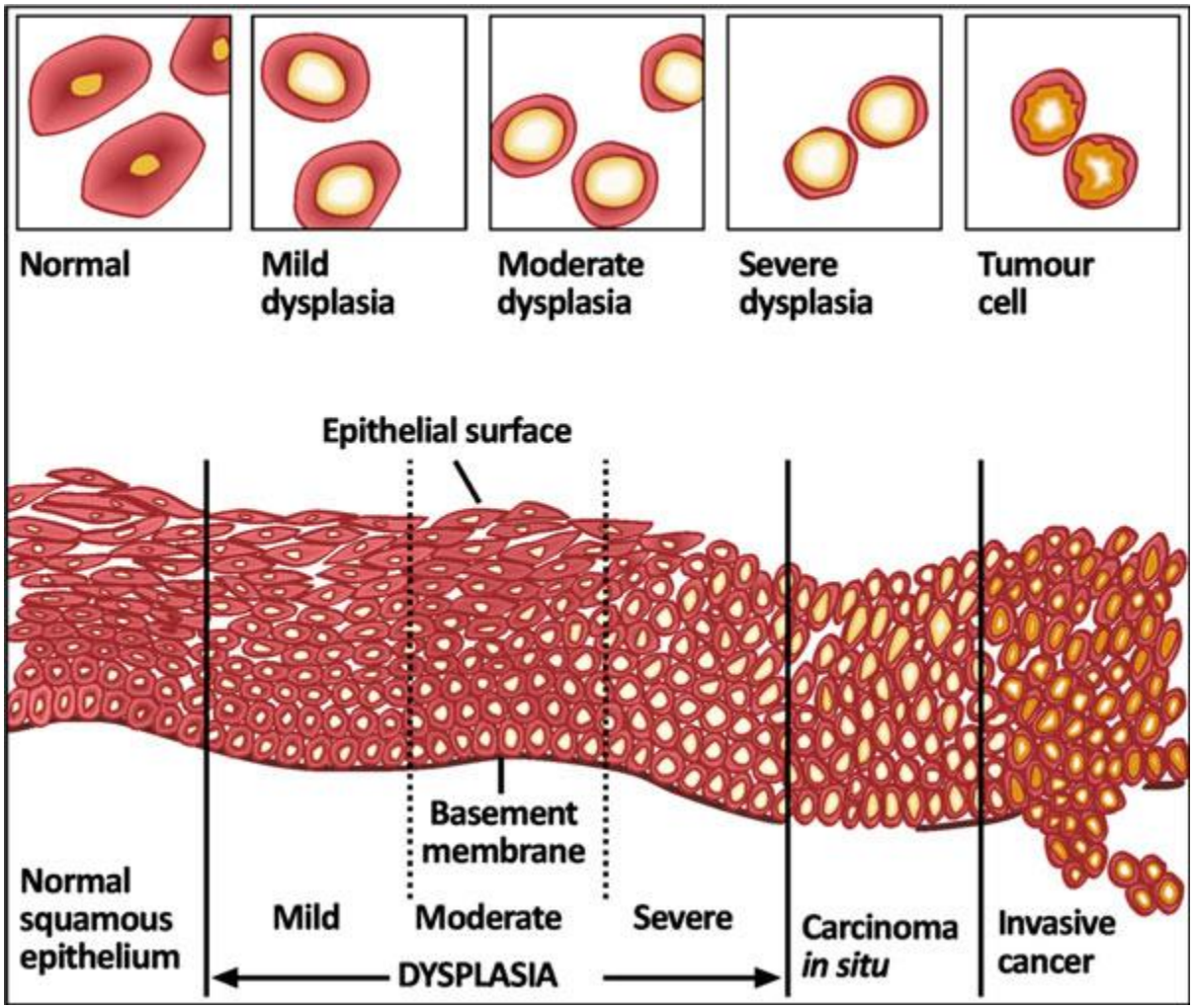
Ectopic hormone production

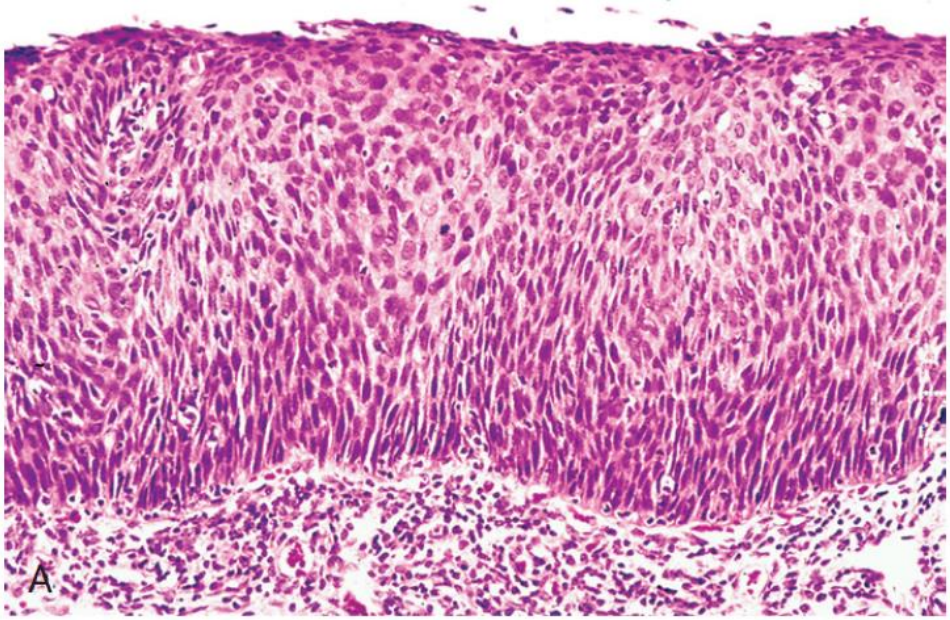
What about Dysplasia?

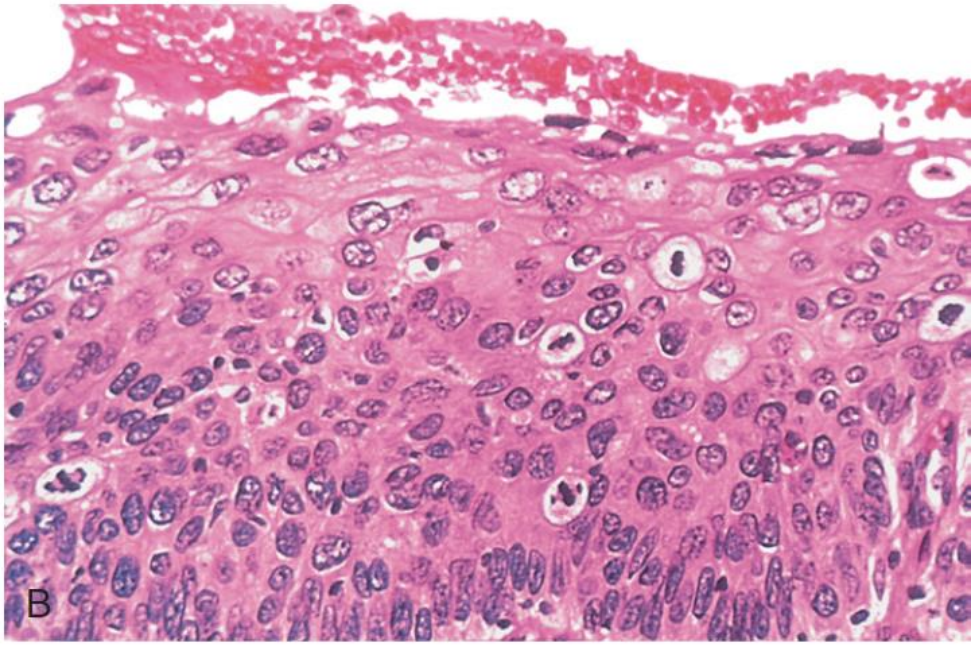
Pleomorphism

Hyperchromatic nuclei

Mitotic figures more frequent & outside the basal layer







Carcinoma-in-situ

Preinvasive

Whole epithelium thickness involved

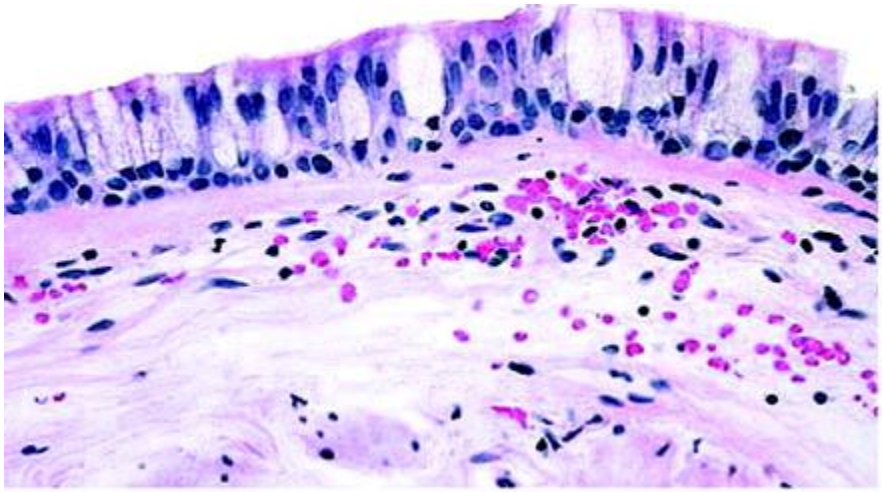
Basement membrane intact

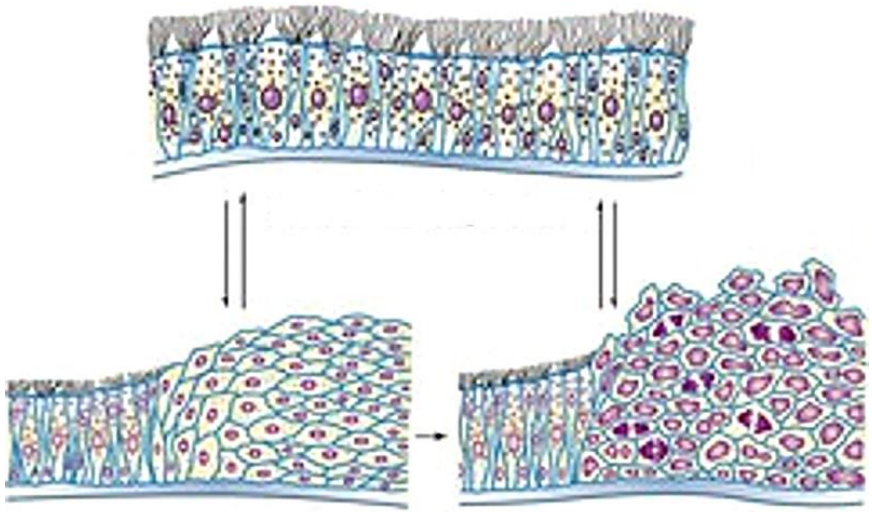
Pleomorphism

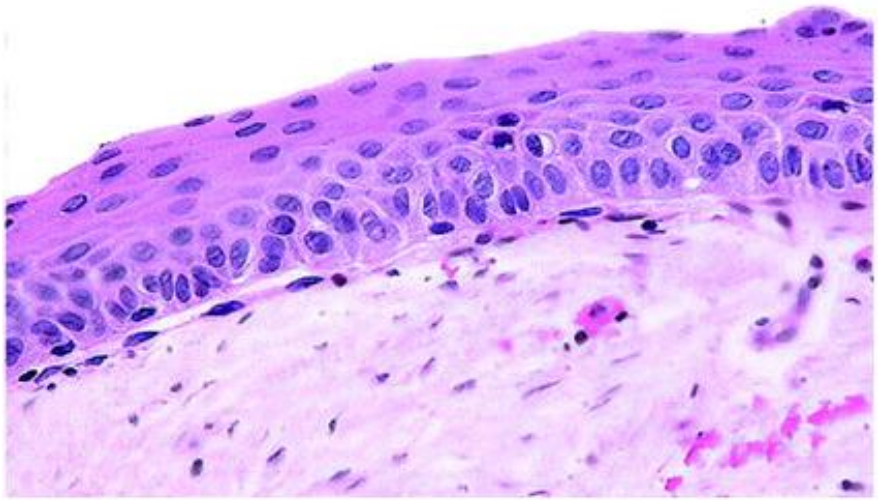
Hyperchromatic nuclei

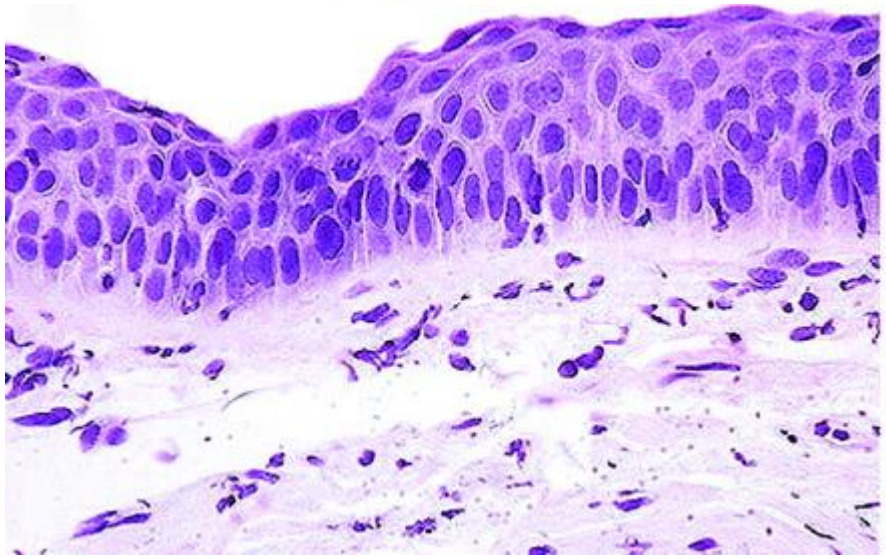
Mitotic figures more frequent and outside the basal layer

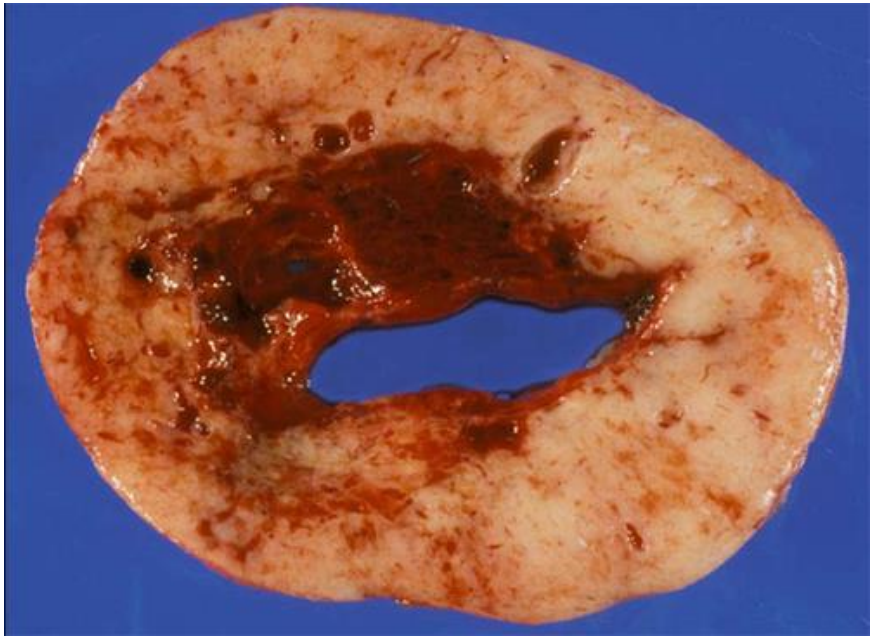
Metaplasia-Dysplasia-CIS

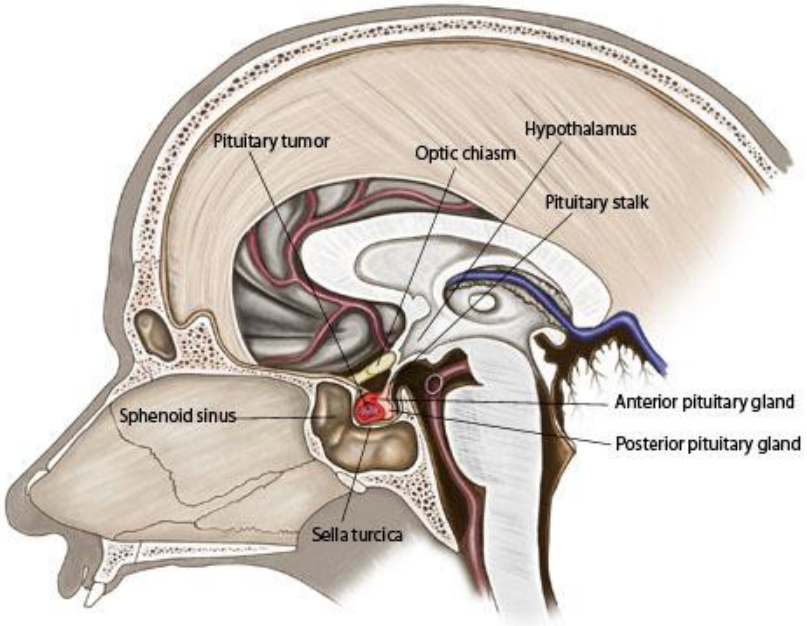










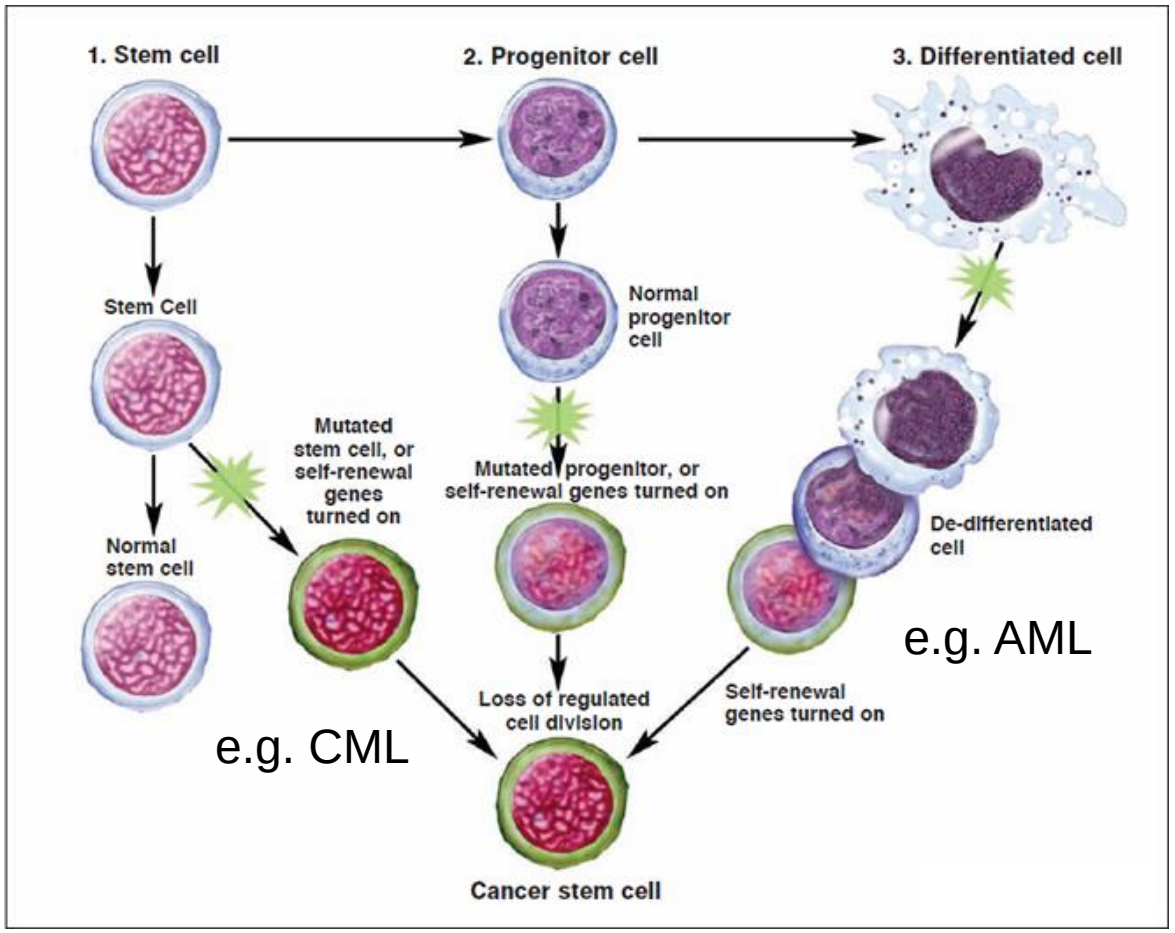


Rate of growth

Benign/well differentiated = slow*

Malignant/poorly differentiated = fast*

Factors
- Blood supply
- Hormone/GF effect
- Anatomical limitations
- SMT/subclone
- Cancer stem cell hypothesis

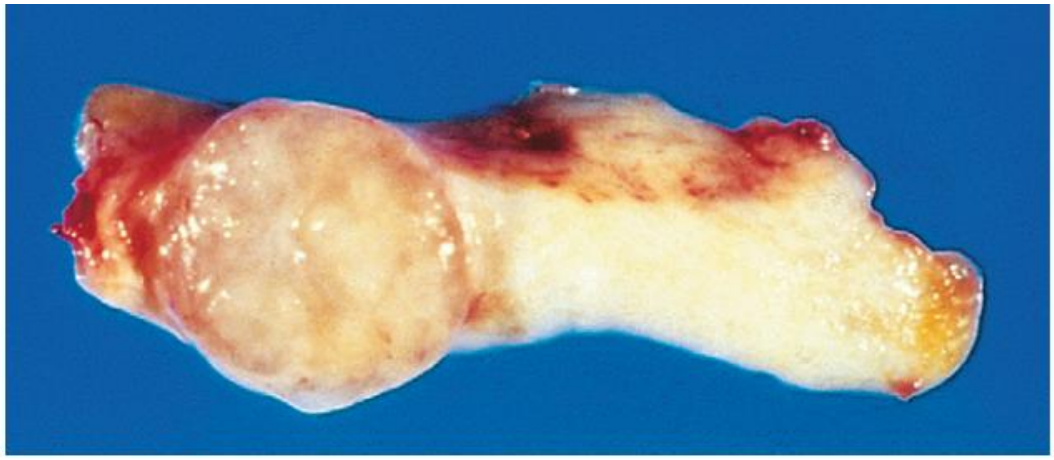


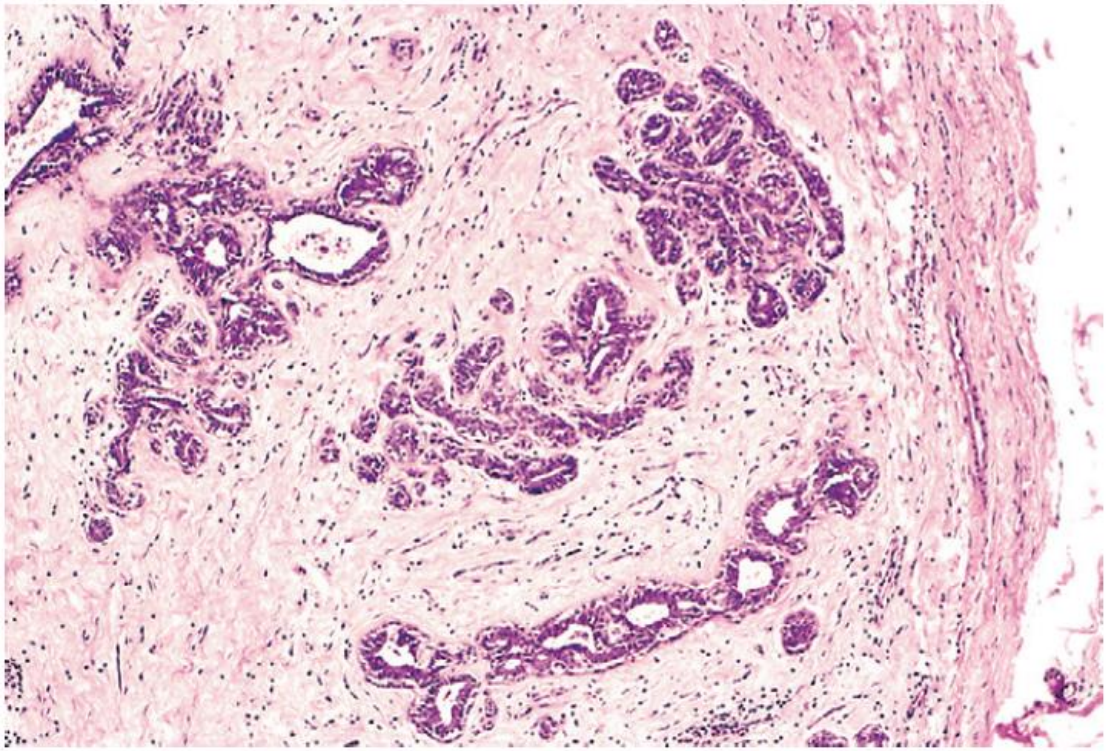
Rate of growth

Cancer stem cell hypothesis

- Renewal capacity
- MDR-1
- Leukemia stem cells
- Solid tumor stem cells?

Without killing the cancer stem cells a cancer can recur



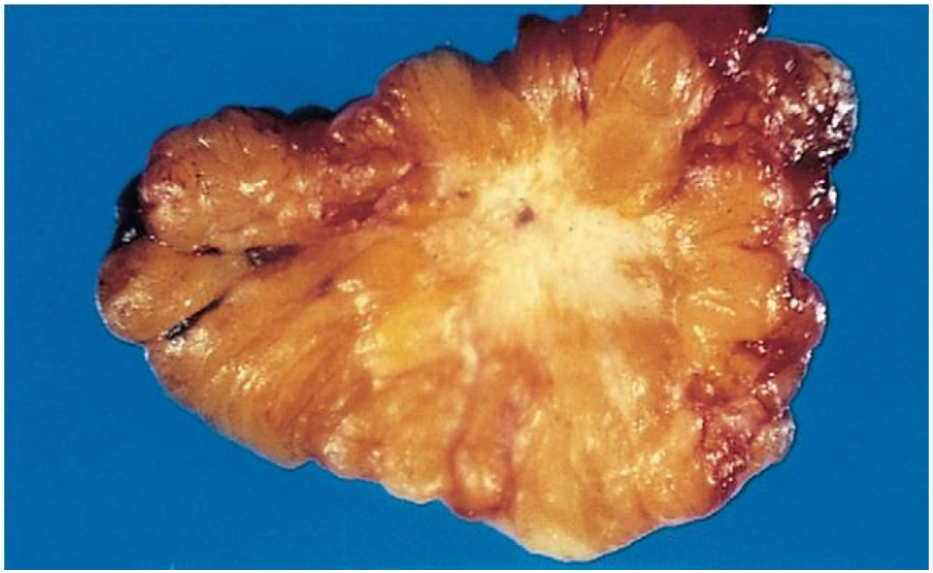


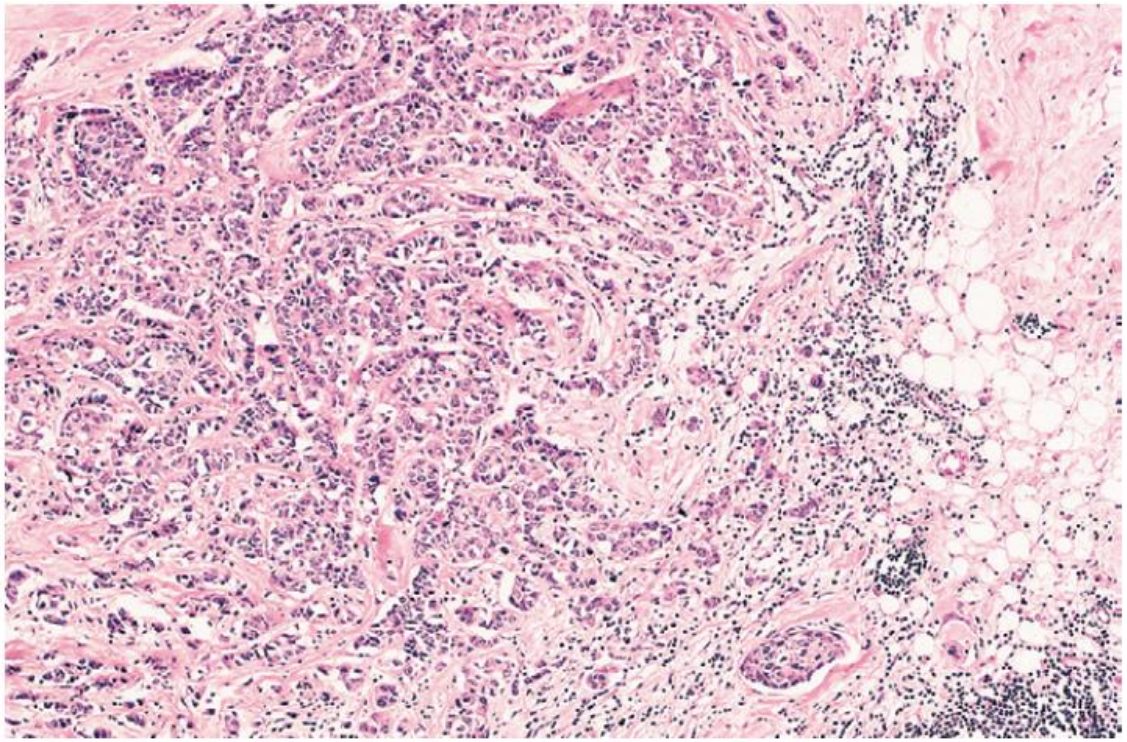
Local Invasion

Benign neoplasia

Most (not all) benign neoplasia have a fibrous capsule clearly demarcating their edge

They do not infiltrate, invade, or metastasize





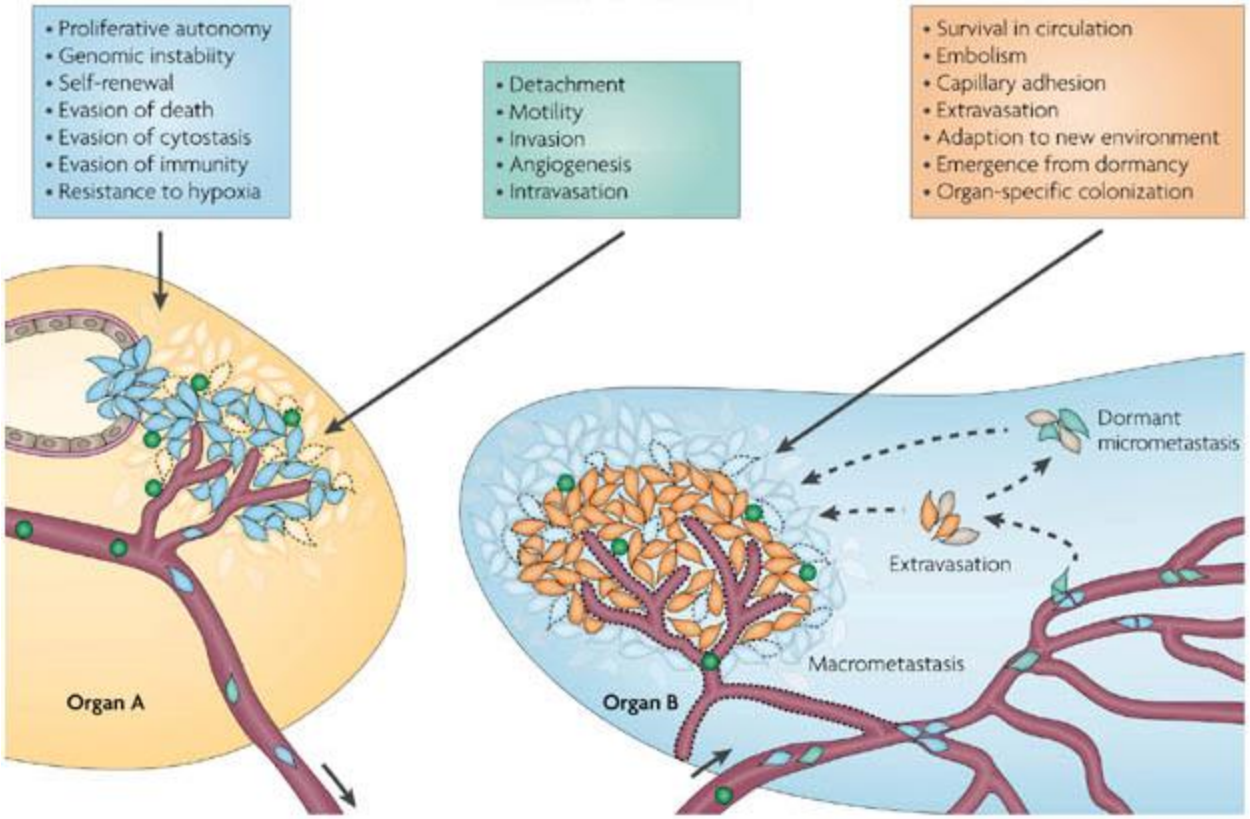
Local Invasion

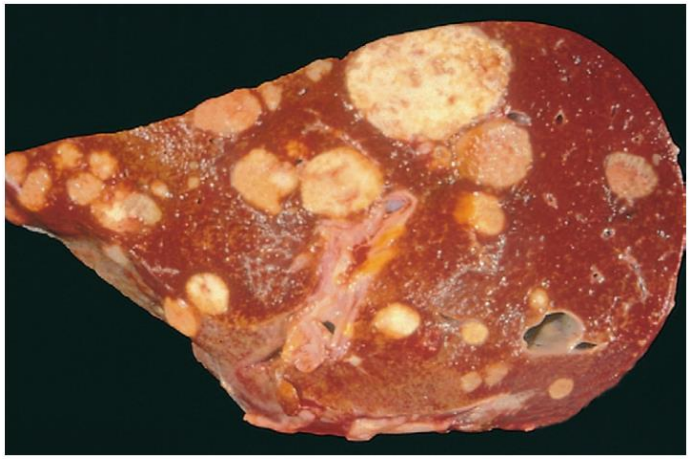
<u>Malignant neoplasia</u>

Do not develop well-defined capsules*

Do infiltrate & invade

Clean margins required for local resection





Metastasis

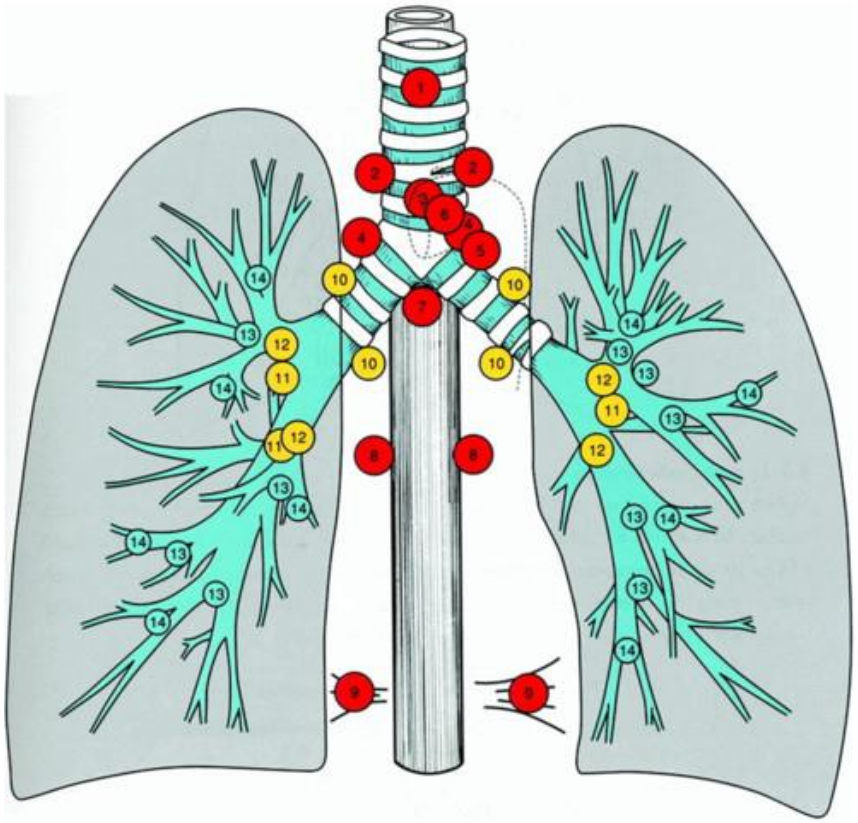
Benign neoplasia do not metastasize

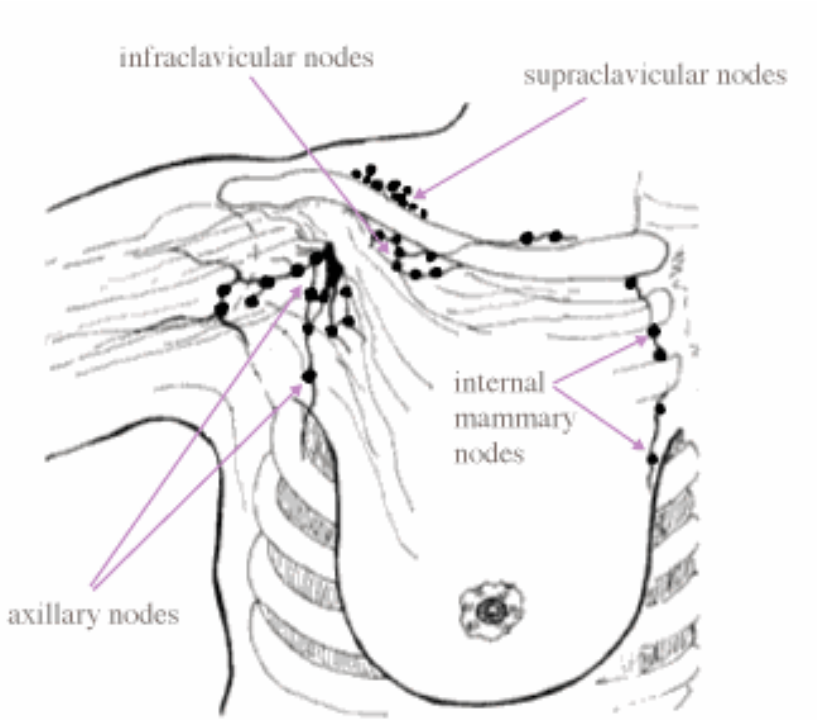
Not all malignant neoplasia metastasize (Biology/Time)

Anaplasia & big → more likely to metastasize*

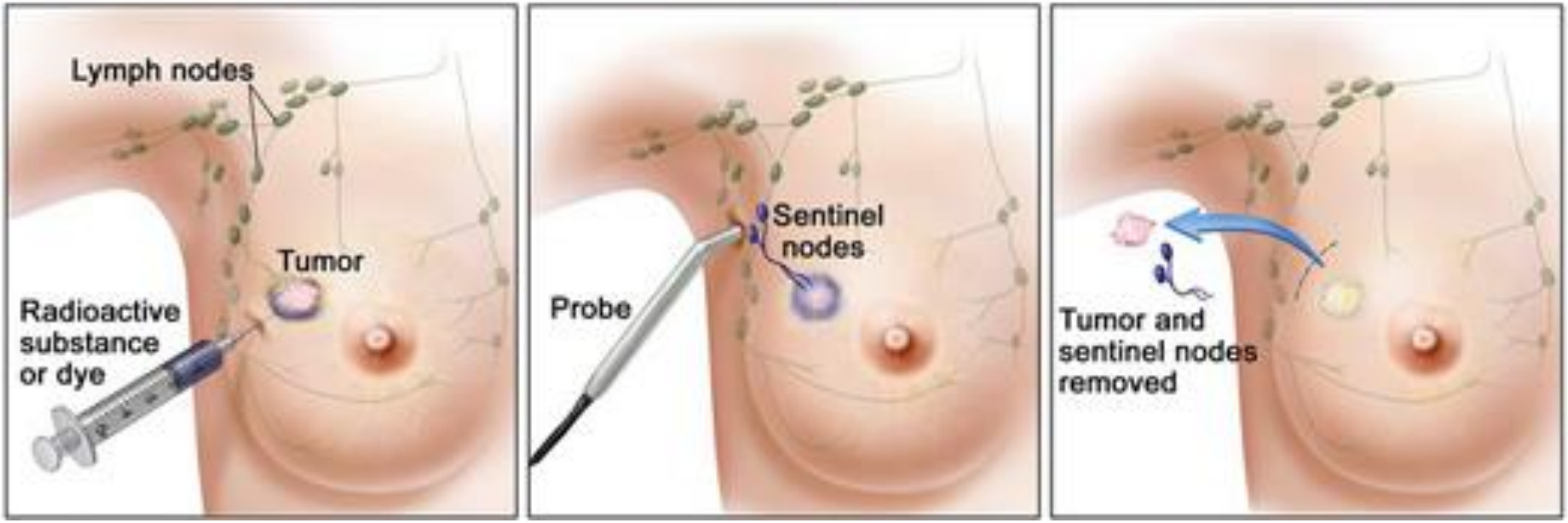
Spread by:
1. Seeding (body cavity)
2. Lymphatic (carcinoma)
3. Hematogenous (sarcoma)

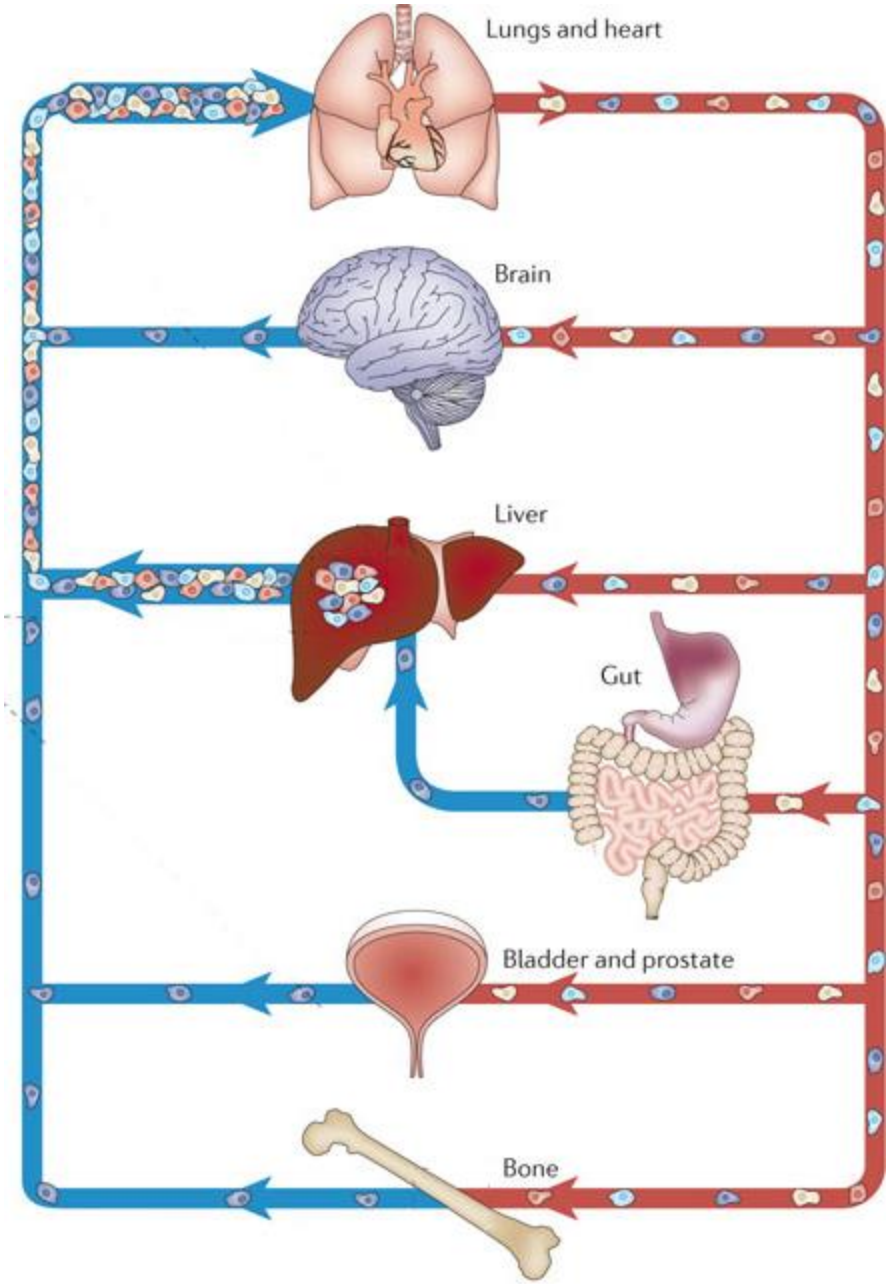
Lymphatic drainage





Sentinel Node Biopsy





Hematogenous metastasis

Vein invasion

First capillary bed encountered

Portal → liver

Caval → lung

Anatomy cannot explain all metastasis*

Summary of extremes