

# Pathology of the breast and pregnancy

**Dr Fónyad László, 1sz. Patológiai és Kísérleti Rákkutató Intézet, SE**

# Topics covered

C/77. Pathology of pregnancy

C/78. Benign epithelial lesions and benign tumors of the breast

C/79. Malignant tumors of the breast

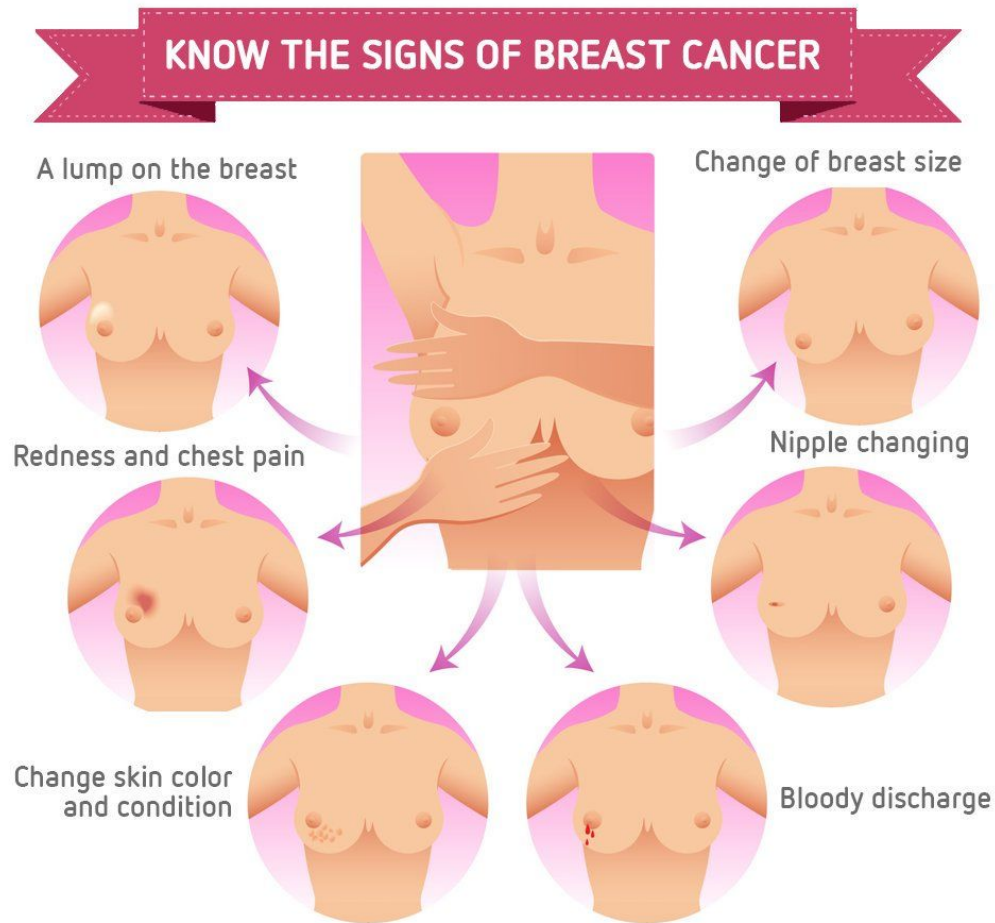
- **Clinicopathological background (diagnostics)**
- **Breast**
  - Stromal lesions
  - Epithelial lesions
    - Benign lesions
    - Malignant lesions
- **Pathology of pregnancy**
  - Gestational trophoblastic diseases
    - Mola
    - Choriocarcinoma

# **Clinicopathological background (diagnostics)**

# Clinicopathological background (diagnostics)

- **Signs**
- **Self-examination**
- **Imaging**
- **Pathology**

# Clinical signs



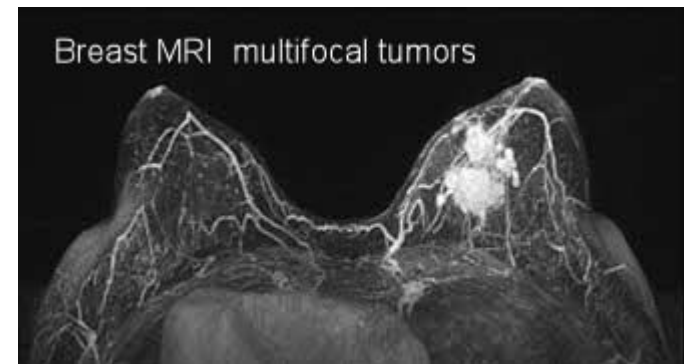
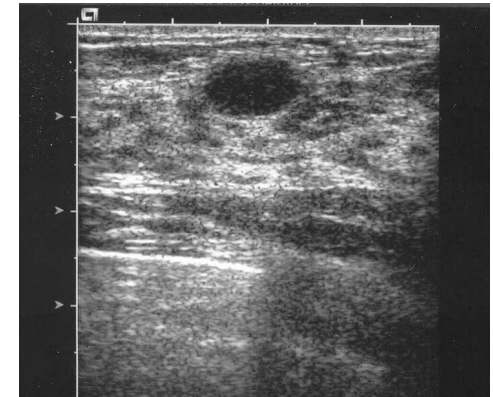
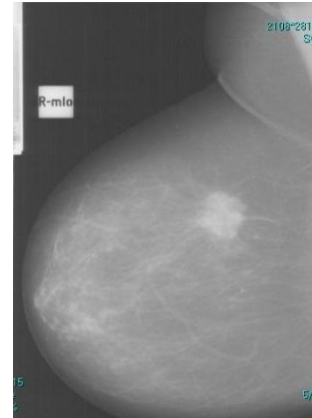
# Self-examination

- 20+ yoa, once in a month
- After menstruation
- In menopause (or when the cycle is irregular) on the same day in each month



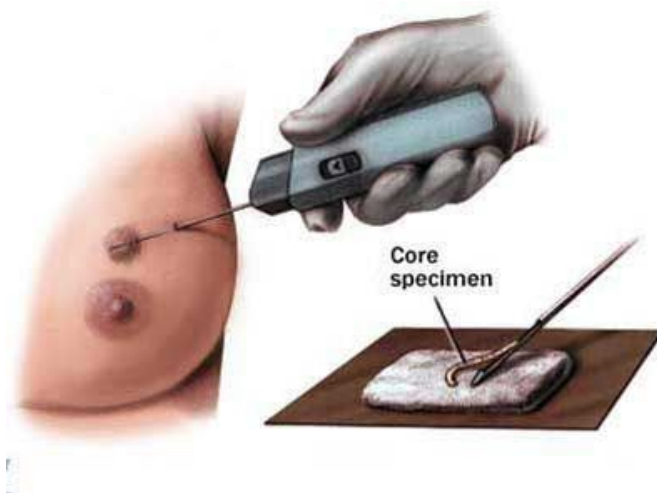
# Imaging

- Mammography
  - Cheap, accessible
  - High sensitivity and specificity
  - 40+ yoa
- UH - ancillary t.
  - 30- yoa
- MRI: occult, multifocal, recurrence, BRCA+ family history screening
- Isotope ( $^{99m}\text{Tc}$ )

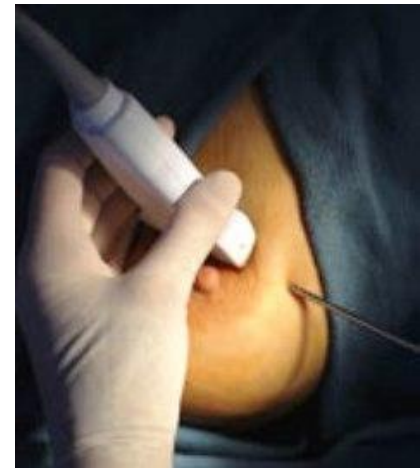


# Pathology

- FNAB



- Core





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- **Clinicopathological background (diagnostics)**

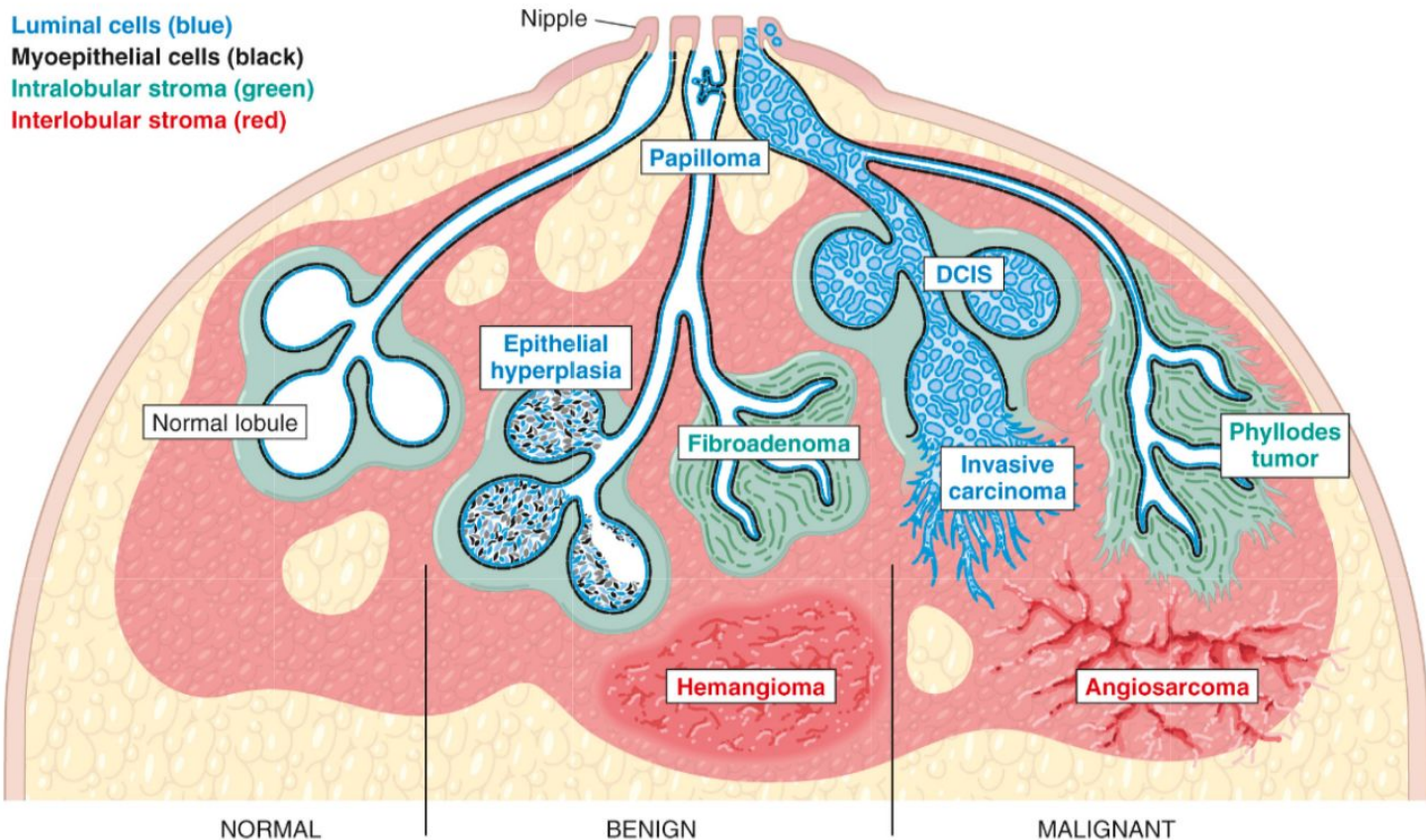
- **Breast**

- Stromal lesions
- Epithelial lesions
  - Benign lesions
  - Malignant lesions

- **Pathology of pregnancy**

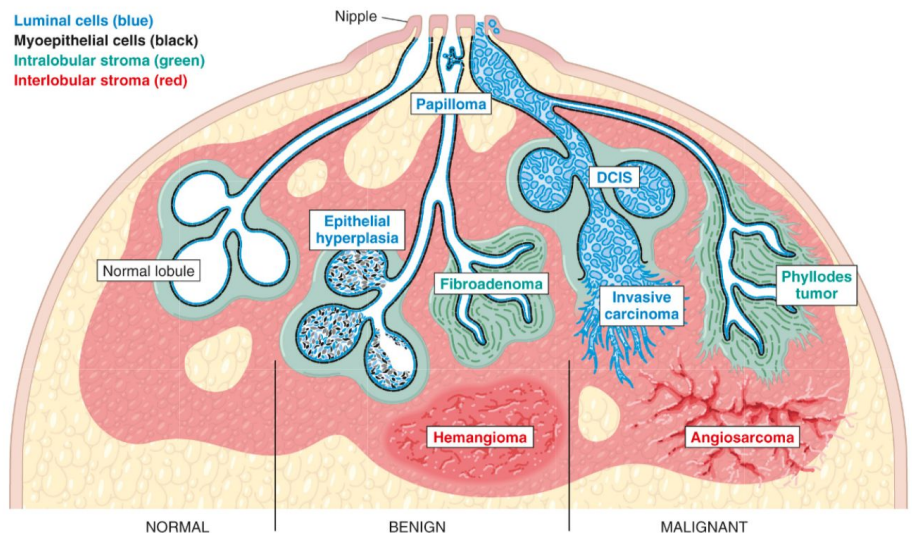
- Gestational trophoblastic diseases
  - Mola
  - Choriocarcinoma

# Origin of different breast lesions



# Stromal lesions

- Intralobular stroma
  - Fibroadenoma
  - Phylloid -tumor
- Interlobular stroma
  - Soft-tissue tumors
    - angiosarcoma



# Stromal lesions

- **Intralobular stroma**

- **Fibroadenoma**

- **Most common benign tumor**

- **Usu. at younger age**

- **2-3 cm**

- **Solitary**

- +

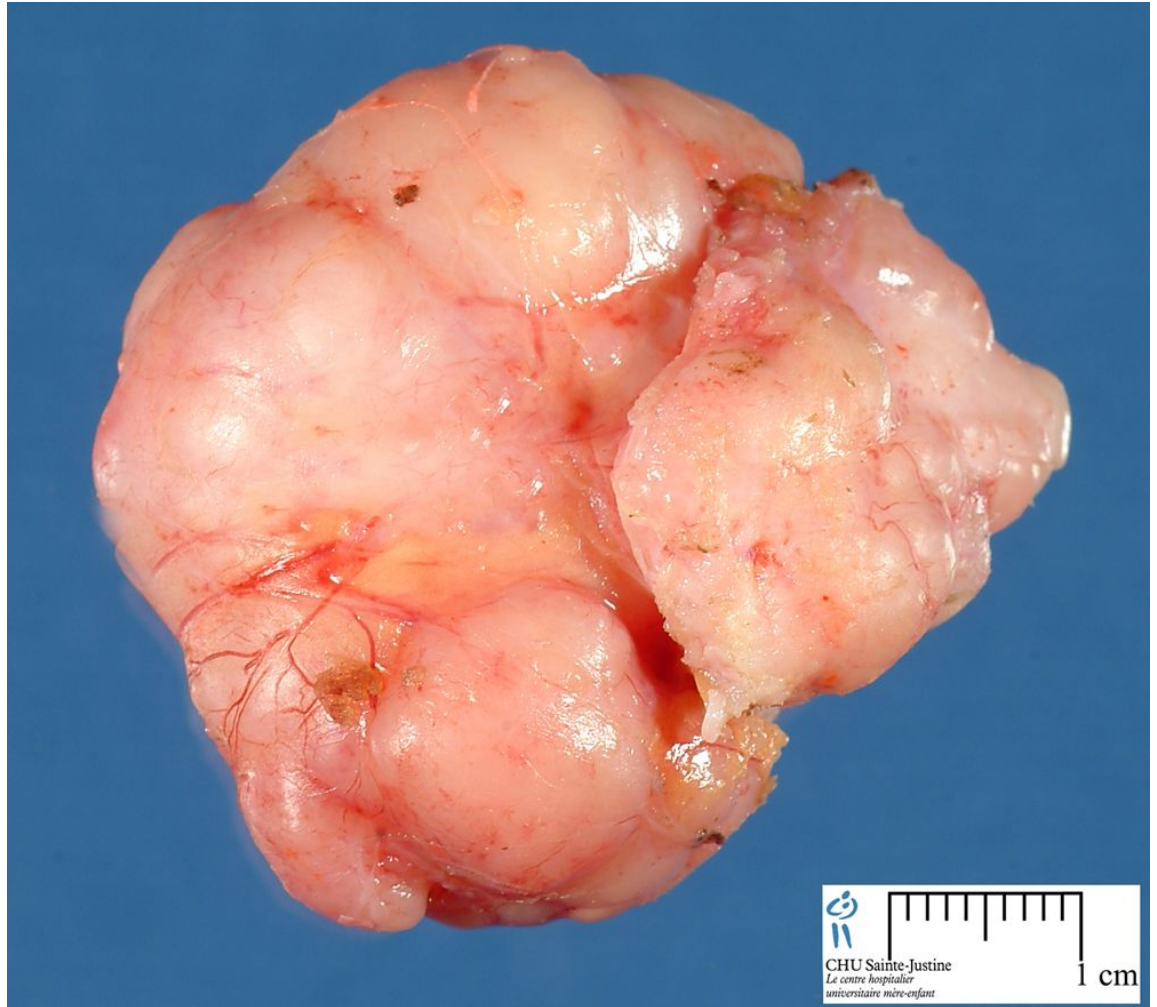
- **Painless**

- **Mobile**

- **Firm mass**

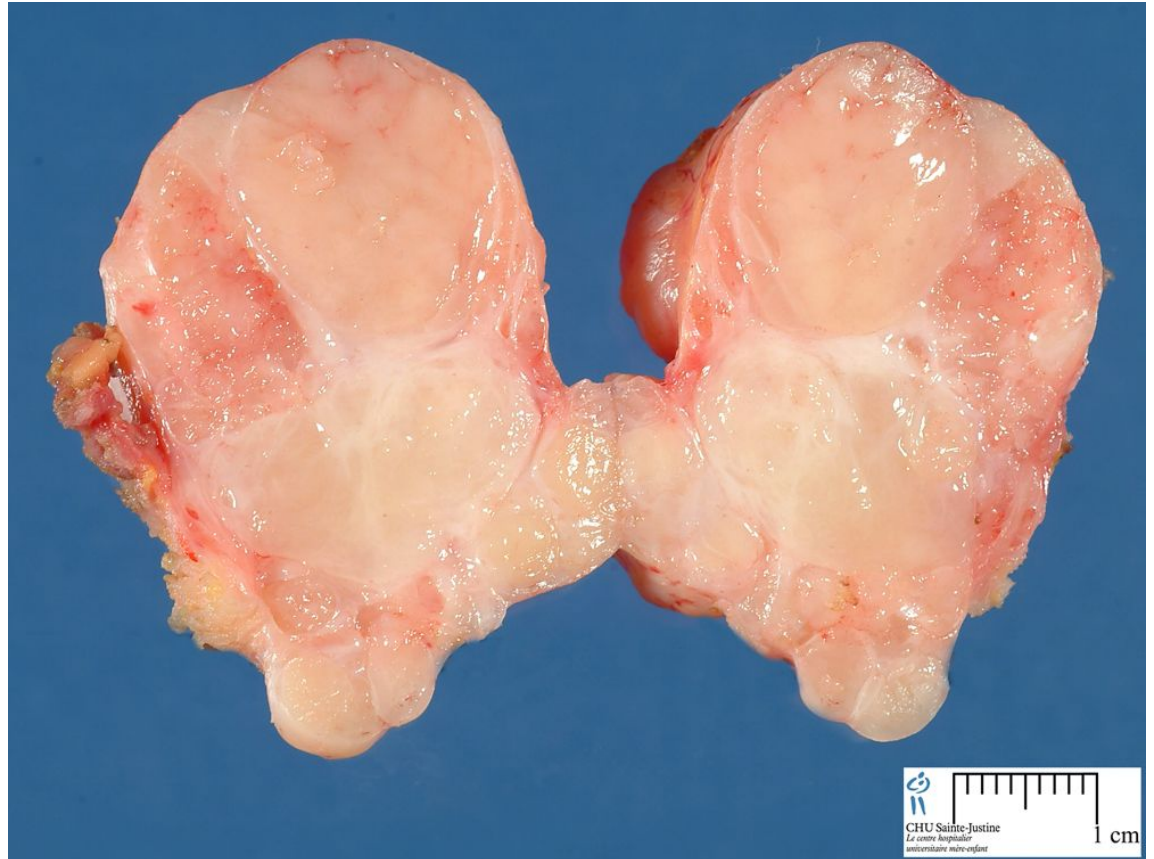
# Stromal lesions

- **Intralobular stroma**
  - **Fibroadenoma**
    - well circumscribed
    - ovoid mass

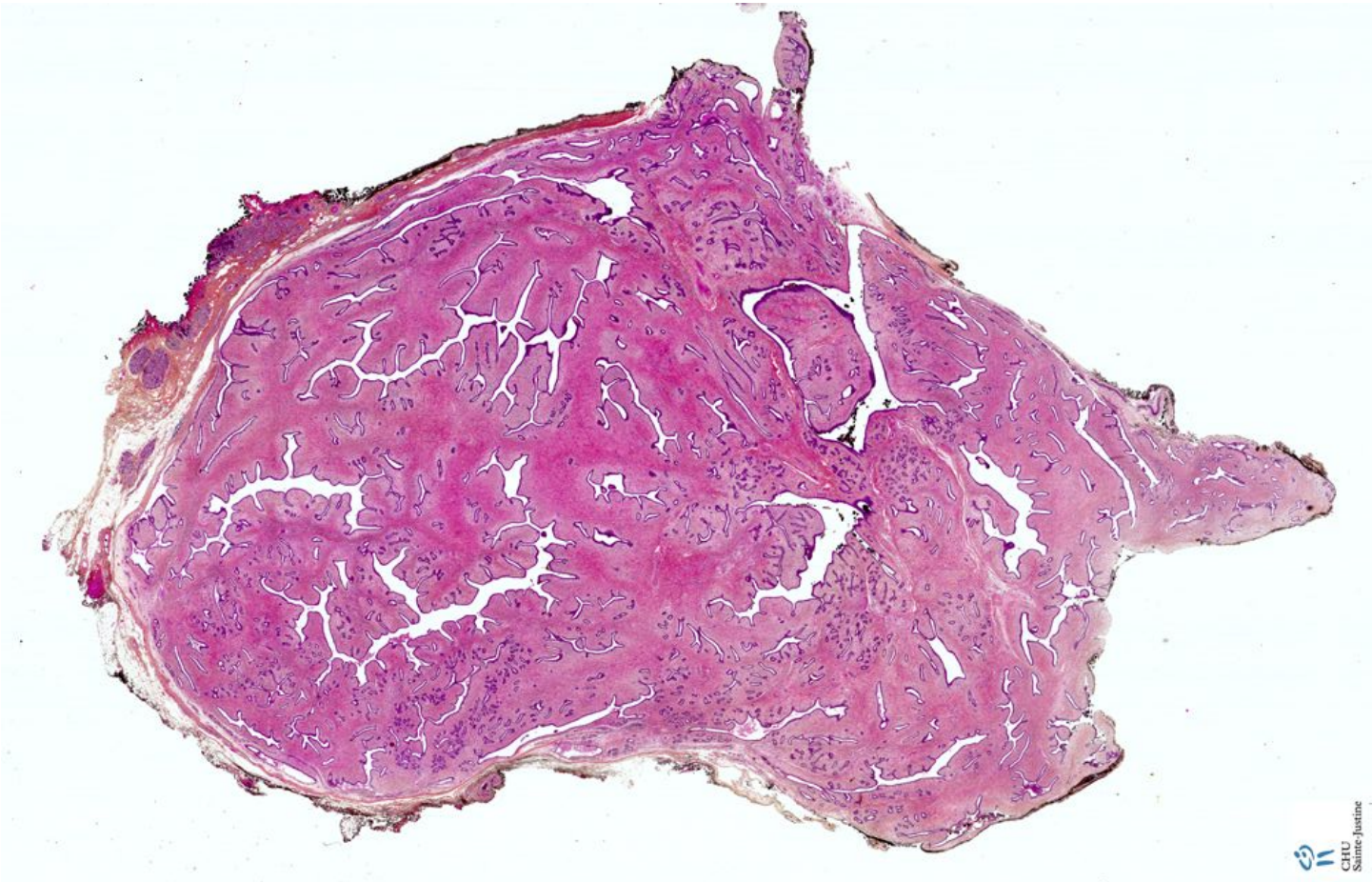


# Stromal lesions

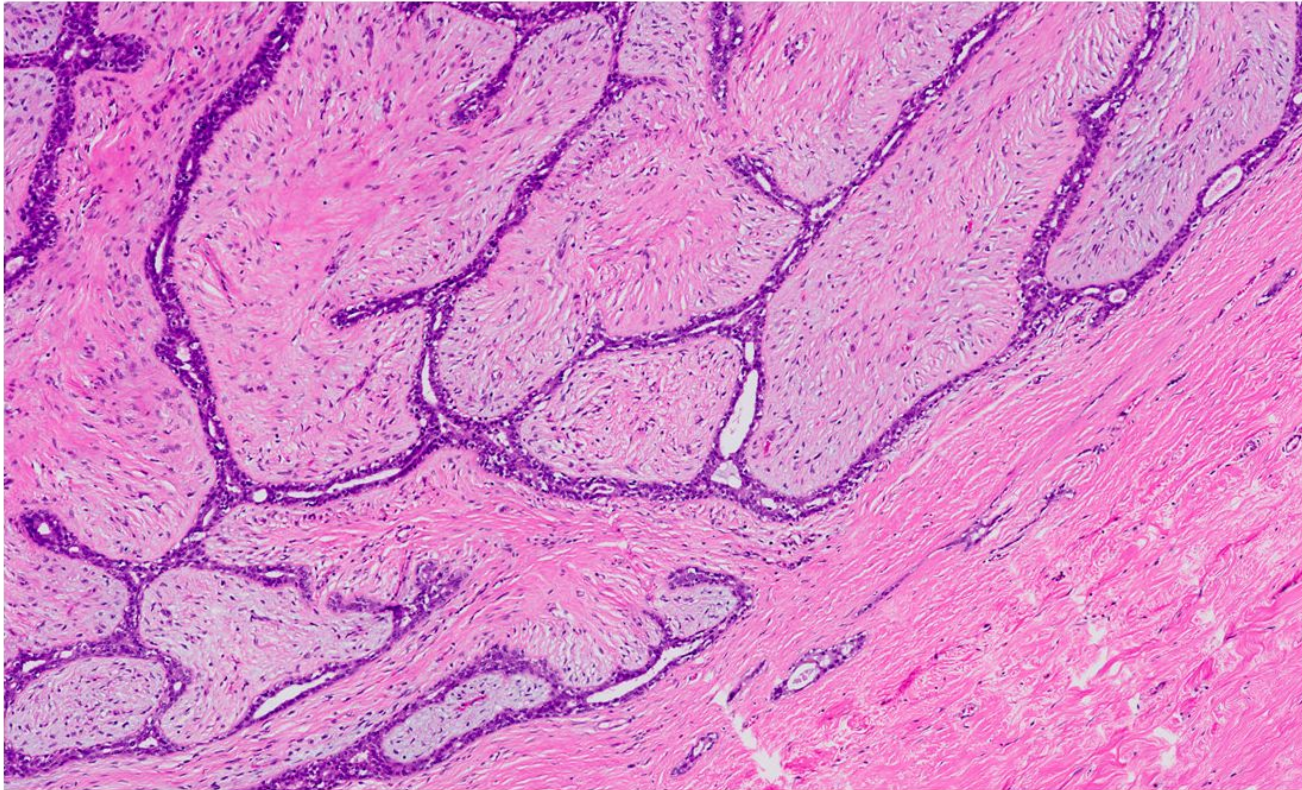
- **Intralobular stroma**
  - **Fibroadenoma**
    - well circumscribed
    - ovoid mass



# Stromal lesions



# Stromal lesions



Fibroadenoma (H&E 20x): uniform low stromal cellularity with no stromal cellular atypia



# Stromal lesions

- **Intralobular stroma**

- **Phylloid-tumor**

- **Middle aged fm**

- **Large (20+ cm)**

- **Spectrum**

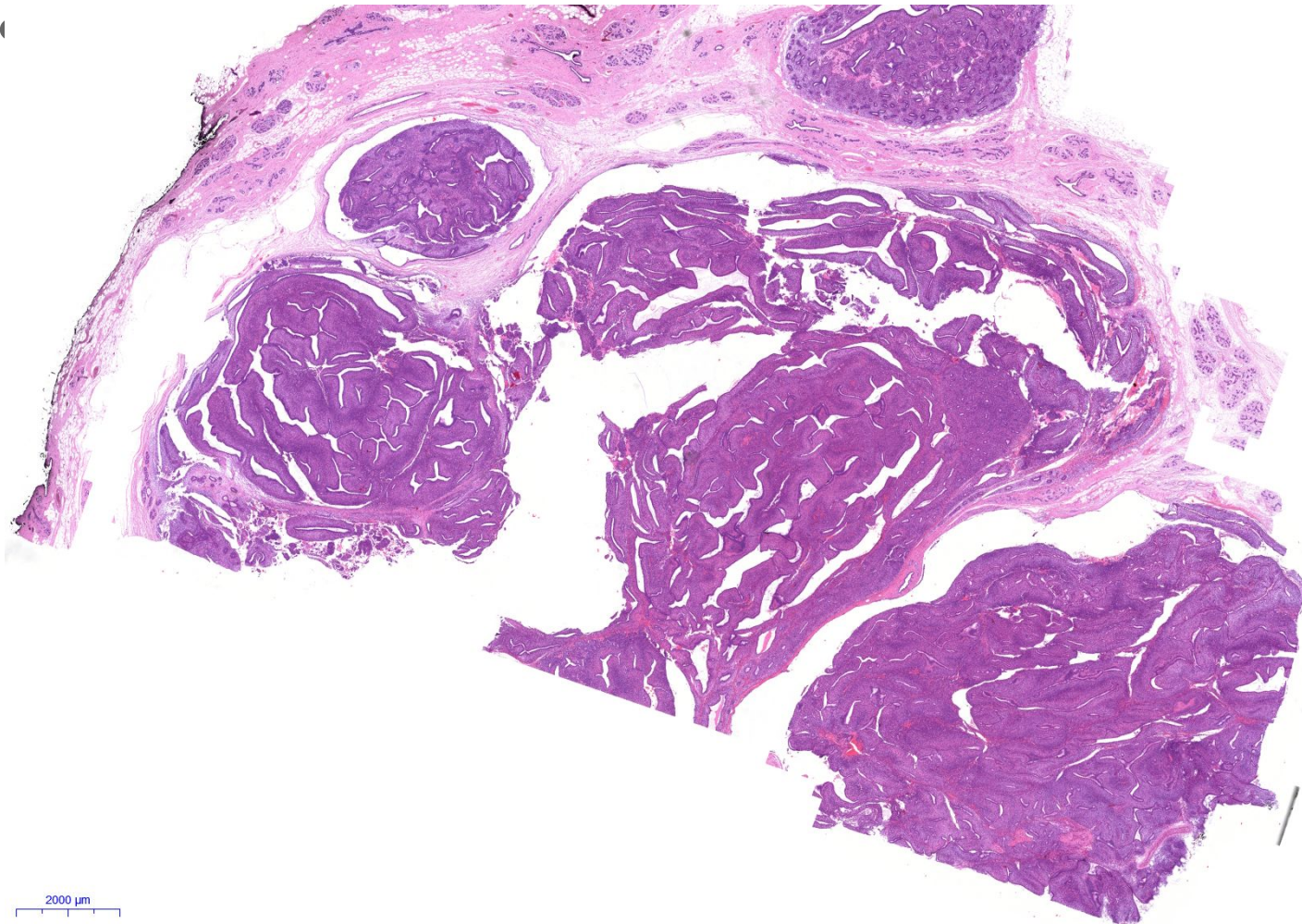
- **Benign**

- **Borderline**

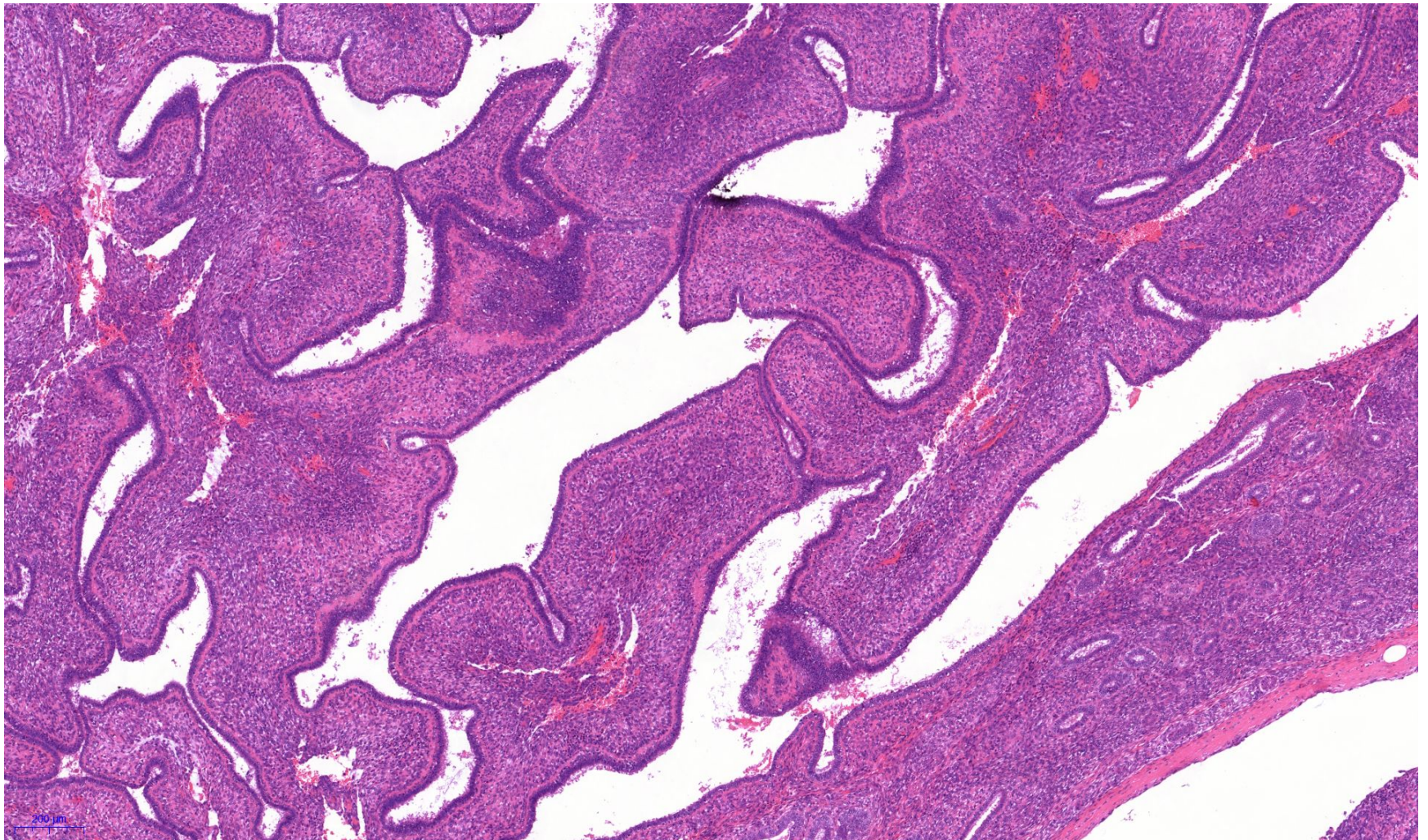
- **Malignant**

- **Wide excision (risk of recurrence!)**

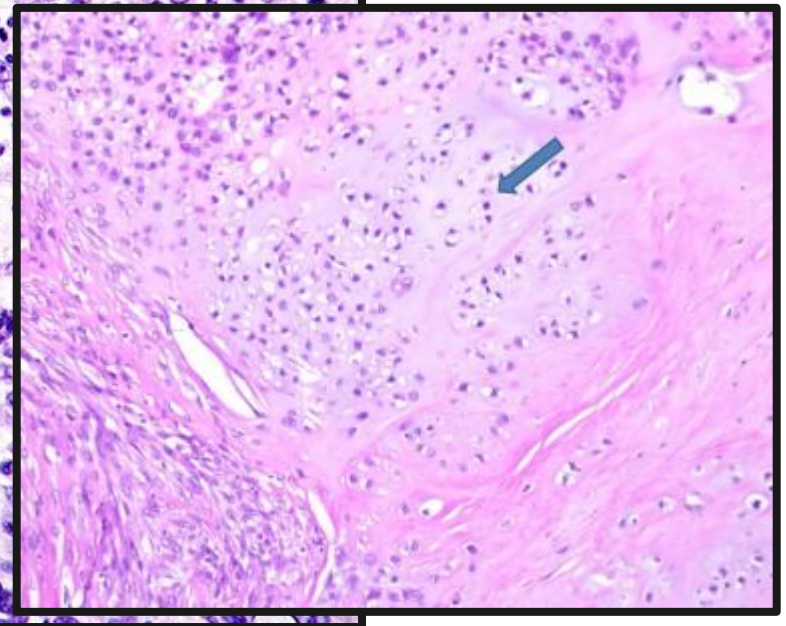
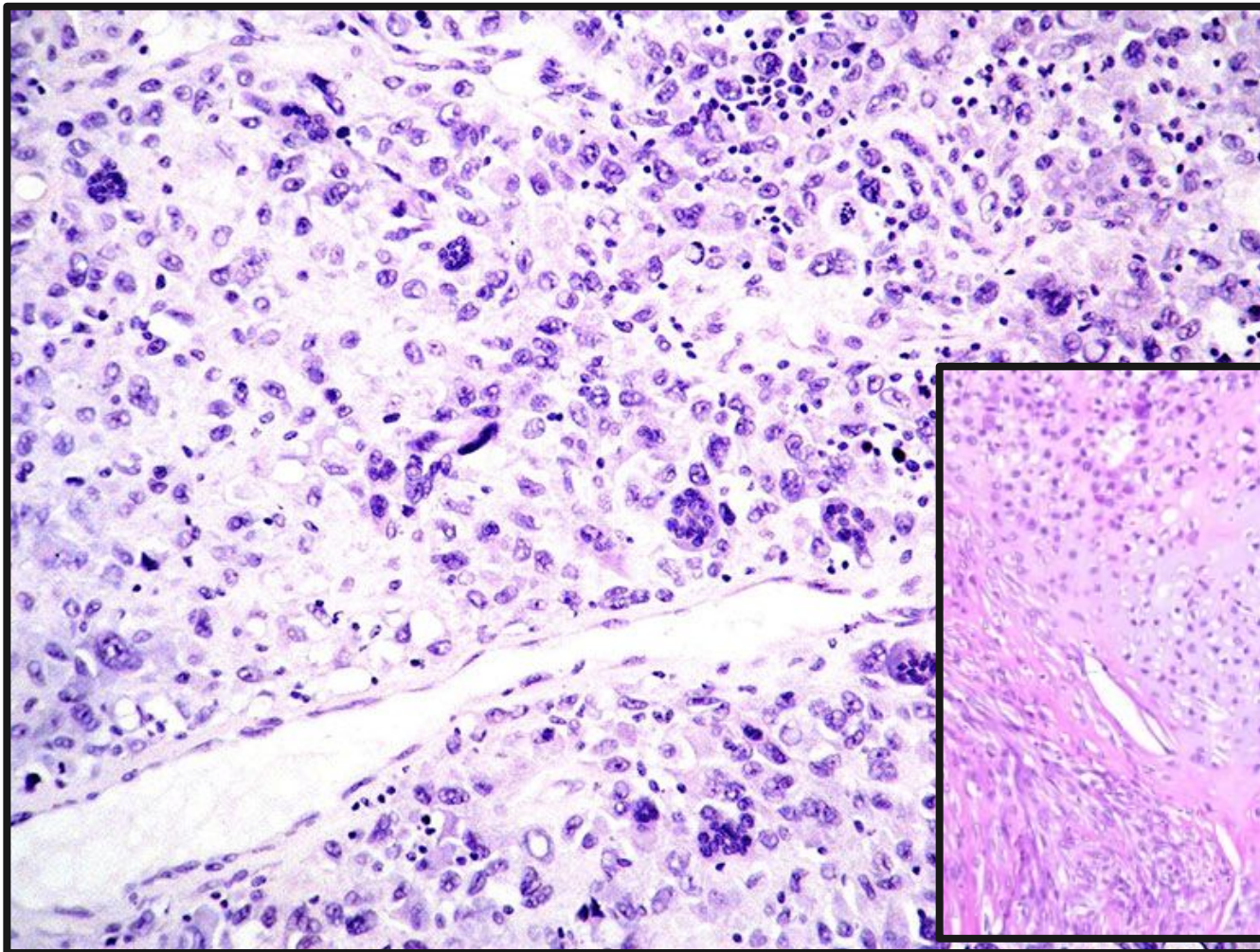
# Stromal lesions



# Stromal lesions



# Stromal lesions



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C/78. Benign epithelial lesions and benign tumors of the breast

C/79. Malignant tumors of the breast

- **Clinicopathological background (diagnostics)**

- **Breast**

- **Stromal lesions**

- **Epithelial lesions**

- **Benign lesions**

- **Malignant lesions**

- **Pathology of pregnancy**

- **Gestational trophoblastic diseases**

- **Mola**

- **Choriocarcinoma**

# Epithelial lesions

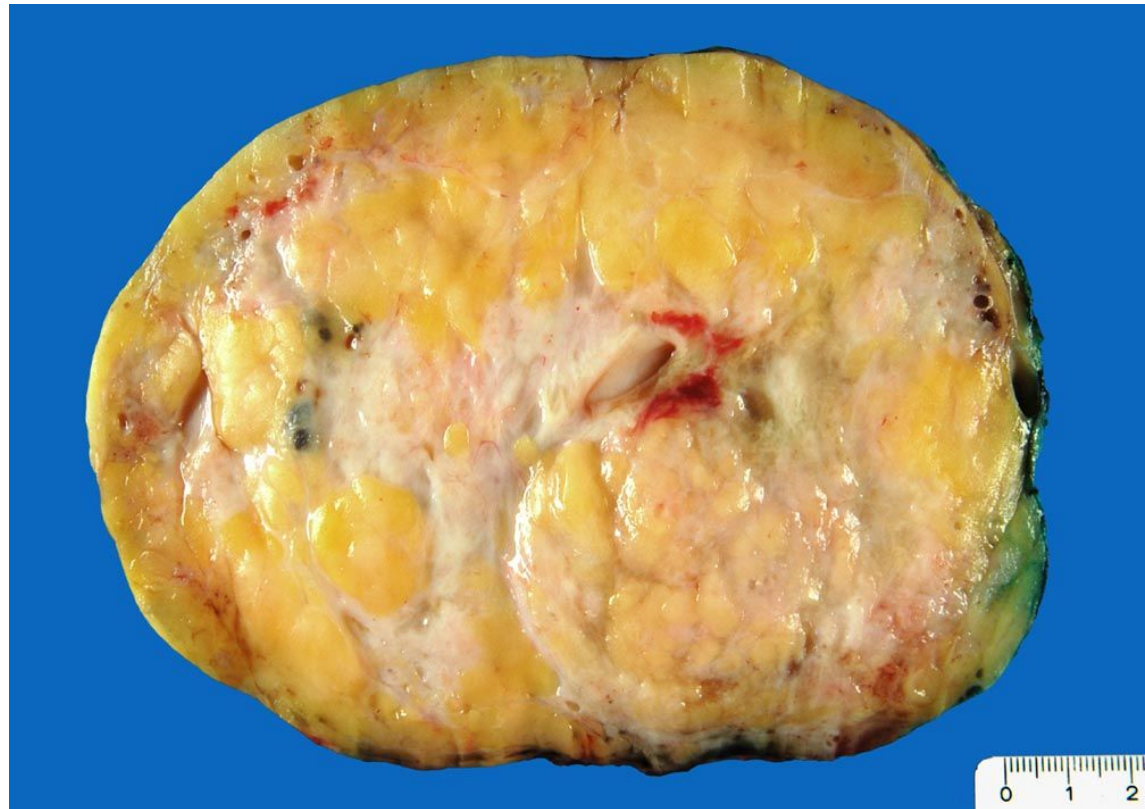
- **Benign lesions**
- **Malignant lesions**

# Benign epithelial lesions

- **Nonproliferative diseases**
  - Fibrocystic change
  - Adenosis
- **Proliferative diseases wo. atypia**
  - Usual duct hyperplasia
  - Sclerosing adenosis
  - Complex sclerosing lesion
  - Papilloma
- **Proliferative diseases with atypia**
  - ALH
  - ADH

# Benign epithelial lesions

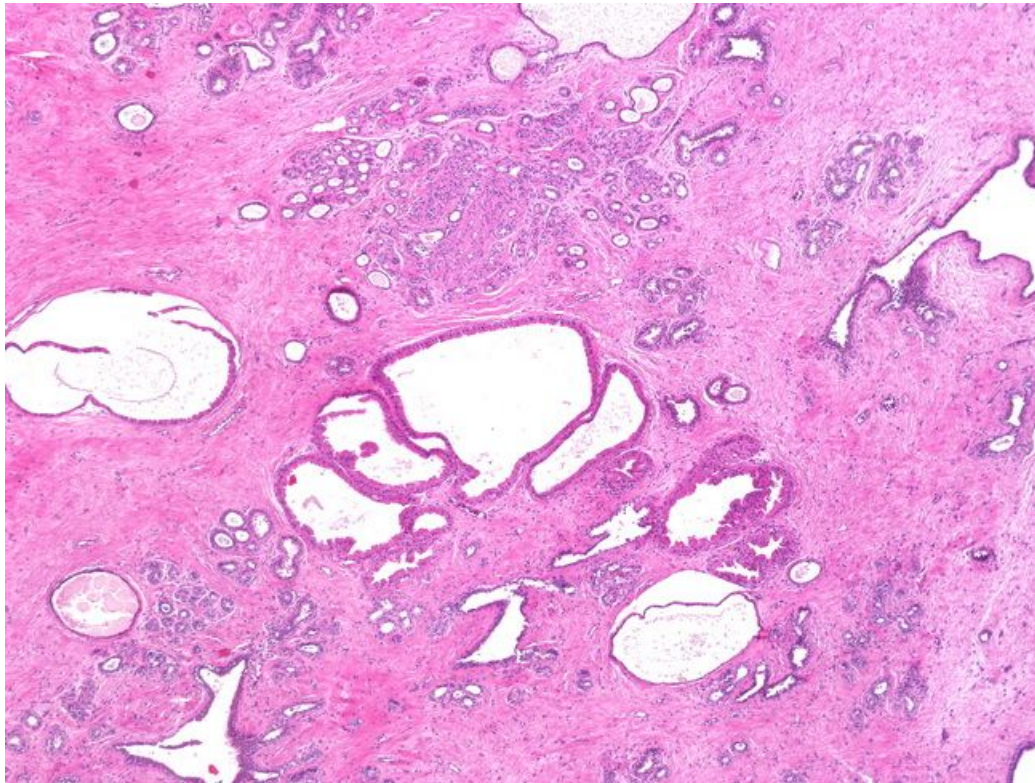
- **Nonproliferative diseases**
  - Fibrocystic change





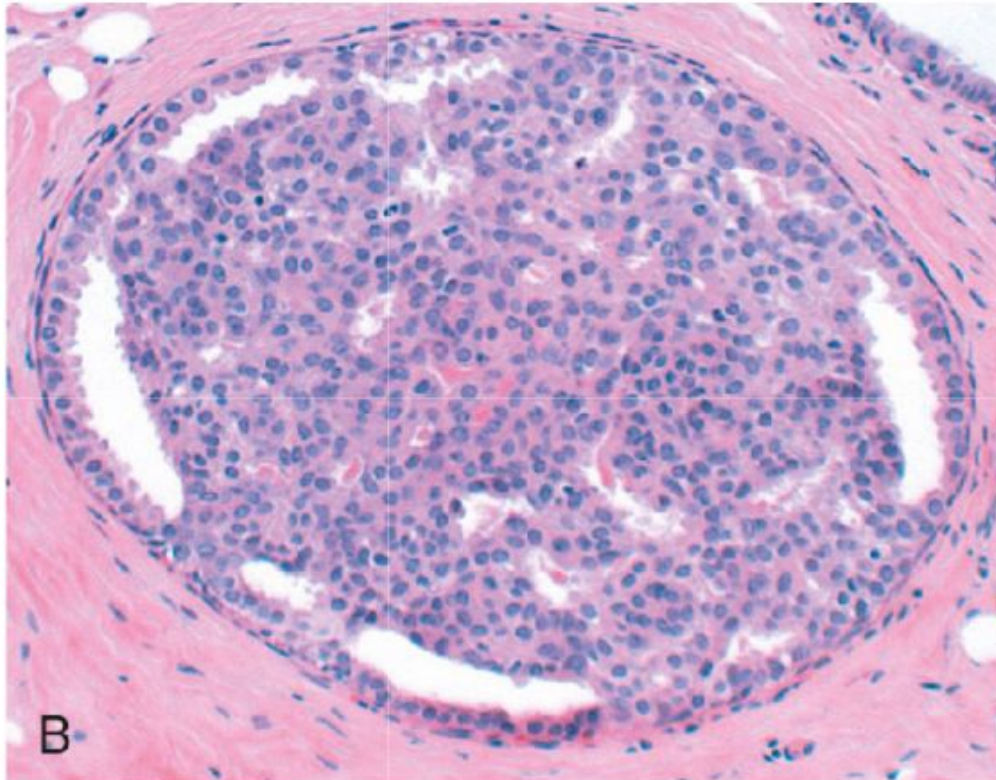
# Benign epithelial lesions

- **Nonproliferative diseases**
  - Fibrocystic change



# Benign epithelial lesions

- Proliferative diseases wo. atypia
  - Usual duct hyperplasia



# Benign epithelial lesions

- Proliferative diseases with atypia
  - ADH



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# Malignant epithelial lesions

- Risk factors
- Patogenesis, Prognostic factors
- Treatment options
- Types of malignant lesions
  - In situ
  - Invasive

# Malignant epithelial lesions

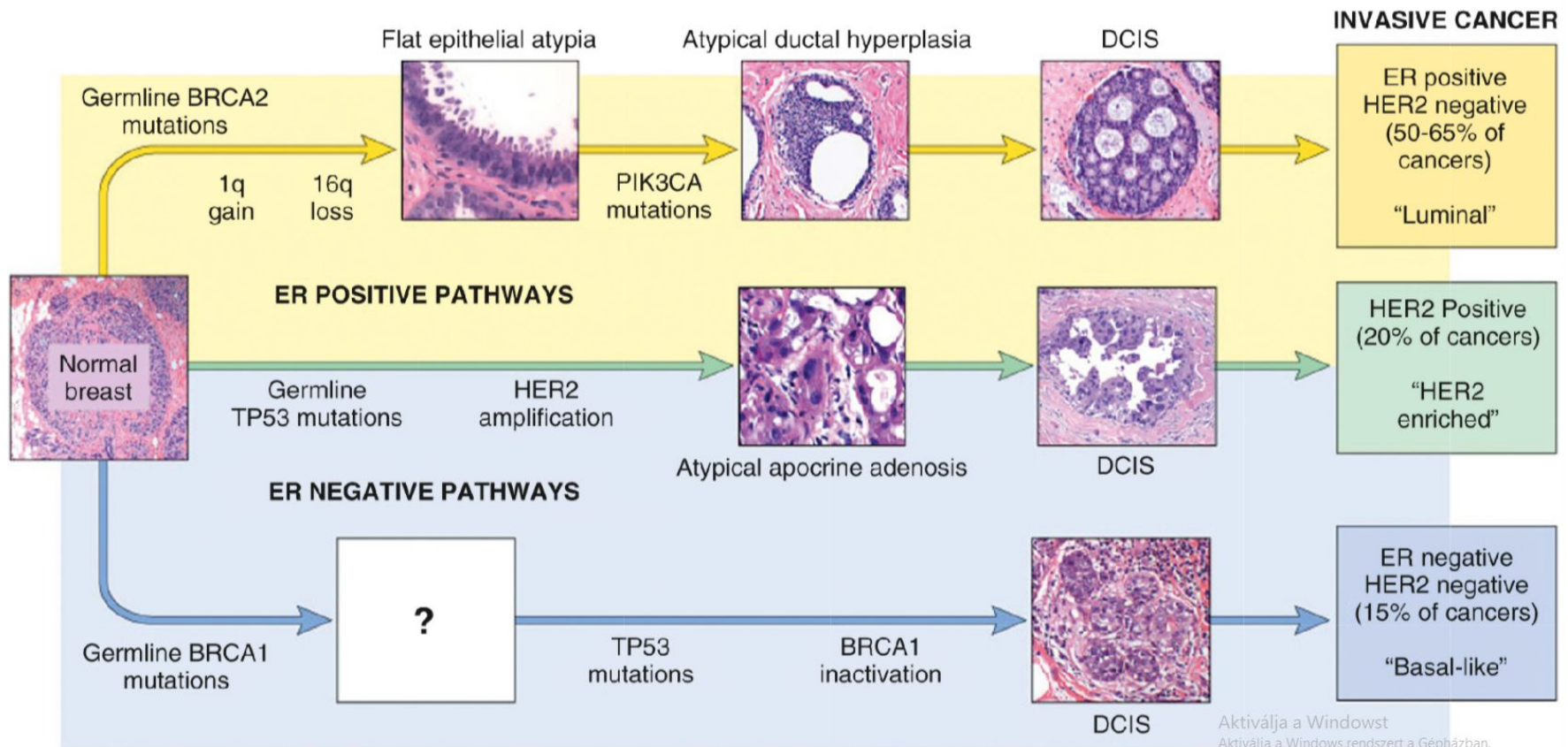
- **Risk factors**
  - **Sex**
  - **Age**
  - **Family history**
  - **Reproductive anamnesis**
  - **Other**

# Malignant epithelial lesions

Patogenesis,  
Prognostic factors

- Histological type
- Grade
  - Gland formation
  - Polymorphism
  - Mitotic rate
- Stage
- Biomarkers
  - ER
  - PR
  - HER2
  - Ki67
- *Molecular classification*

# Malignant epithelial lesions





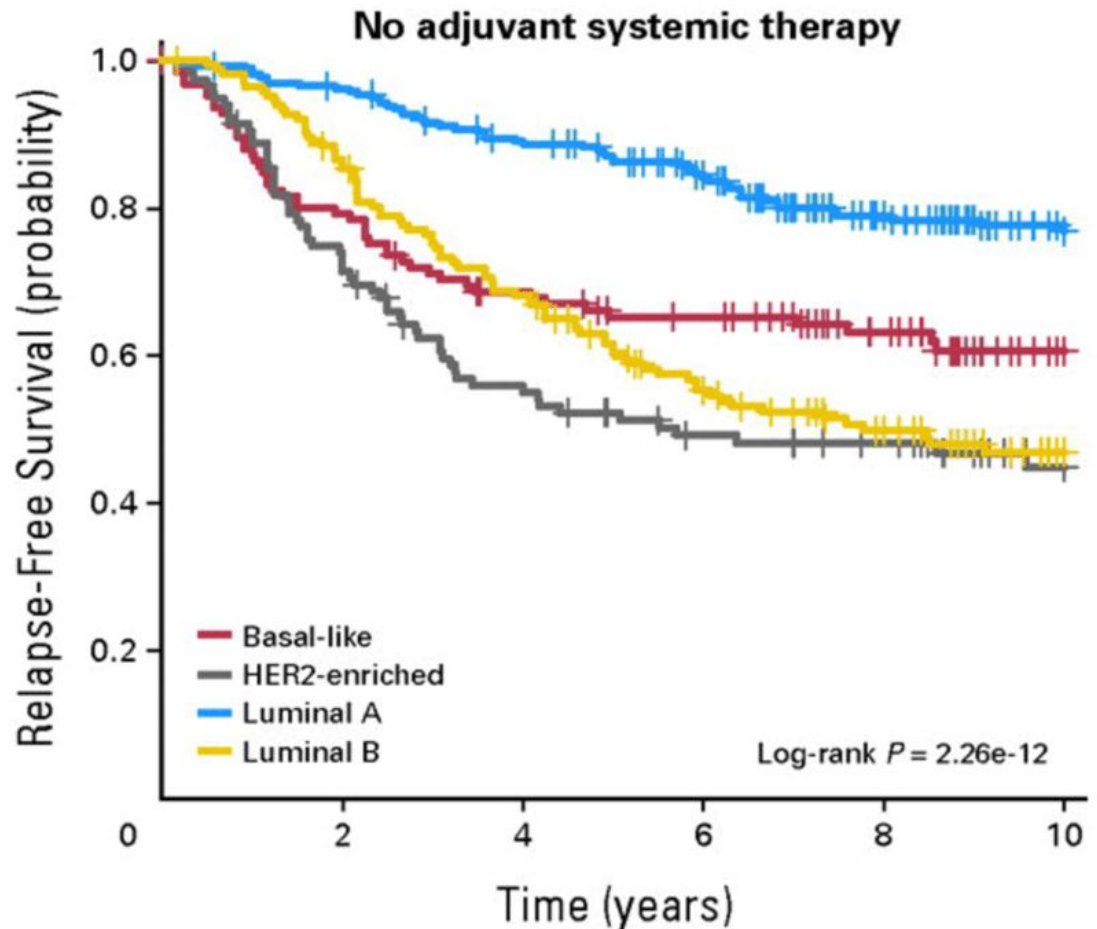
# Malignant epithelial lesions

Annals of Oncology

**Table 2. Surrogate definitions of intrinsic subtypes of breast cancer [23]**

Intrinsic subtype	Clinicopathological surrogate definition
Luminal A	'Luminal A-like' ER-positive HER2-negative Ki67 low <sup>a</sup> PgR high <sup>b</sup> Low-risk molecular signature (if available)
Luminal B	'Luminal B-like (HER2-negative)' ER-positive HER2-negative and either Ki67 high or PgR low High-risk molecular signature (if available)
	'Luminal B-like (HER2-positive)' ER-positive HER2-positive Any Ki67 Any PgR
HER2	'HER2-positive (non-luminal)' HER2-positive ER and PgR absent
'Basal-like'	'Triple-negative' <sup>c</sup> ER and PgR absent <sup>c</sup> HER2-negative <sup>c</sup>

Adapted from the 2013 St Gallen Consensus Conference [23].



# Malignant epithelial lesions

- Treatment options

**Neoadjuvant  
Surgical  
Adjuvant  
First/second/third line**

Irradiation

Endocrine th.

Chemotherapy

Anti-HER2

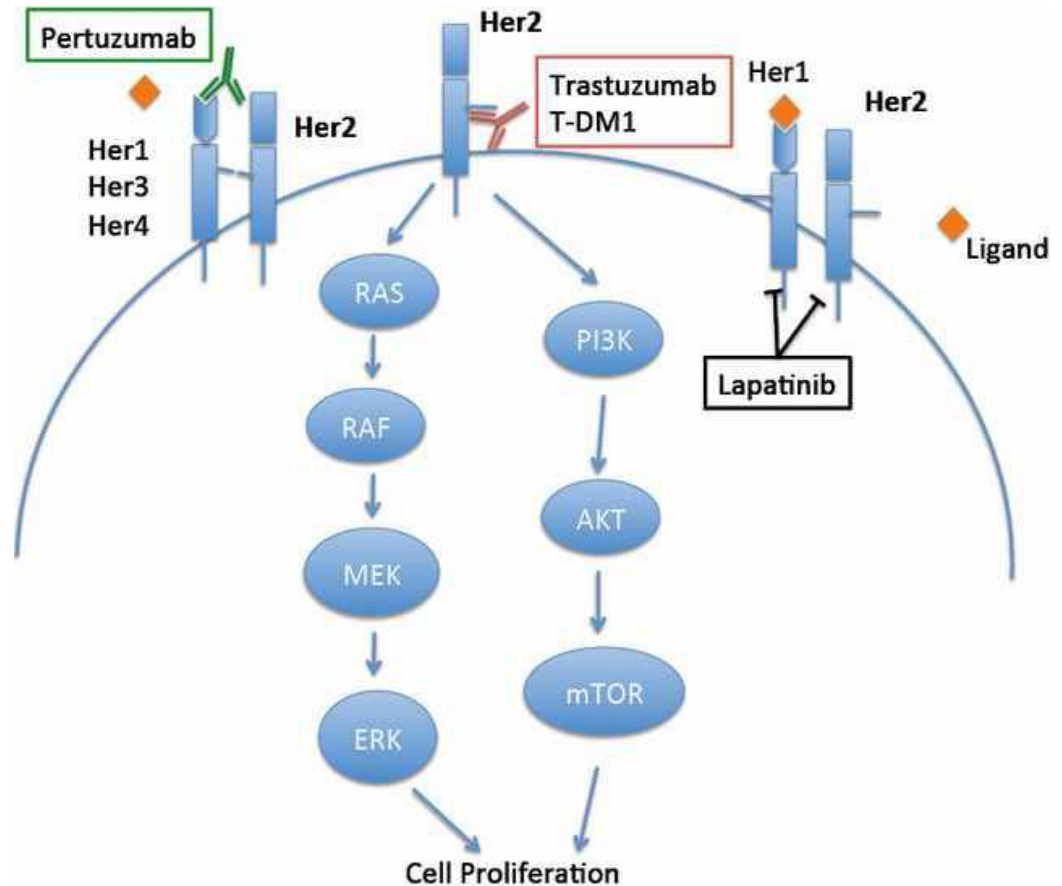
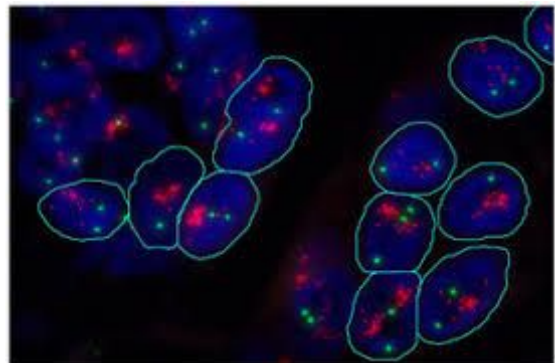
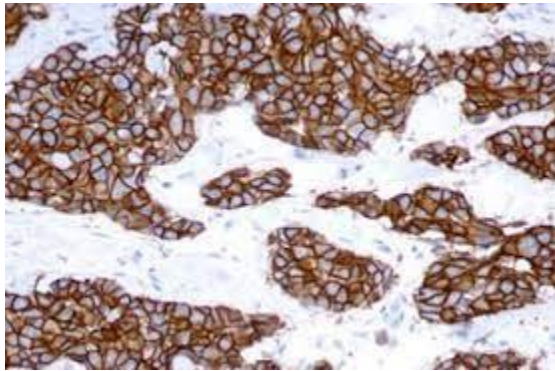
New approaches - PARP-, CDK4-, PIK3CA-,  
PDL1 inhibitors

*Systemic / local*

# Malignant epithelial lesions

- Treatment options

- Anti-HER2

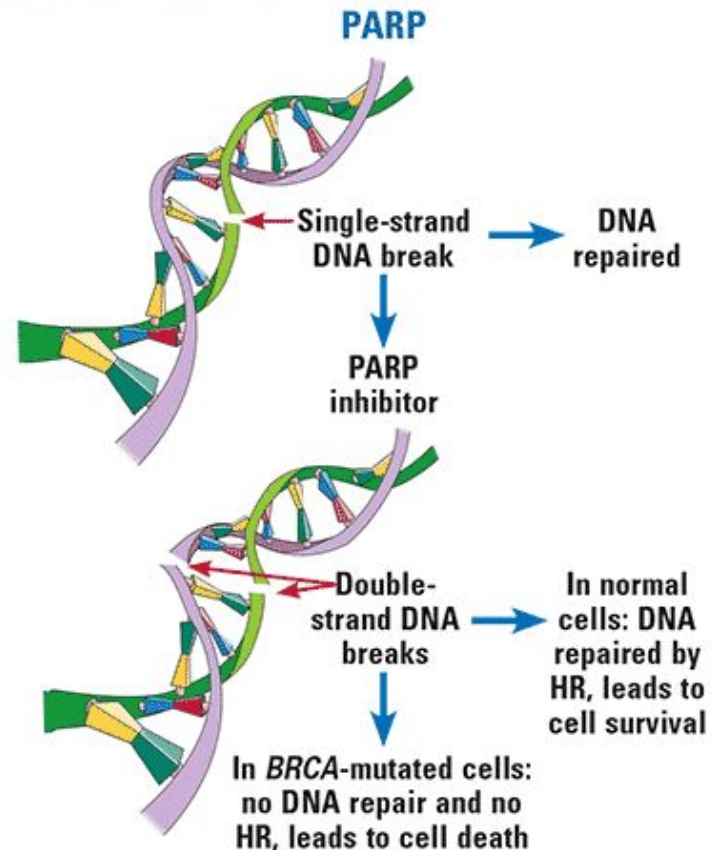


# Malignant epithelial lesions

- Treatment options
  - PARP-inhibitors



## Schematic mechanism of PARP inhibitors



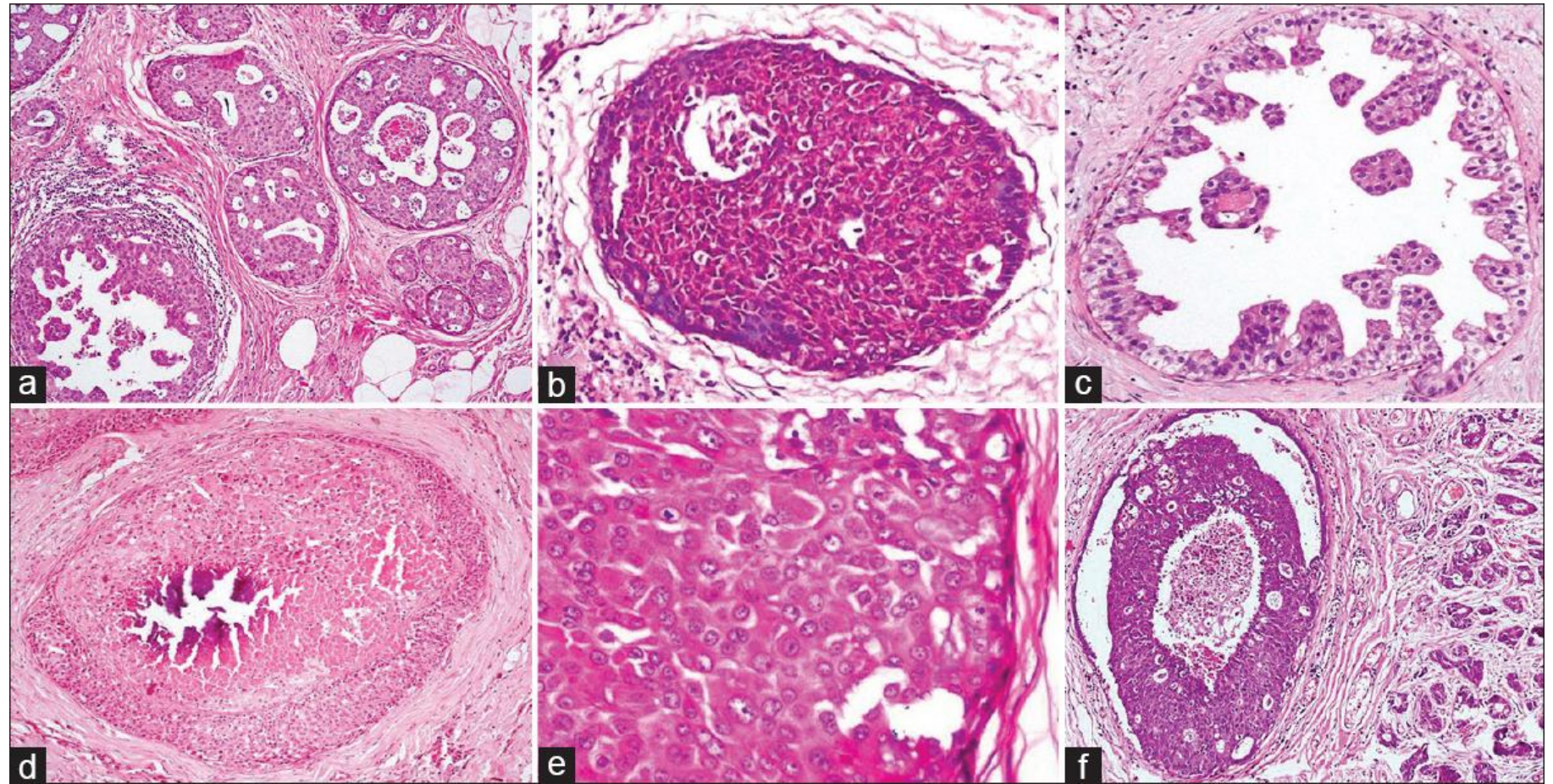
# Malignant epithelial lesions

- **Types of malignant lesions**
  - **In situ**
    - DCIS
    - LCIS
    - Paget's disease
  - **Invasive tumors**
    - NST
    - ILC
    - Tubular
    - Medullary
    - Mucinous

# Malignant epithelial lesions

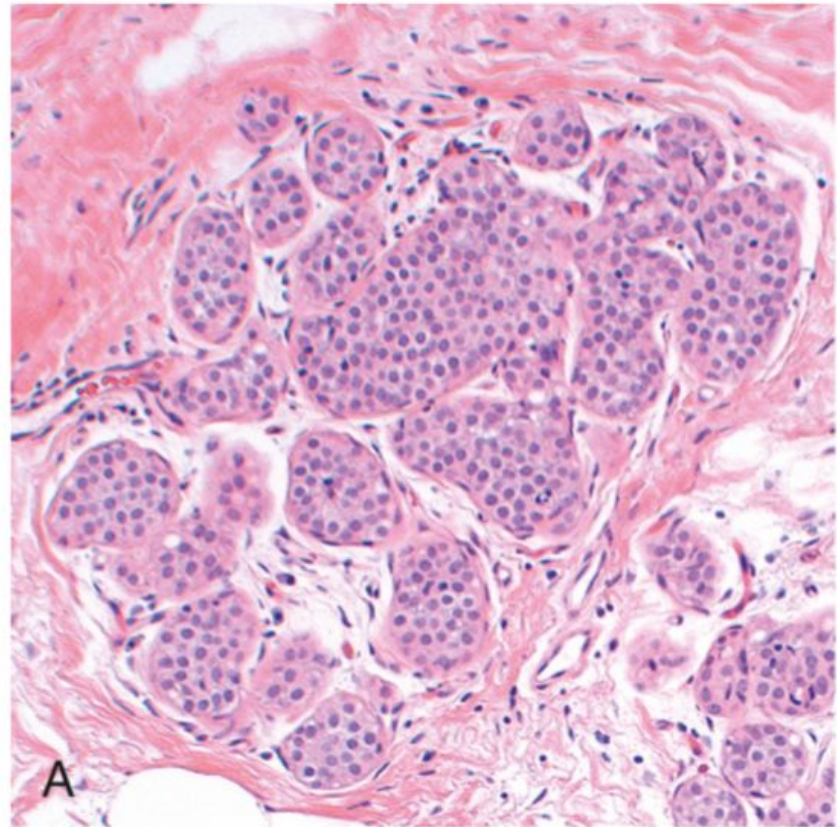
- **Types of malignant lesions**
  - **In situ**
    - **DCIS**

# Malignant epithelial lesions



# Malignant epithelial lesions

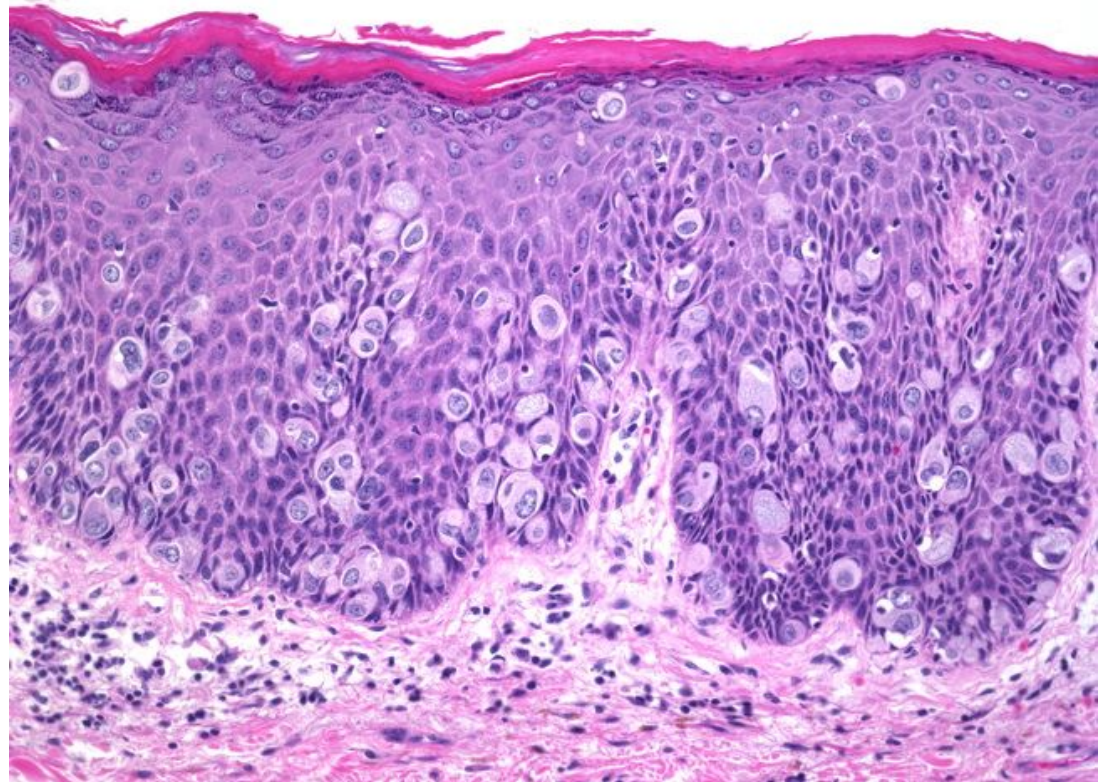
- Types of malignant lesion
  - In situ
    - LCIS





# Malignant epithelial lesions

- Types of malignant lesions
  - In situ
    - Paget's disease



# Malignant epithelial lesions

- Types of malignant lesions

- In situ

- DCIS

- LCIS

- Paget's disease

- Invasive tumors

- NST

- ILC

- Tubular

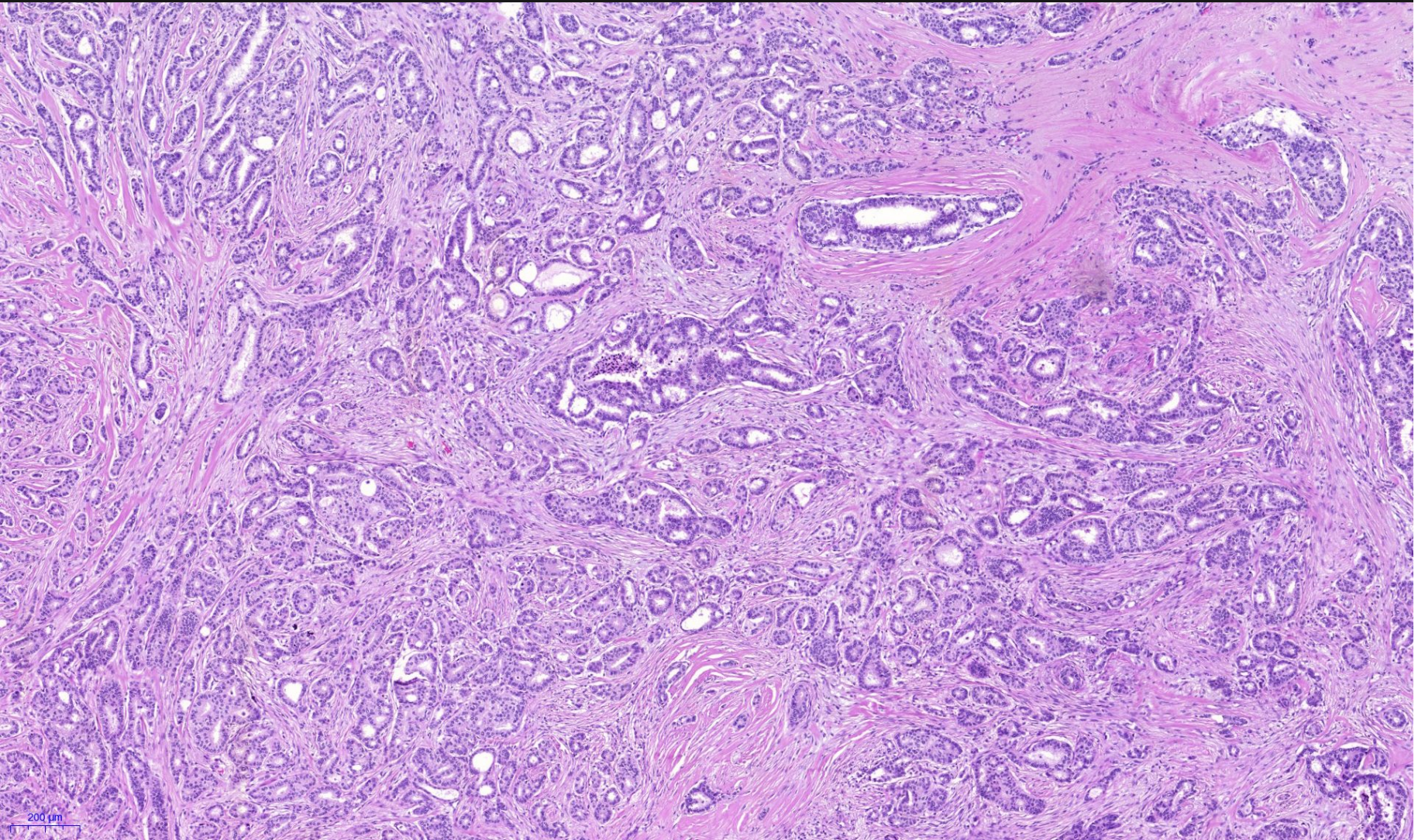
- Medullary

- Mucinous

# Malignant epithelial lesions

- **Types of malignant lesions**
  - **Invasive tumors**
    - **NST**

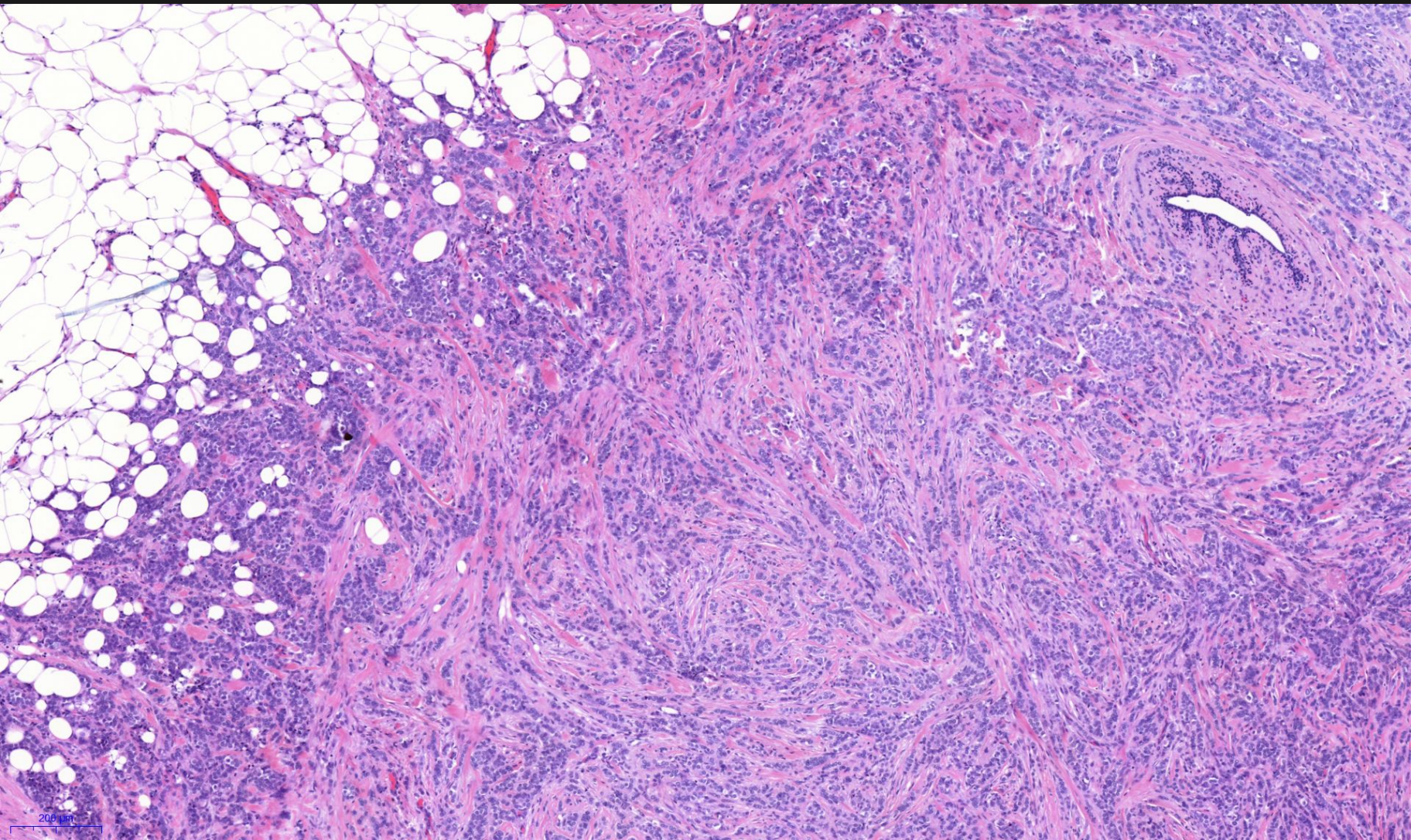
# Malignant epithelial lesions



# Malignant epithelial lesions

- **Types of malignant lesions**
  - **Invasive tumors**
    - **ILC**

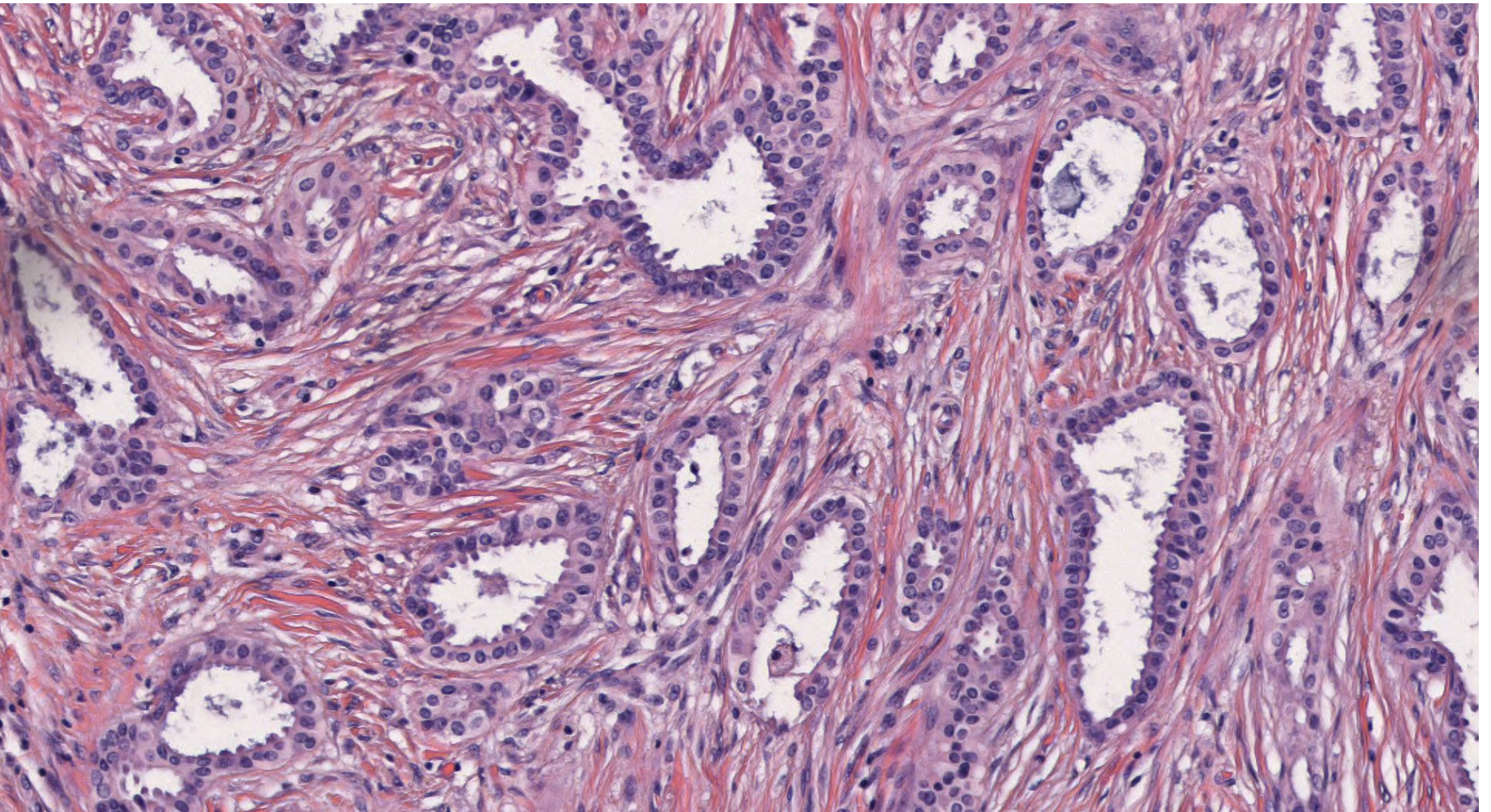
# Malignant epithelial lesions



# Malignant epithelial lesions

- **Types of malignant lesions**
  - **Invasive tumors**
    - **Tubular**

# Malignant epithelial lesions

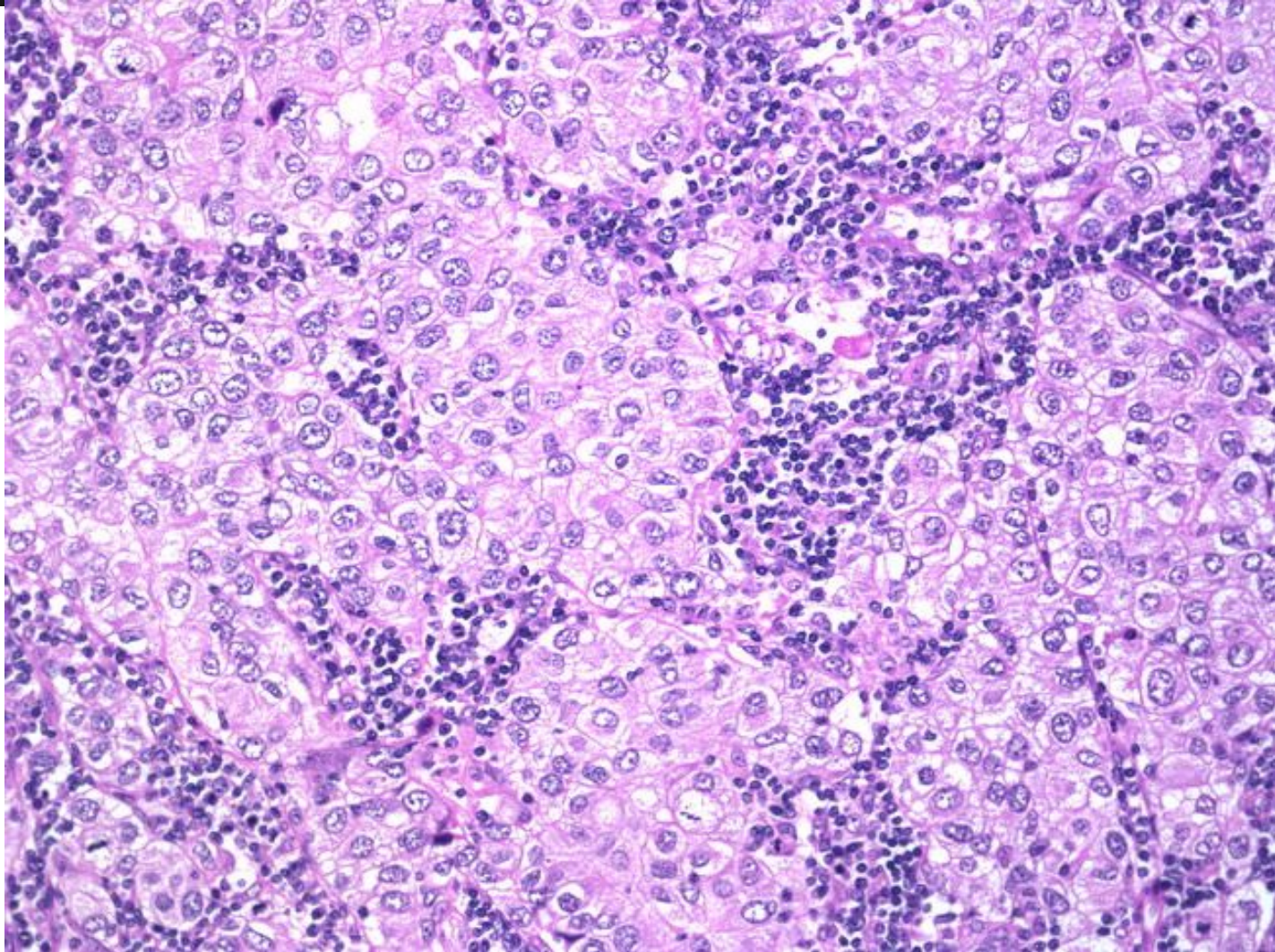




# Malignant epithelial lesions

- **Types of malignant lesions**
  - **Invasive tumors**
    - **Medullary**

# Malignant epithelial lesions



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- Epithelial lesions

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- Malignant lesions

- **Pathology of pregnancy**

- Gestational trophoblastic diseases

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- Choriocarcinoma

# Pathology of pregnancy

- Gestational trophoblastic diseases
  - Mola
  - Choriocarcinoma

# Pathology of pregnancy

## Gestational trophoblastic diseases

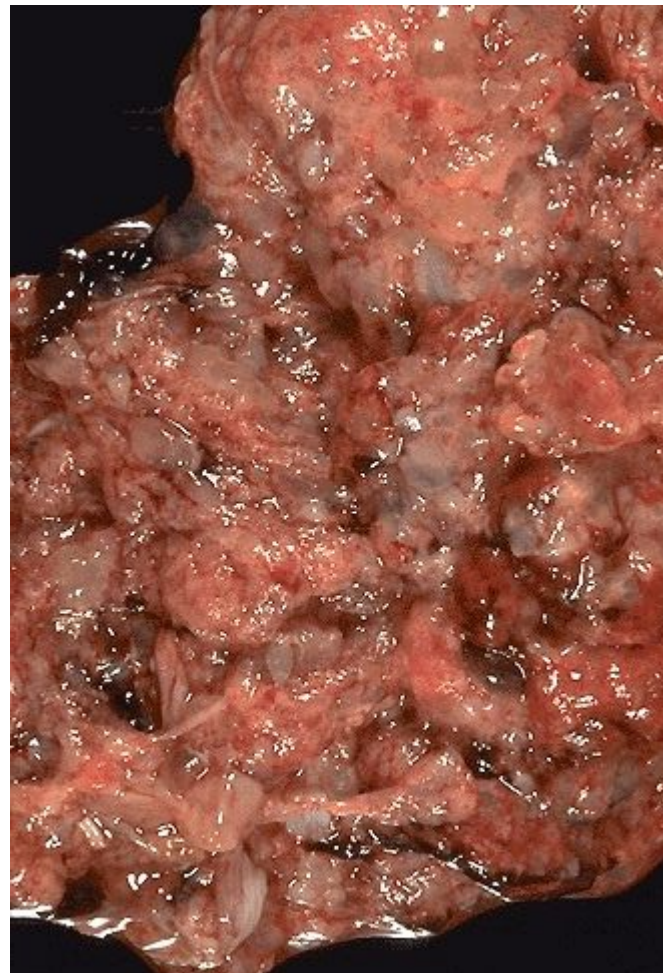
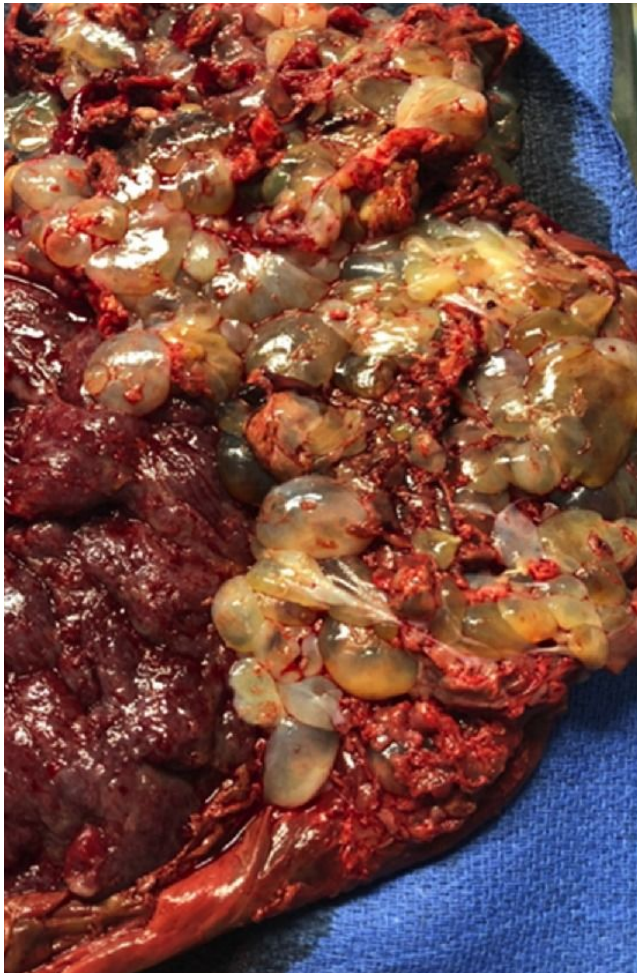
- Mola

Feature	Complete Mole	Partial Mole
Karyotype	46,XX (46,XY)	Triploid (69,XXY)
Villous edema	All villi	Some villi
Trophoblast proliferation	Diffuse; circumferential	Focal; slight
Serum hCG	Elevated	Less elevated
Tissue hCG	++++	+
Risk of subsequent choriocarcinoma	2%	Rare

hCG, Human chorionic gonadotropin.

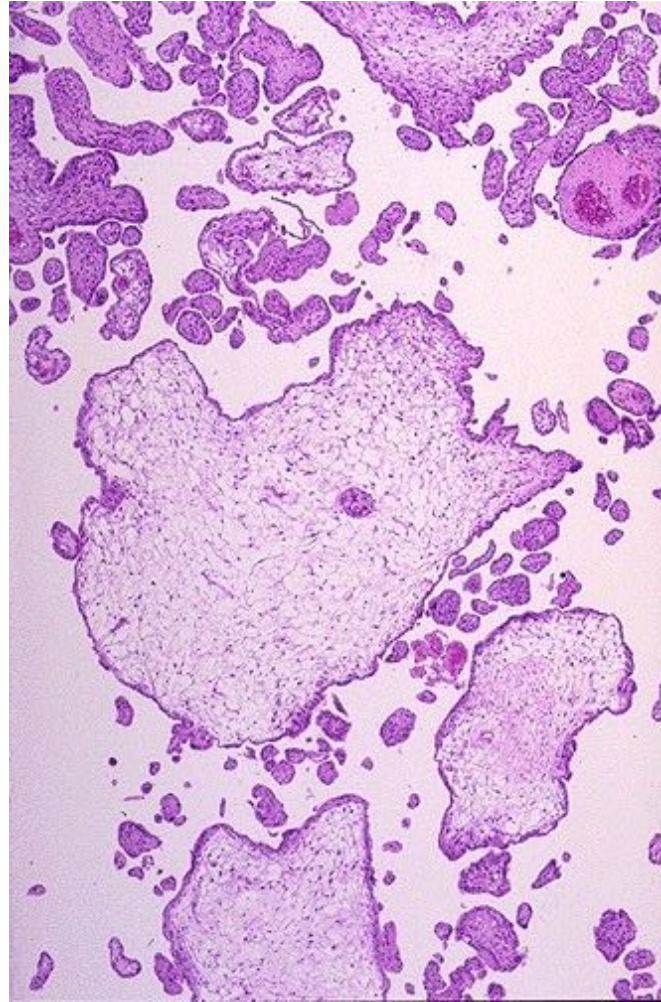
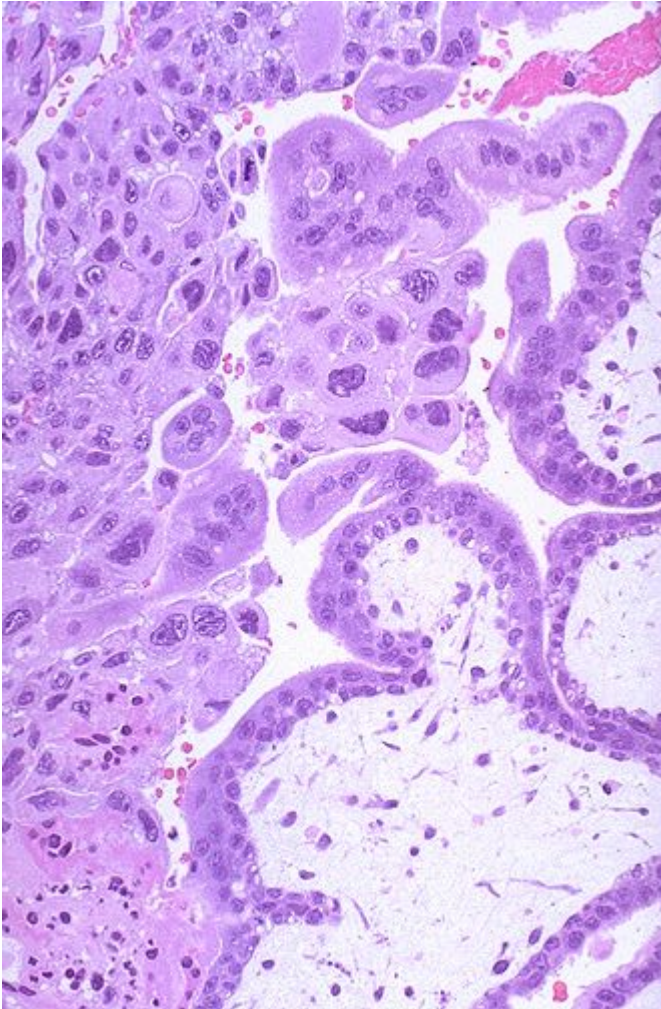
# Pathology of pregnancy

## Gestational trophoblastic diseases



# Pathology of pregnancy

## Gestational trophoblastic diseases



# Pathology of pregnancy

## Gestational trophoblastic diseases

- **Choriocarcinoma**

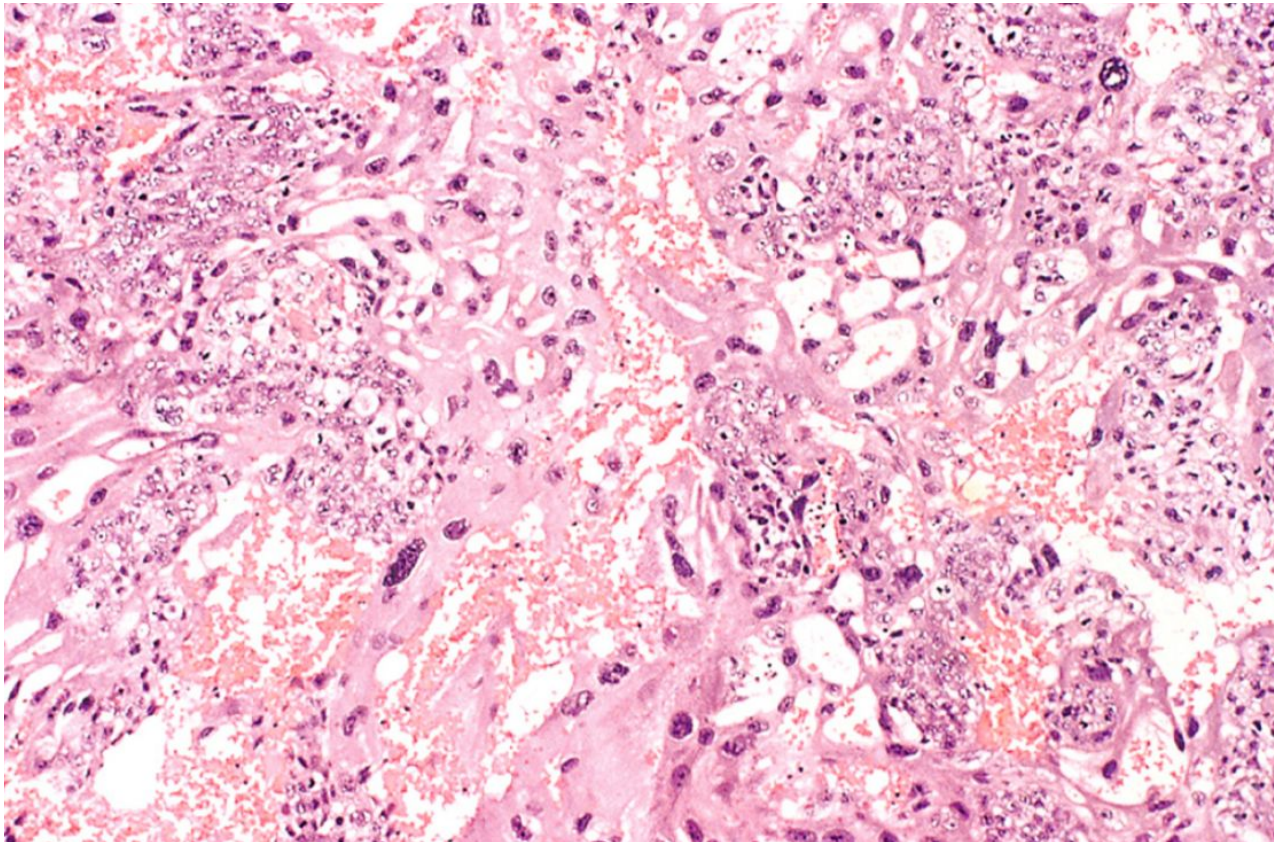
- Malignant trophoblastic tumor
- Syncytiotrophoblast, cytotrophoblast, intermedier trophoblast
- Rapid growts
- Early met.
- Good prognosis



# Pathology of pregnancy

## Gestational trophoblastic diseases

- Choriocarcinoma



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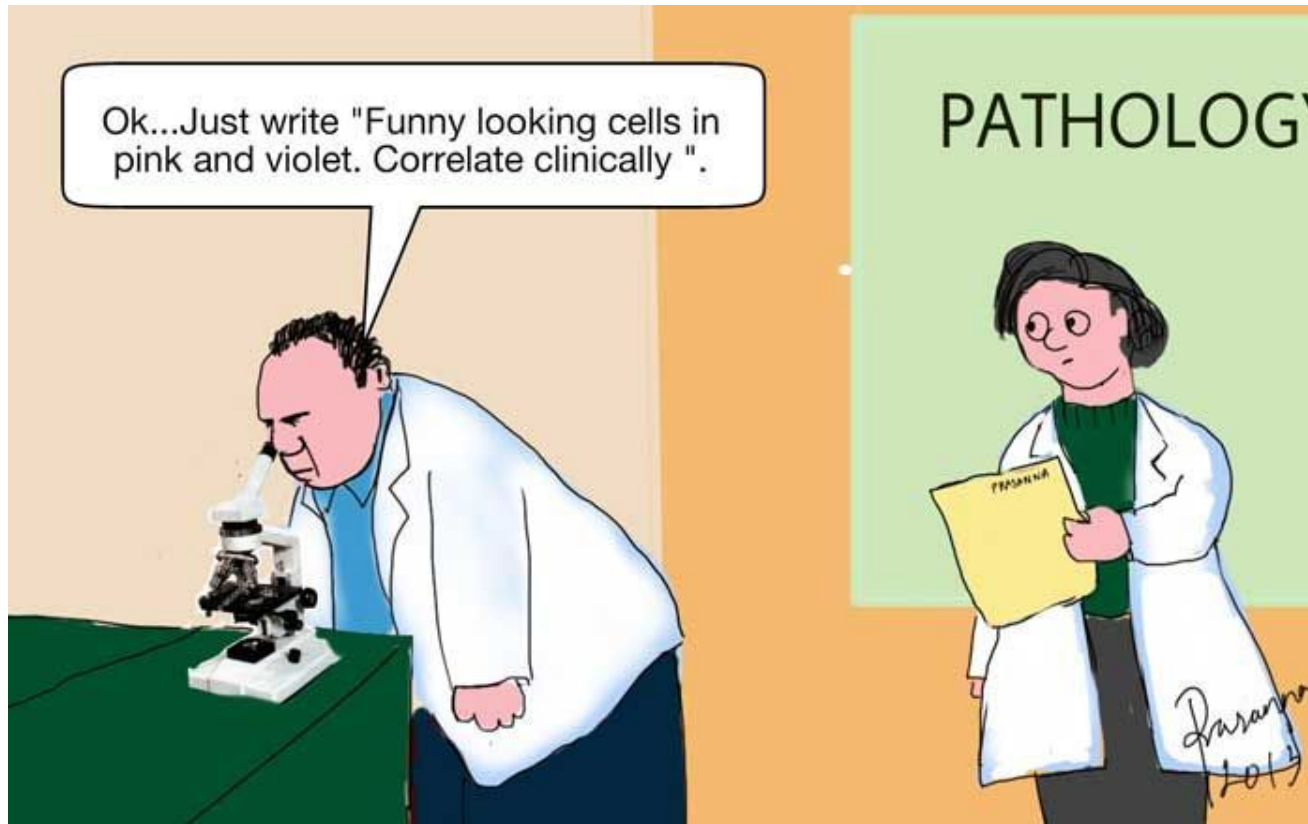
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