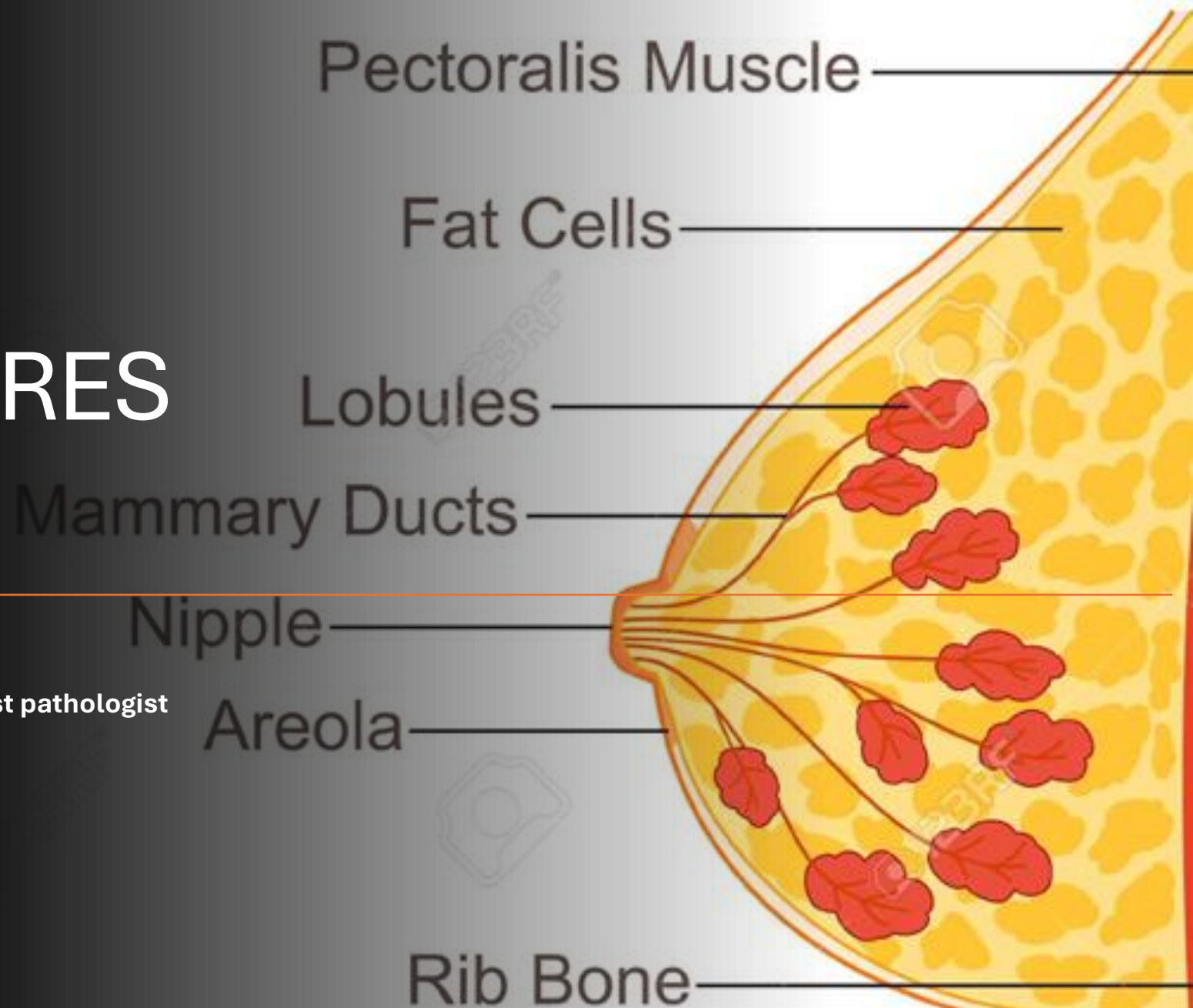


# BREAST LECTURES

## 1+2

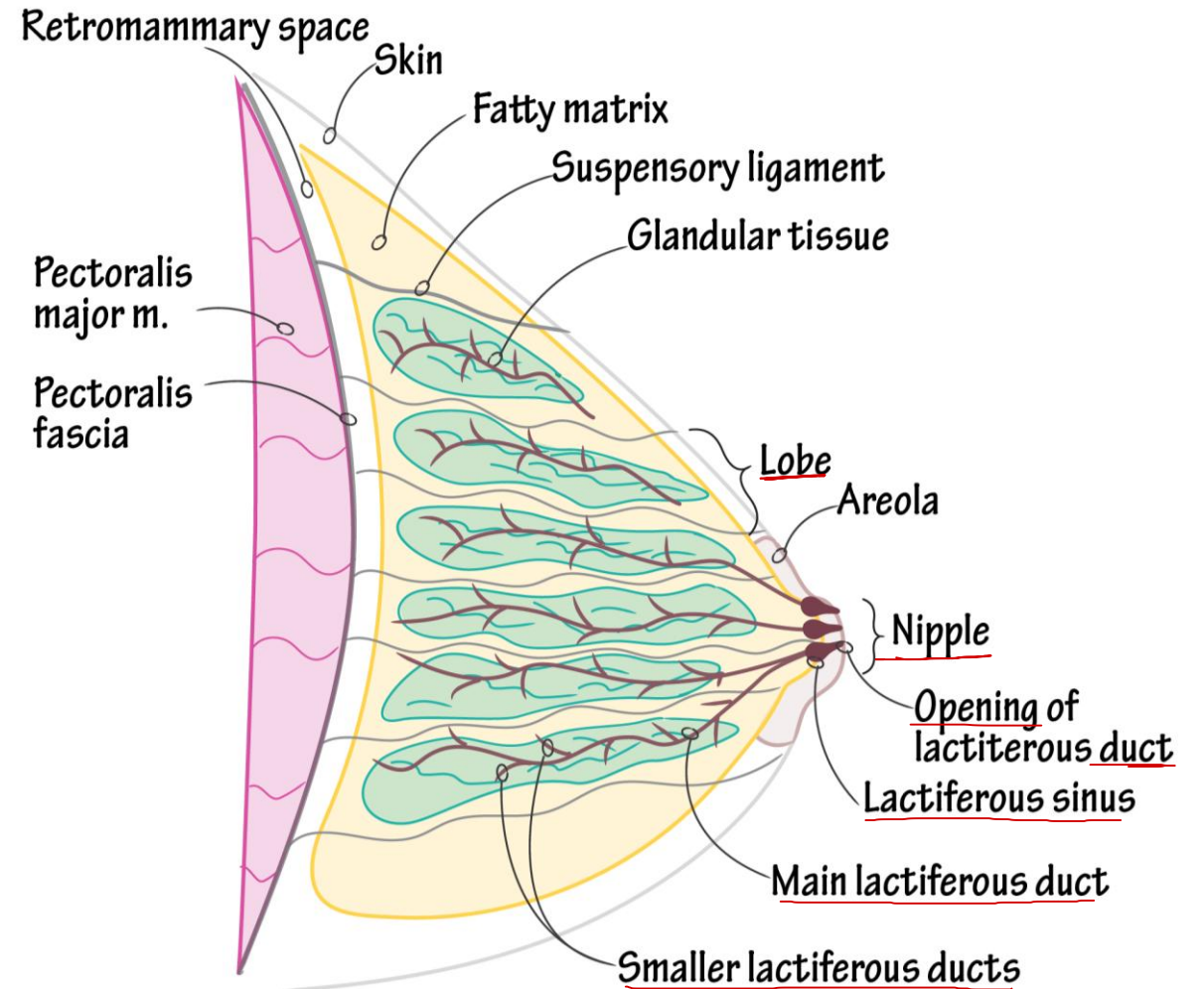
Dr. Bushra Al-Tarawneh, MD

- Anatomical pathologist-Gynecologic and Breast pathologist
- Department of Microbiology & Pathology
- Mutah University , School of Medicine
- UGS lectures 2026

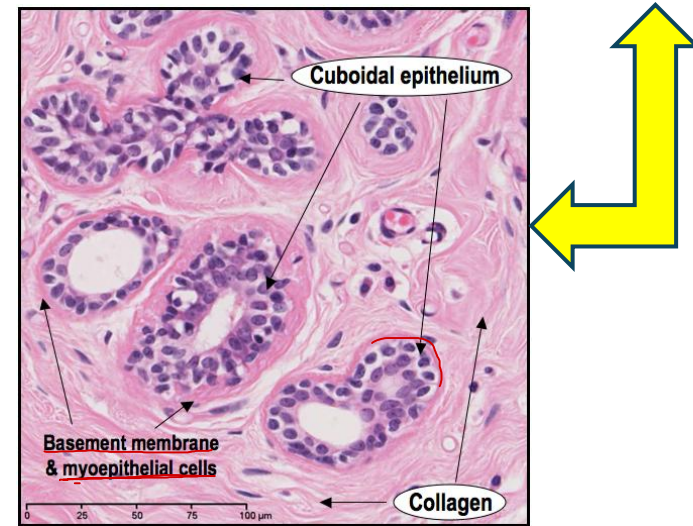
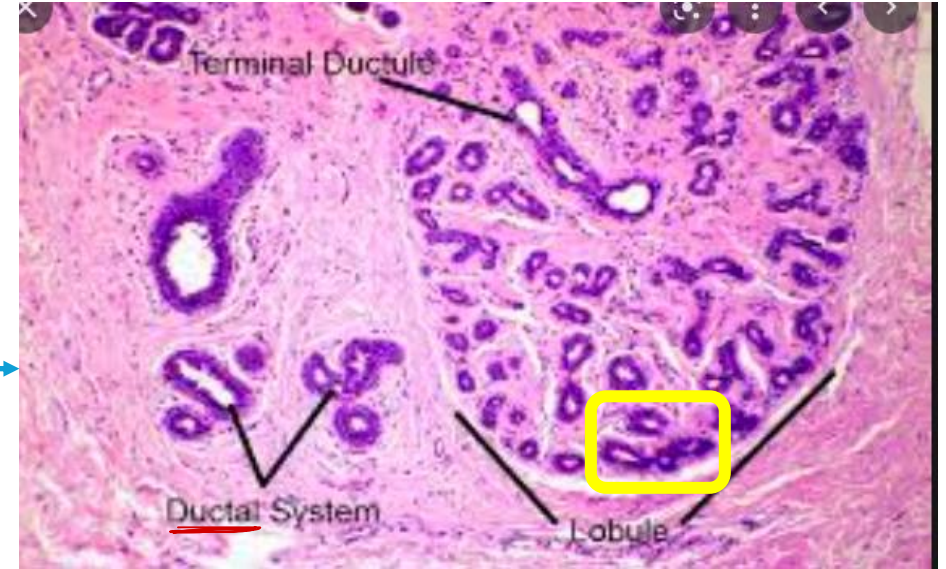
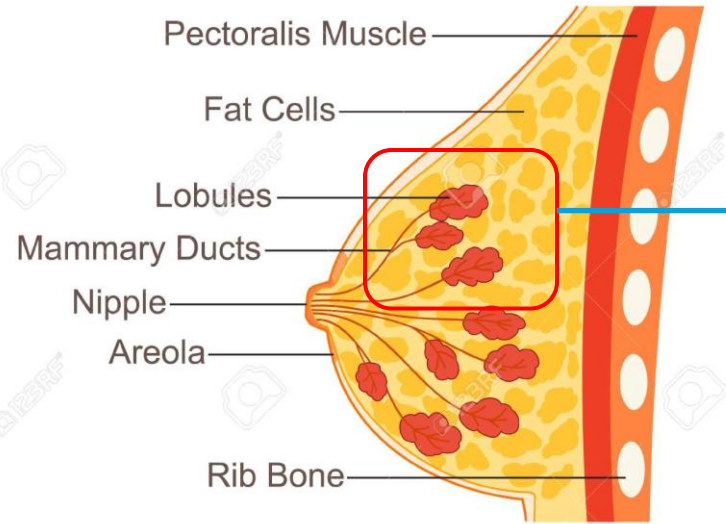


- Overview( anatomy, histology).
- Clinical Presentations of Breast Disease.
- Stromal Neoplasms.
- Benign Epithelial Lesions.
- Carcinoma.

# Overview ...anatomy.

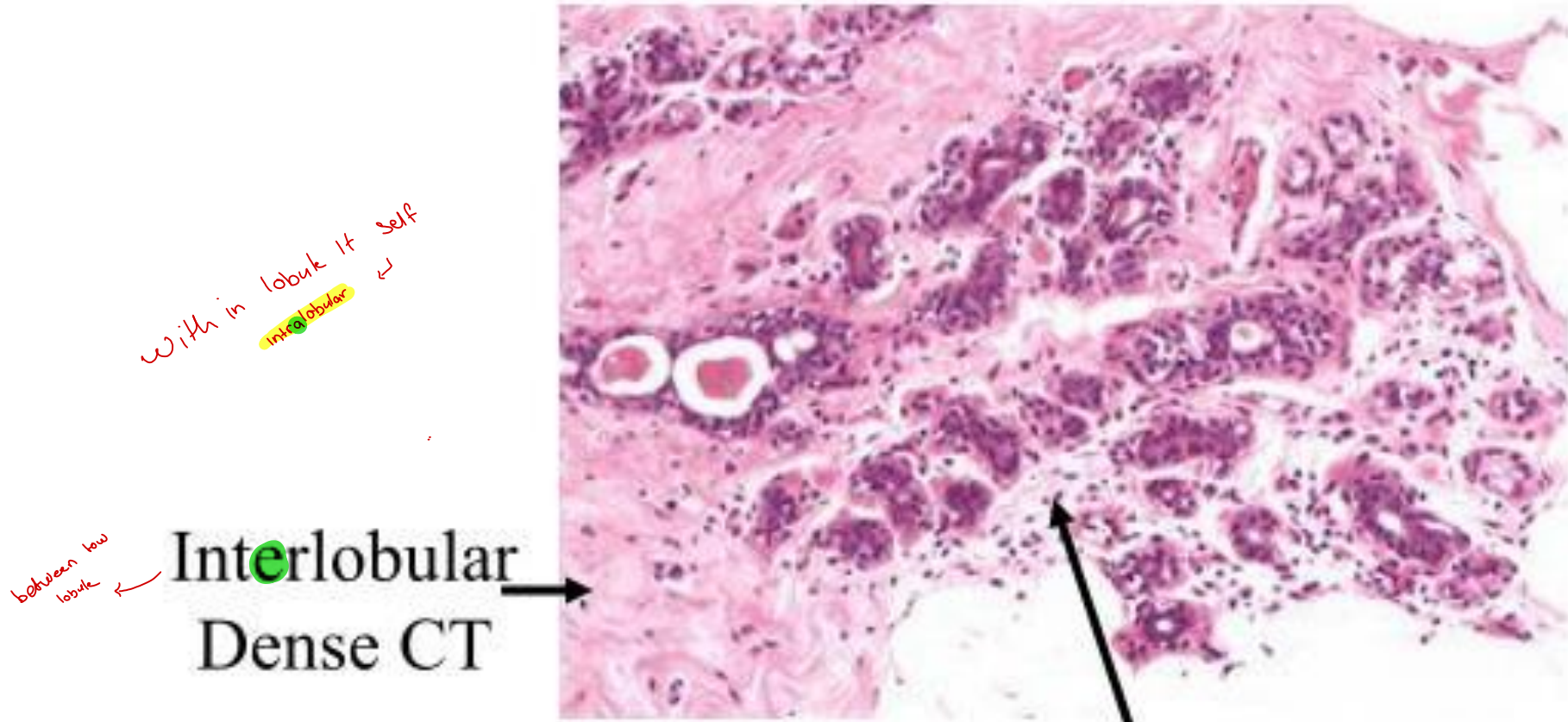


# Overview ...Histology

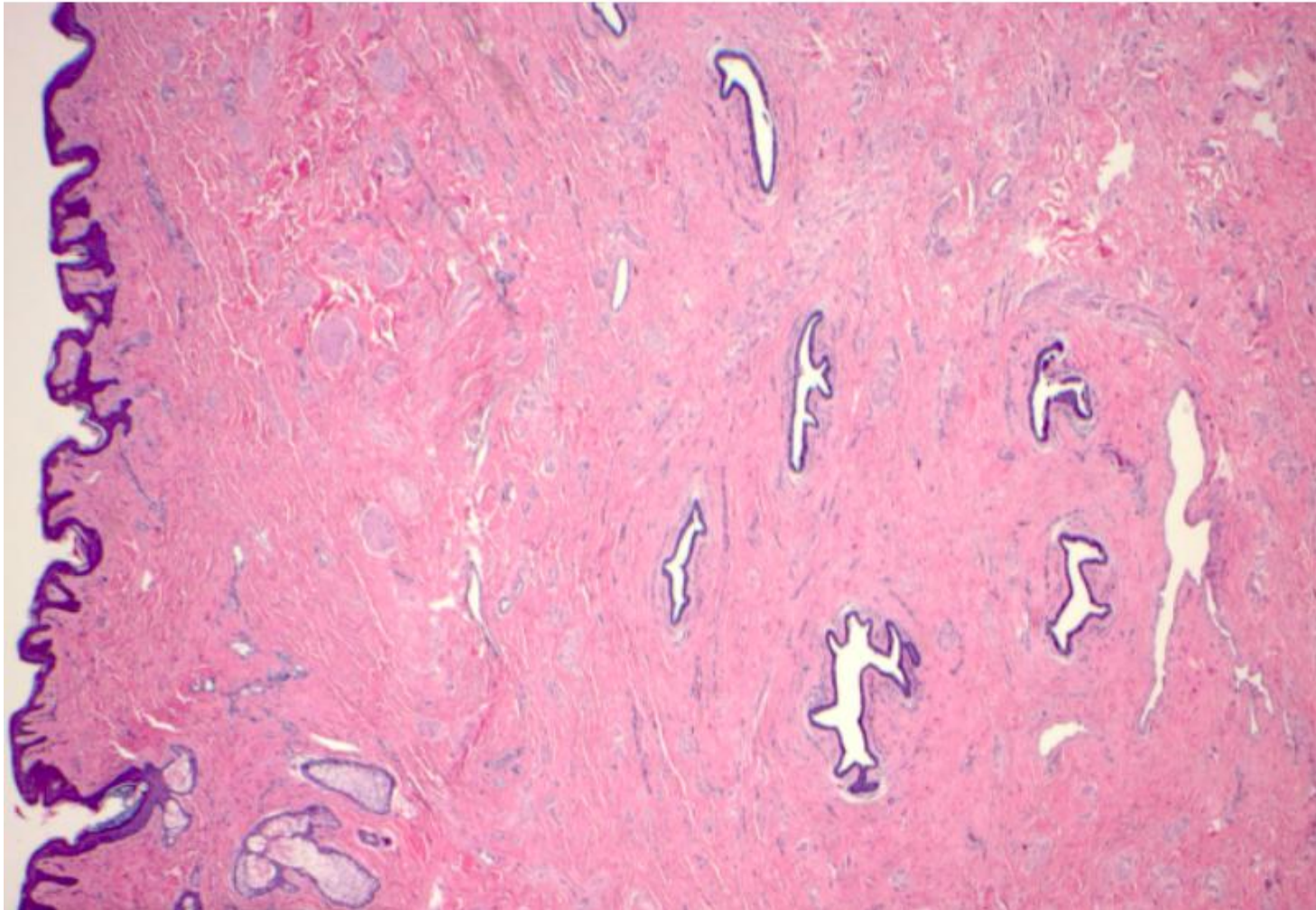


# Higher magnification of a lobule

BM surrounds each alveolus



# Nipple..histology



→ Nerve high

مرحبا بكم جبراً  
حياتنا من الامتحان

# Common clinical presentation of breast disease



lump → Mass



skin dimpling → depression  
غضارة لا انفتاحها



change in skin color  
or texture



change in how nipple looks,  
like pulling in of the nipple



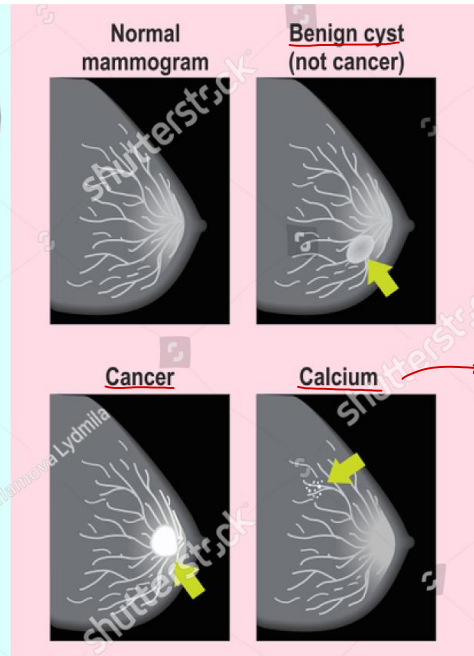
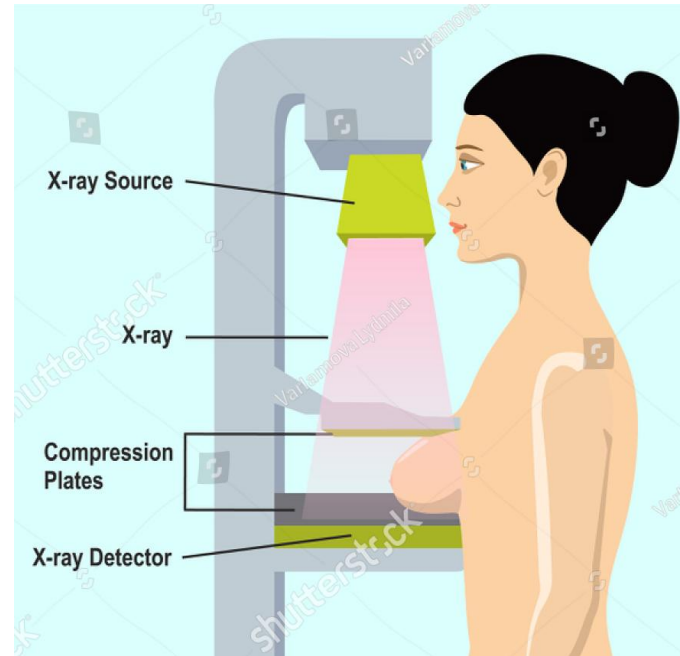
clear or bloody fluid that  
leaks out of the nipple → discharge blood or  
serous

respect author

# Abnormal mammogram

screening Program  
نموذج  
Normal Patient without any sign

- Aimed to detect early, **nonpalpable asymptomatic breast carcinomas** before metastatic spread has occurred.
- **average size** of **invasive carcinomas** detected by **mammography** is about **1 cm.**

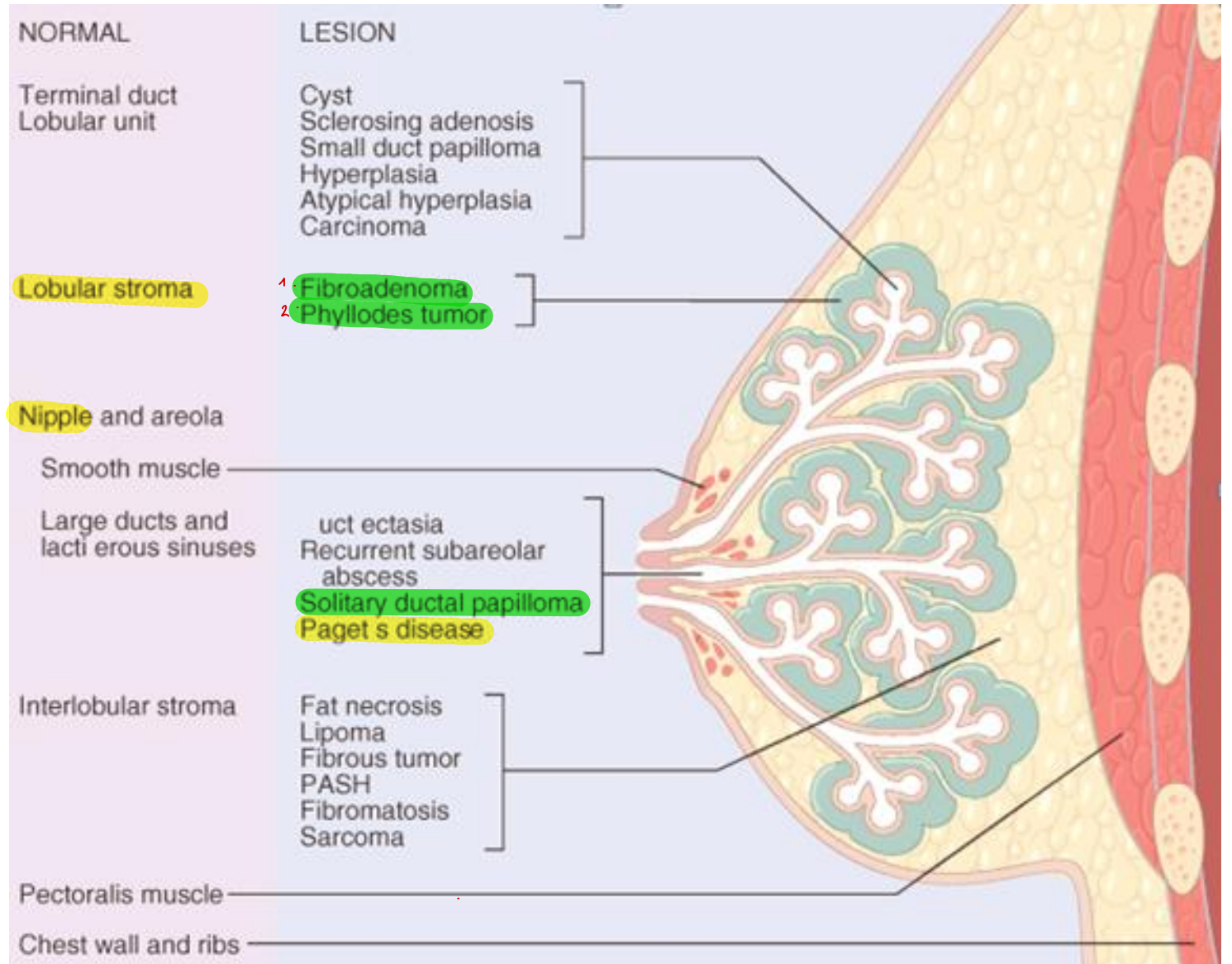


Mostly associated with Malignancy

1, 2, 3, 4, 5  
benign      high suspicion of malignancy      malignant

Breast lesion  
 can be  
 classified  
 according to the  
 anatomical  
 location

---



breast affected by estrogen

breast → Monthly cycle change

↑estrogen → ↑ risk of hyperplasia

# I. Stromal neoplasms

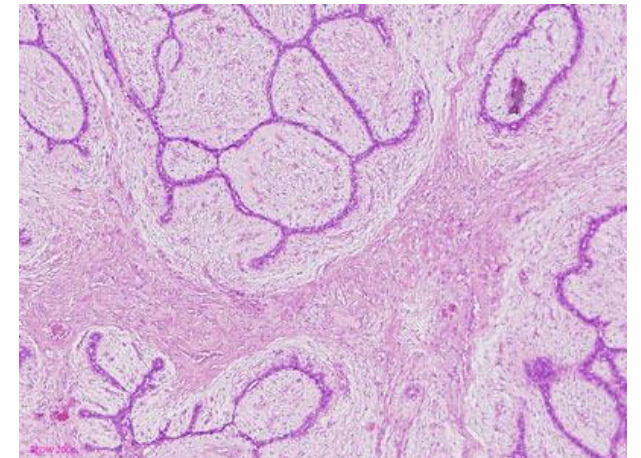
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- The two types of stroma in the breast, intralobular & interlobular, give rise to different types of neoplasms.
- ❖ **Intralobular** (specialized) stroma: *Same lobule*
  - (1) benign **fibroadenomas**
  - (2) **phyllodes tumors**
- ❖ **Interlobular** stroma: *2 lobule*
  - Same connective tissue tumors in other body sites (hemangiomas & angiosarcomas)

# A. fibroadenomas

Multiple Mass  
Mobile Mass  
Not adherent to Pectoralis Muscle or skin  
benign

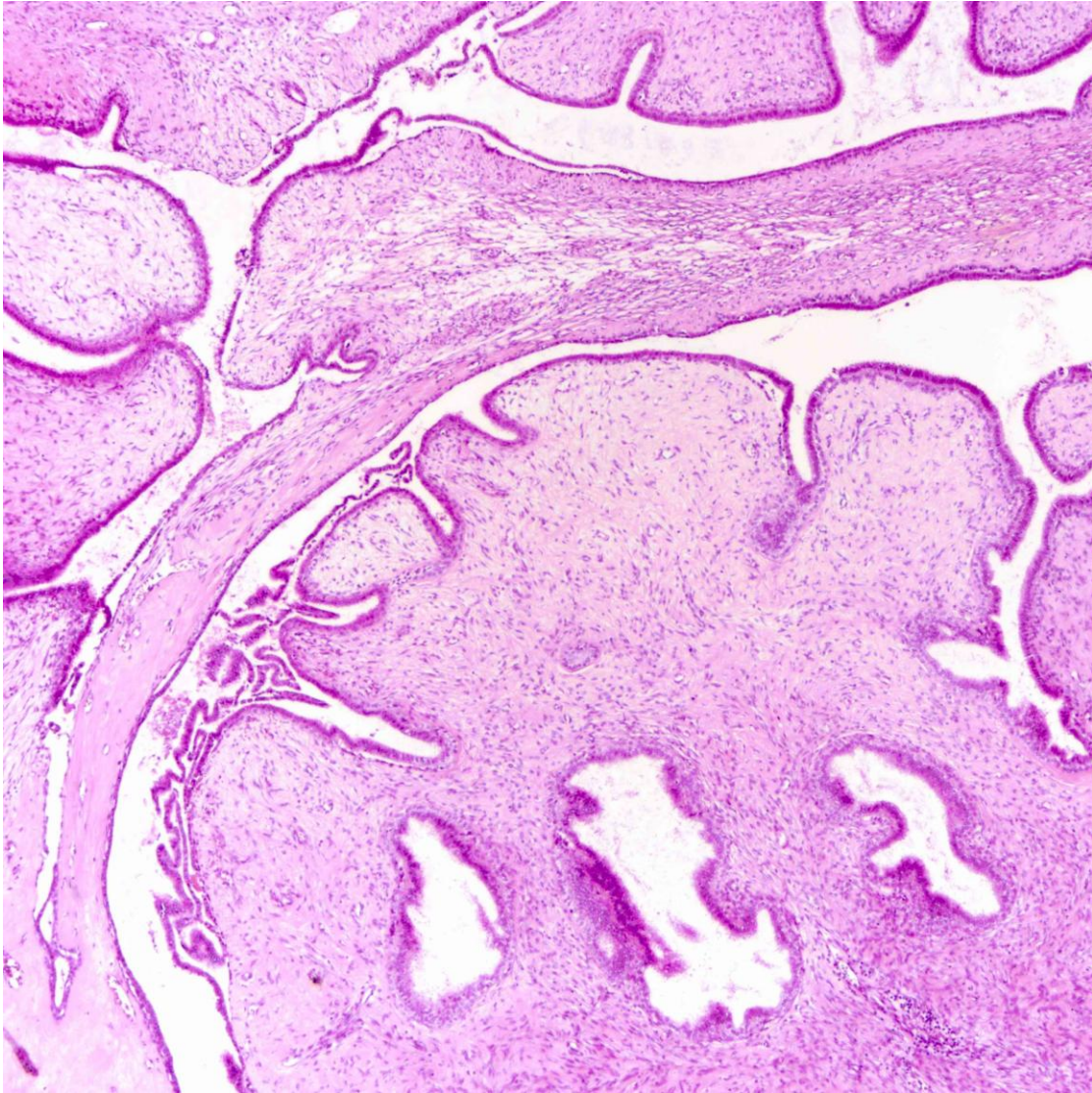
- The most common benign tumor of the breast.
- Affecting reproductive age.
- Estrogen sensitive.
- **Gross:** well-circumscribed & freely mobile (breast mouse).
- **Microscopic:** Low cellularity, intralobular fibroblasts proliferate → push & distort epithelial cells (elongated slitlike structures instead of round acini) & rare mitoses.



# B. Phyllodes tumors

---

- Less common, older age group.
- Microscopic: Highly cellular -stromal cells outgrow epithelial cells- resulting in bulbous nodules stromal cells covered by epithelium ( leaflike morphology (Greek: phyllodes)
- Mitoses can be seen, & Infiltrative borders , Tends to recur locally.
- High grade forms : sarcoma like & ass with metastasis 2%.



Small Polyp

مجموعه من اللزات ينشأ من جدار الرحم  
الغشائي

# II. Benign epithelial lesions

---

- Divided into three groups each associated with a different degree of breast cancer risk :
  1. **Nonproliferative disease**: no ↑ in breast cancer risk.
  2. **Proliferative disease without atypia**: polyclonal hyperplasia with minimal ↑ risk of breast cancer.
  3. **Proliferative disease with atypia**: monoclonal precancers, a modest ↑ in breast cancer risk in both breasts.

## Pathologic Lesion

بند  
۳ تا ۴

## Relative Risk (Absolute Lifetime Risk)\*

**Nonproliferative Breast Changes**  
(Fibrocystic changes)

**1.0 (3%)**

**Proliferative Disease Without Atypia**

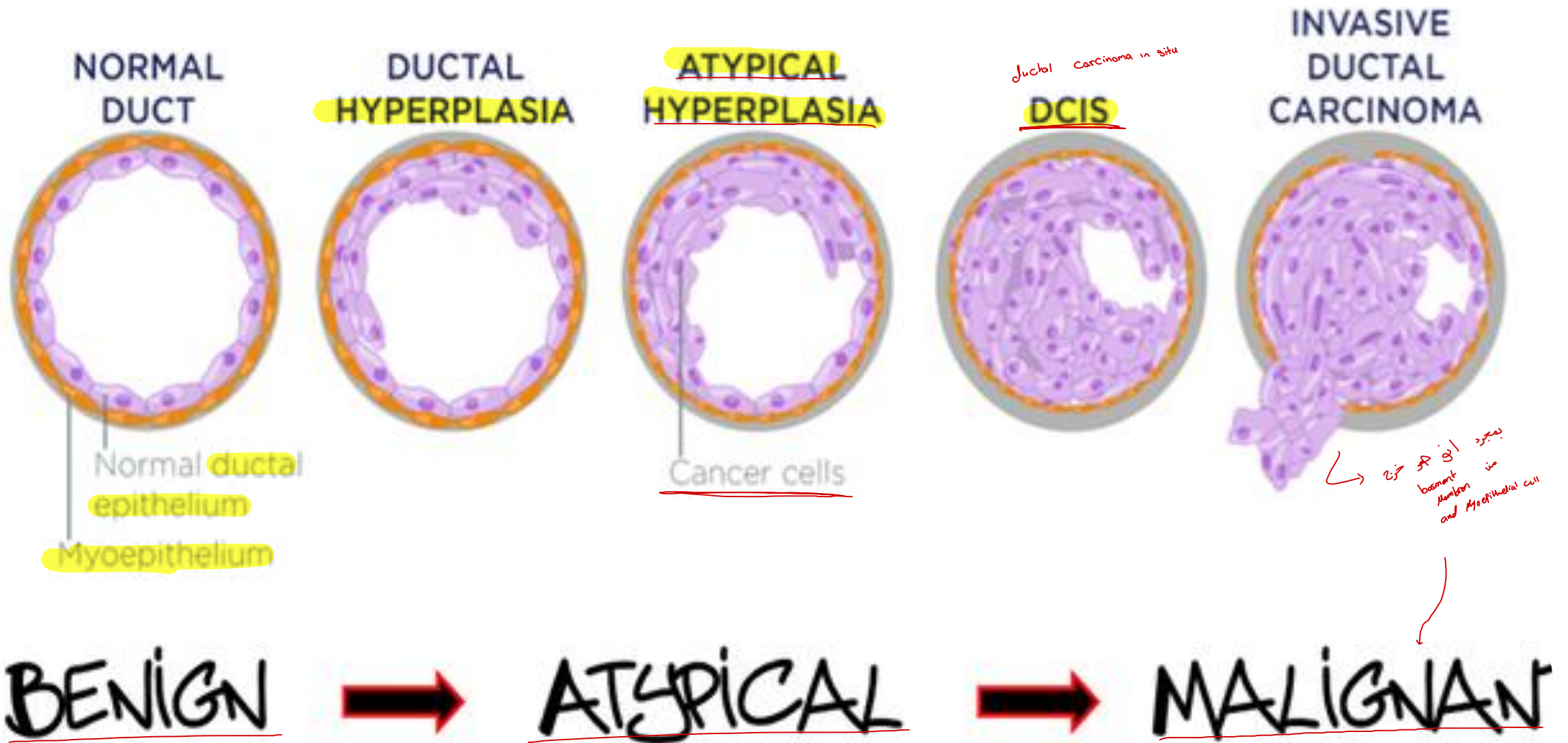
**1.5 to 2.0 (5% to 7%)**

**Proliferative Disease With Atypia**

**4.0 to 5.0 (13% to 17%)**

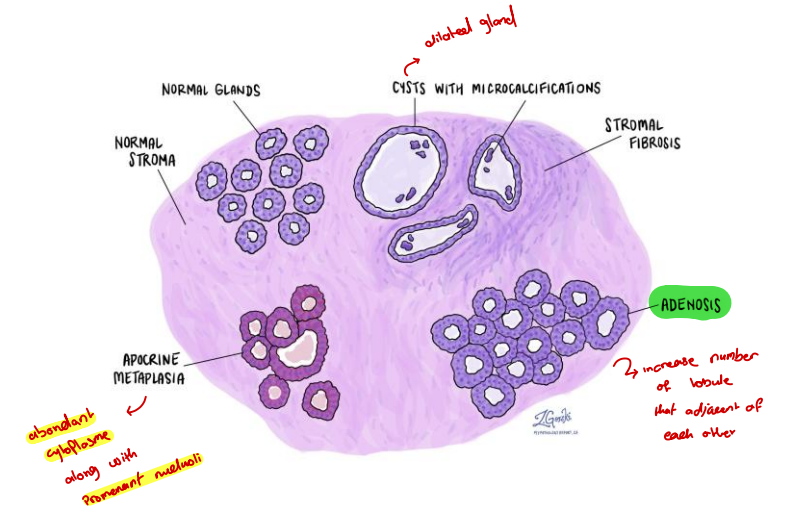
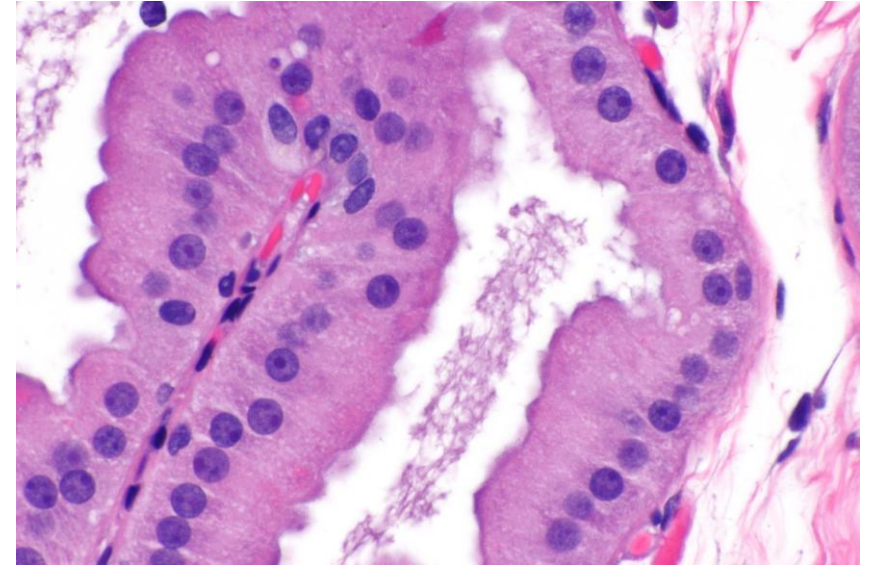
**Carcinoma in situ**

**8.0 to 10.0 (25% to 30%)**

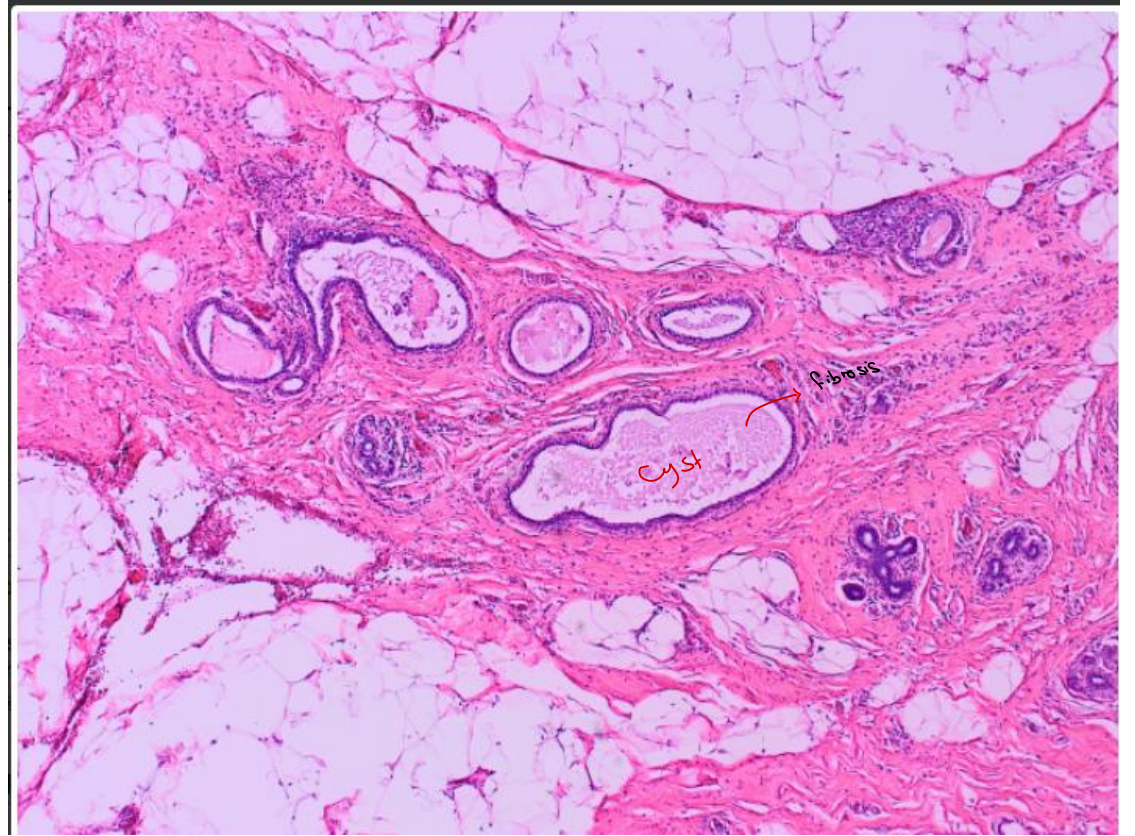


# A. Nonproliferative disease - fibrocystic changes

- Nonproliferative → contain single layers of epithelial cells.
- Presentation: breast lumpiness (palpable nodularity.)
- characterized by :
  - ❖ Adenosis.
  - ❖ fibrosis.
  - ❖ cyst formation.
  - ❖ Apocrine metaplasia.



سینج کورت عدیبه لعلی :-  
1. lobectomy  
2. Massectomy  
3. In situ mastectomy



# B. Proliferative disease without atypia

---

Epithelial  
hyperplasia.



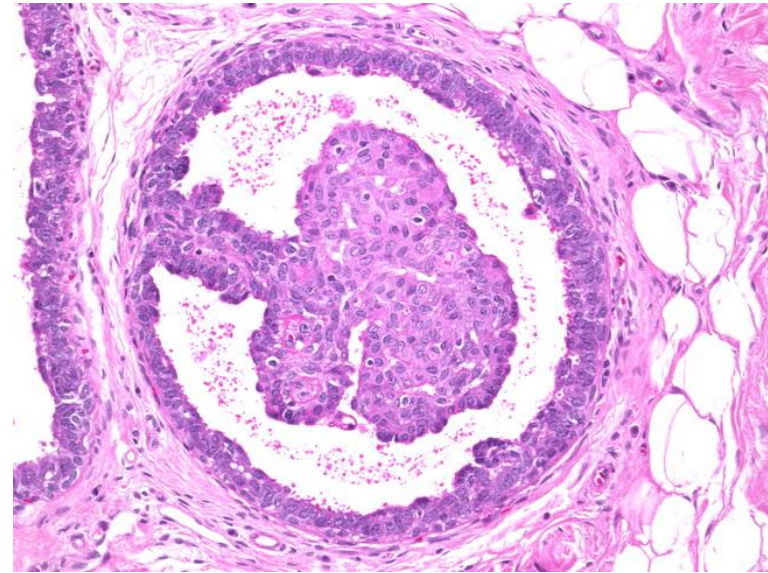
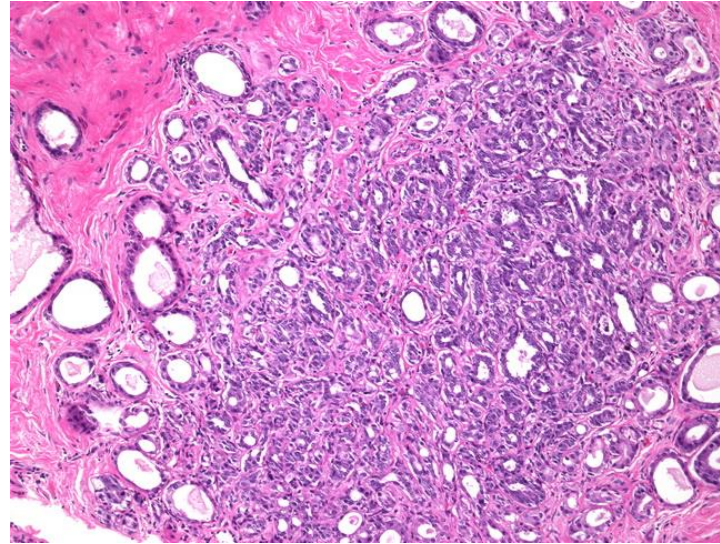
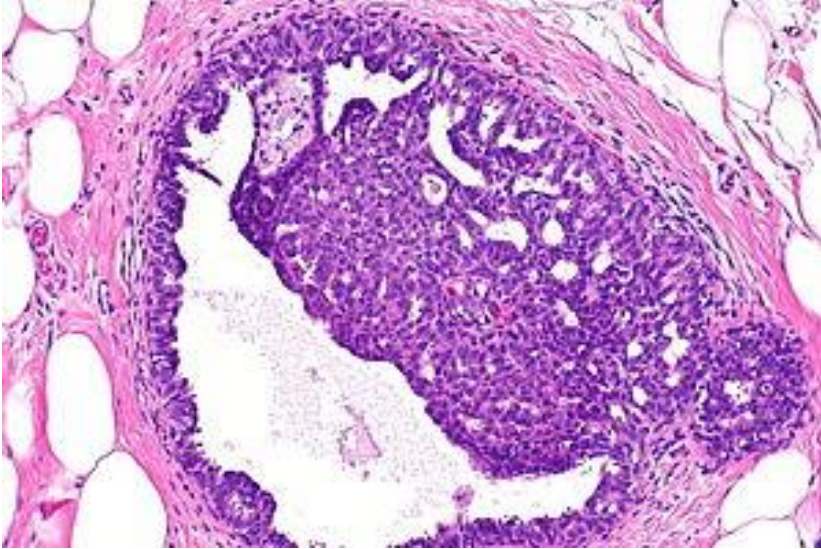
Sclerosing  
adenosis



Papilloma.



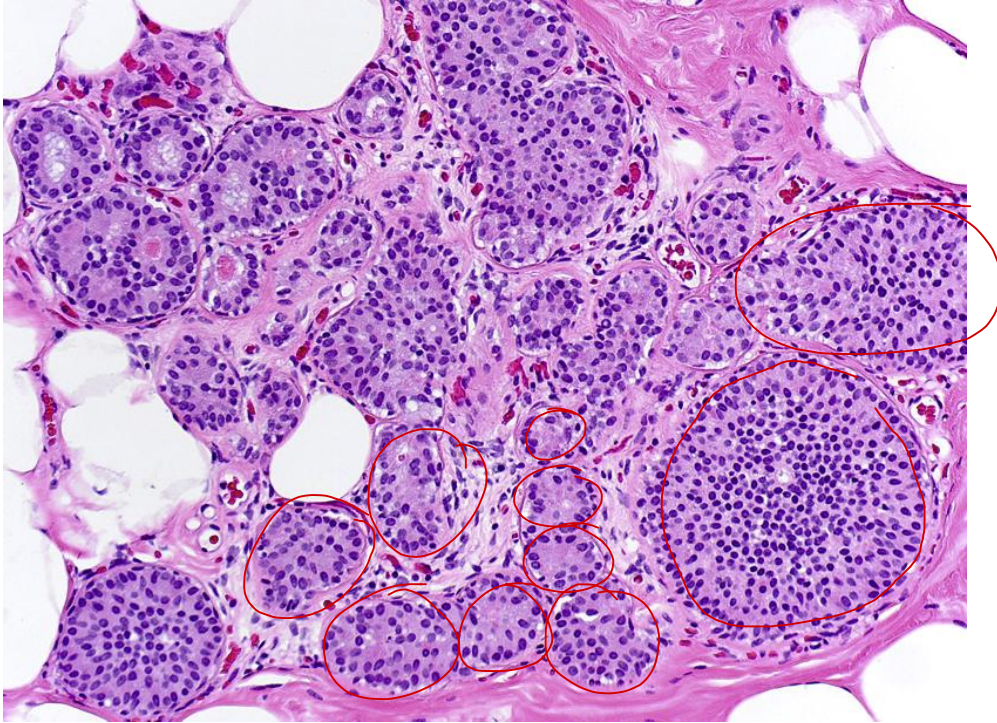
## B. Proliferative disease without atypia



## C. Proliferative disease with atypia

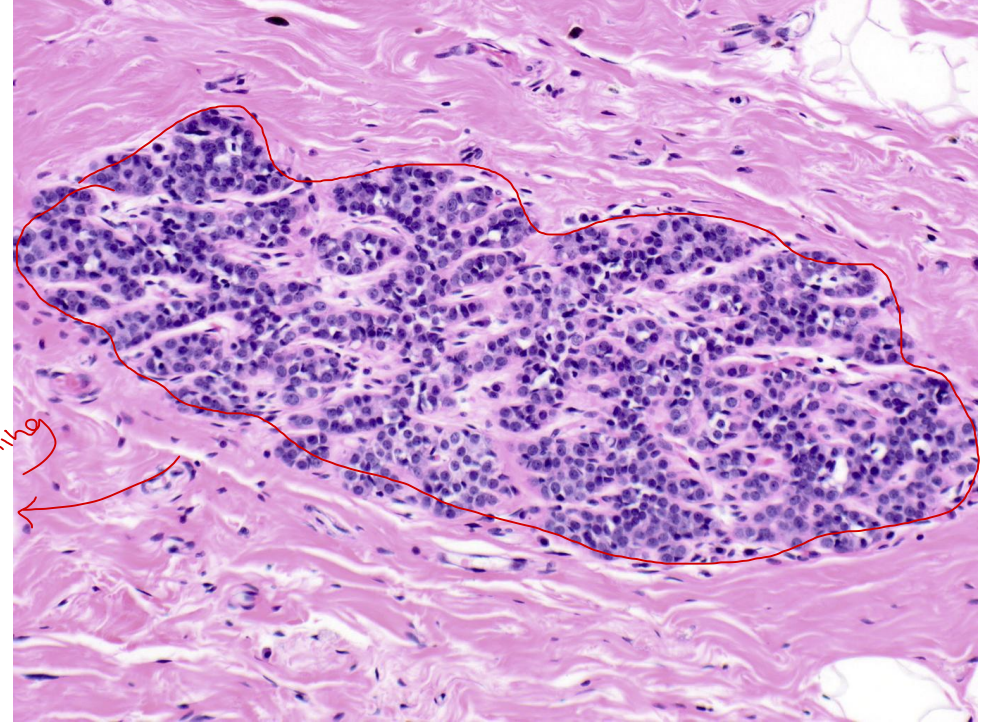
1. Atypical lobular hyperplasia (ALH) resembles lobular carcinoma in situ (LCIS).  
*→ It need follow up  
it have high risk to develop carcinoma*
  2. Atypical ductal hyperplasia (ADH) resembles ductal carcinoma in situ (DCIS)
- Clonal proliferations having some, but not all, histologic features that are required for the diagnosis of carcinoma in situ (LCIS or DCIS)

كيف يحدد الاختلاف ان  
ATypical H  
or  
in situ  
depend on size  
Atypical hyperplasia ← < 2mm  
in situ ← > 2mm  
duct  
or  
lobule



**ADH**

*gland looking*



**ALH**

# Breast carcinoma

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The most common malignancy of women globally. (excluding nonmelanoma skin cancer)

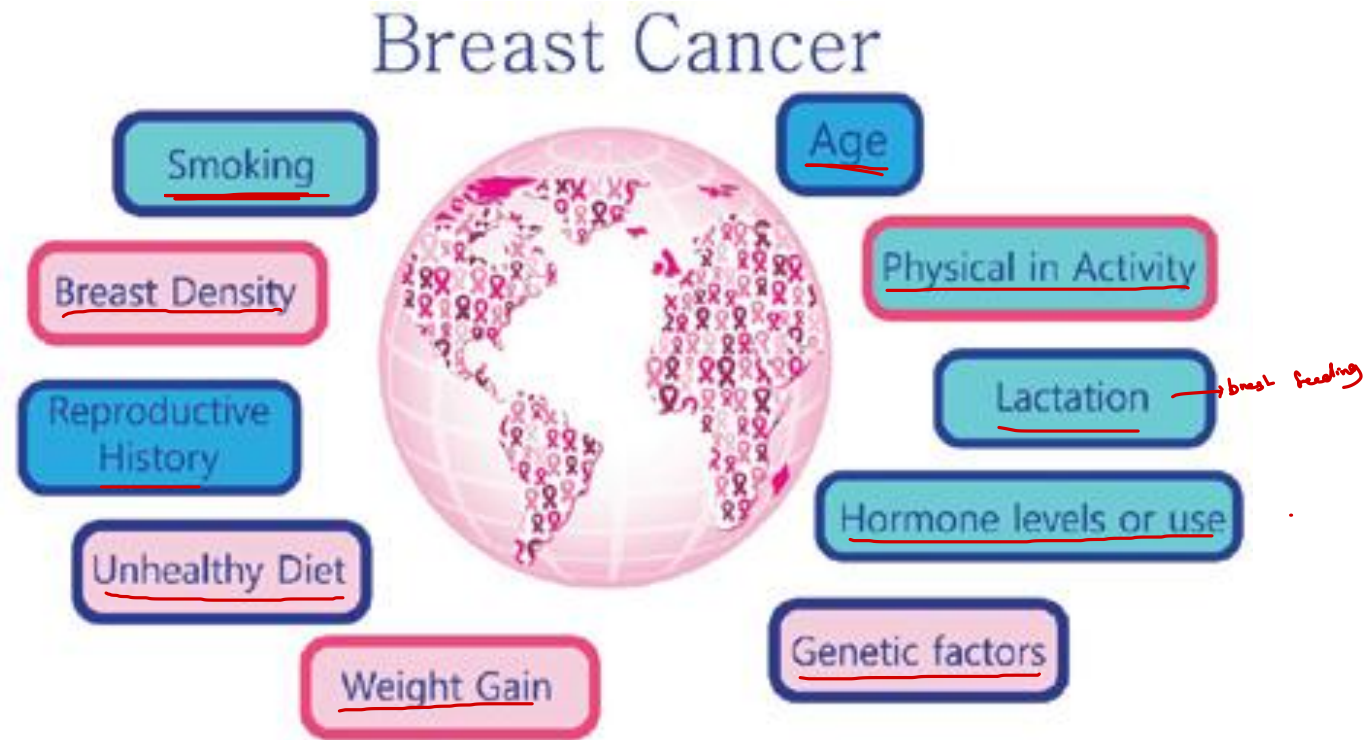
2<sup>nd</sup> most common cause of cancer deaths in women. (2<sup>nd</sup> to lung cancer)

Worldwide incidence and mortality is increasing at an alarming rate.

ممكن يكون السبب  
انك طورتك الجاه وبتنرمم الزمان  
الصحة و الزمانه الطبيعيه

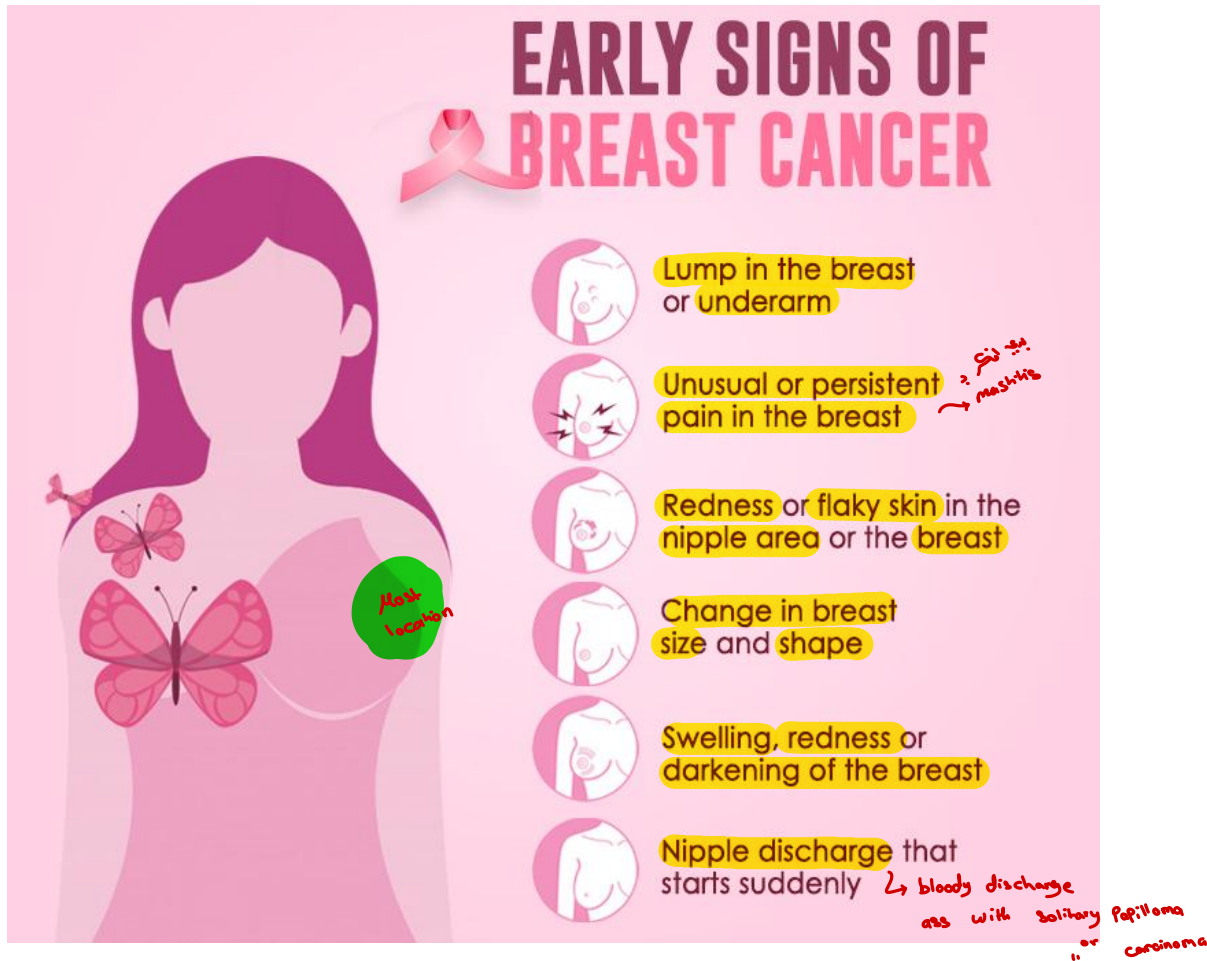
# Risk factors

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Preventing these risk factors  
Not  
Treating breast cancer

## EARLY SIGNS OF BREAST CANCER



The infographic features a silhouette of a woman's upper body on the left. A green circle on her right breast is labeled 'Most common' in red. To the right, a list of six symptoms is provided, each with a small circular icon of a breast. Handwritten red notes are present: 'بعض النقر' (some scratches) next to 'Unusual or persistent pain in the breast', 'bloody discharge or with solitary Papilloma or carcinoma' next to 'Nipple discharge that starts suddenly', and 'Most common' next to the breast silhouette.

-  Lump in the breast or underarm
-  Unusual or persistent pain in the breast *بعض النقر*
-  Redness or flaky skin in the nipple area or the breast
-  Change in breast size and shape
-  Swelling, redness or darkening of the breast
-  Nipple discharge that starts suddenly *↳ bloody discharge or with solitary Papilloma or carcinoma*

## WAYS TO REDUCE YOUR BREAST CANCER RISK



The infographic features a central pink ribbon. Surrounding it are six lifestyle tips, each with an icon. At the bottom, there is the World Health Organization logo and the hashtag #Cancer.

-  Do not smoke
-  Breastfeed
-  Control your weight
-  Be physically active
-  Limit or avoid alcohol
-  Avoid exposure to radiations

World Health Organization #Cancer

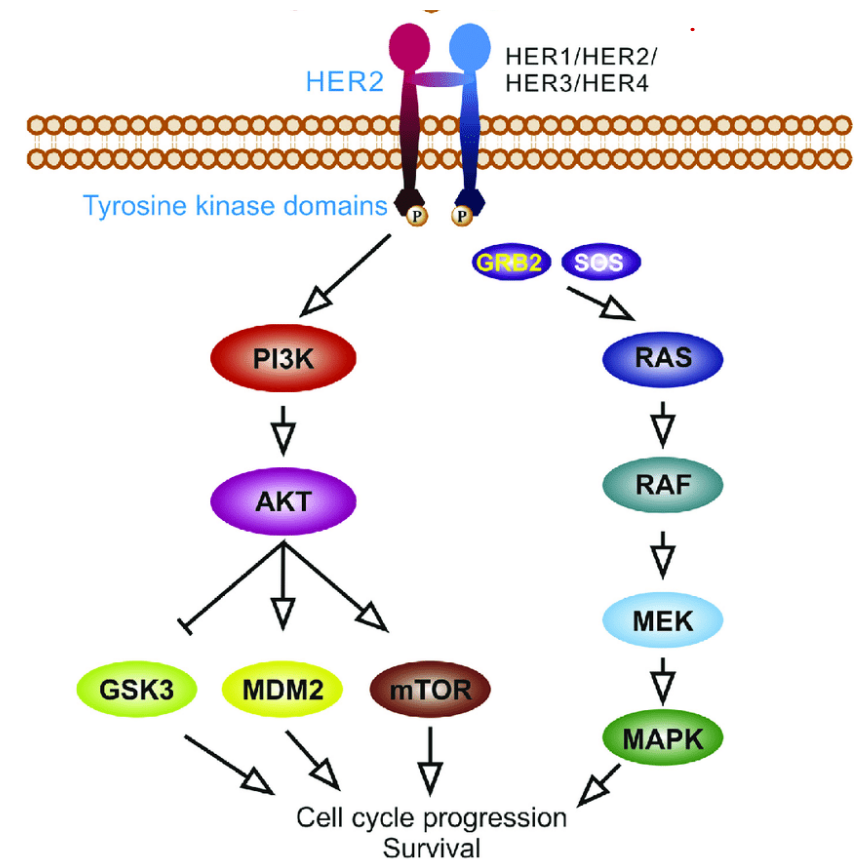
**The most common location of tumors in breast is upper outer quadrant (50%), followed by the central portion (20%).**

## Pathogenesis/genetics

- Some **Familial cases** are **ass with mutations** of :
- **BRCA1 & BRCA2 tumor suppressor genes** (**susceptibility to breast Ca. & ovarian serous Ca**).
- familial germline mutations; **TP53 & PTEN**.
- The pathways in which **familial breast cancer genes** function **also** are often **disturbed in sporadic breast cancers**.

# Pathogenesis/HER2 gene

- A common clinically important driver mutation in breast Ca is the amplification of the HER2 gene.
- HER2 is a receptor tyrosine kinase that promotes cell proliferation & opposes apoptosis.
- Cancers overexpress HER2 are distinct & highly proliferative.
- Used to have poor prognosis → the availability of HER2 targeting therapeutic agents → markedly improved prognosis in patients w HER2-amplified tumor



# morphology

• the main forms of breast carcinoma are as follows:(depend on B.M status):

- **Noninvasive**

1. Ductal carcinoma in situ (DCIS)

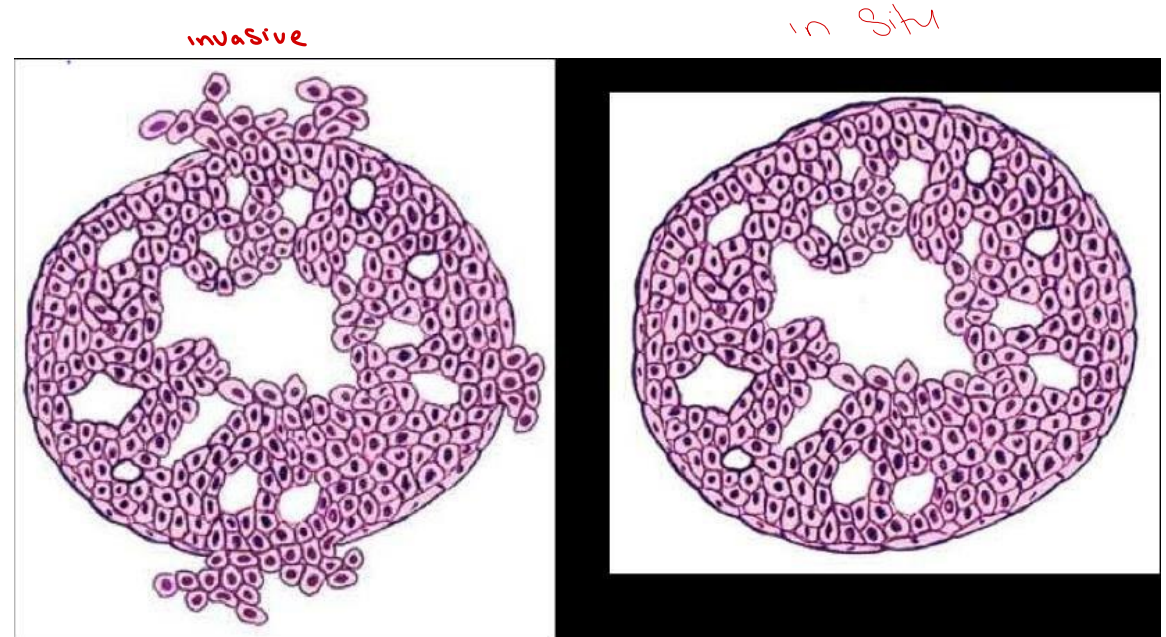
→ focal  
→ multi focal  
bilateral  
] inv. pr

2. Lobular carcinoma in situ (LCIS)

- **Invasive**

1. Invasive mammary carcinoma, NOS( 70-80%).

2. Invasive carcinoma of special type (lobular, medullary, secretory, mucinous)



Most common  
invasive  
ductal carcinoma

# Noninvasive (in Situ) Carcinoma

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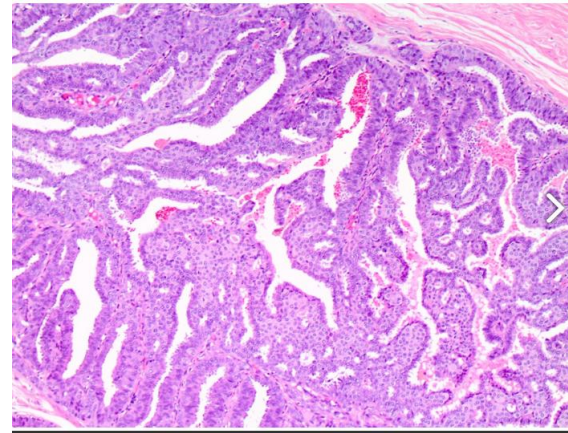
- Malignant clonal proliferation of epithelial cells within the lobules & ducts.
- Both types of CIS arise from cells in the terminal duct
- Both “respect” the basement membrane & do not invade into stroma or lymphovascular channels.

Good prognosis → الجريئة. متابعة  
Follow up

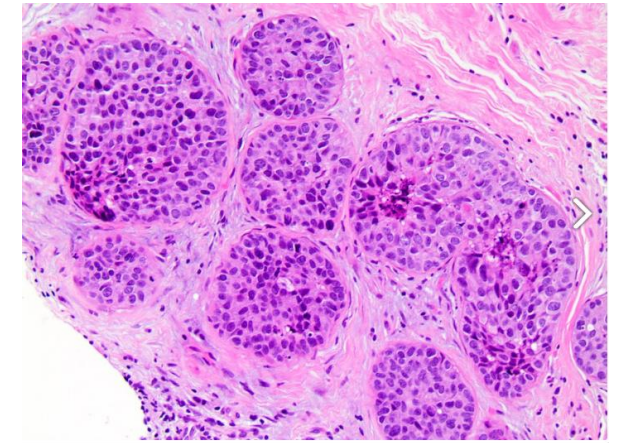
**Ductal carcinoma in situ (DCIS)** is a neoplastic proliferation of mammary ductal epithelial cells confined to the ductal-lobular system **without evidence of invasion** through the **basement membrane into the surrounding stroma**



**CRIBRIFORM**

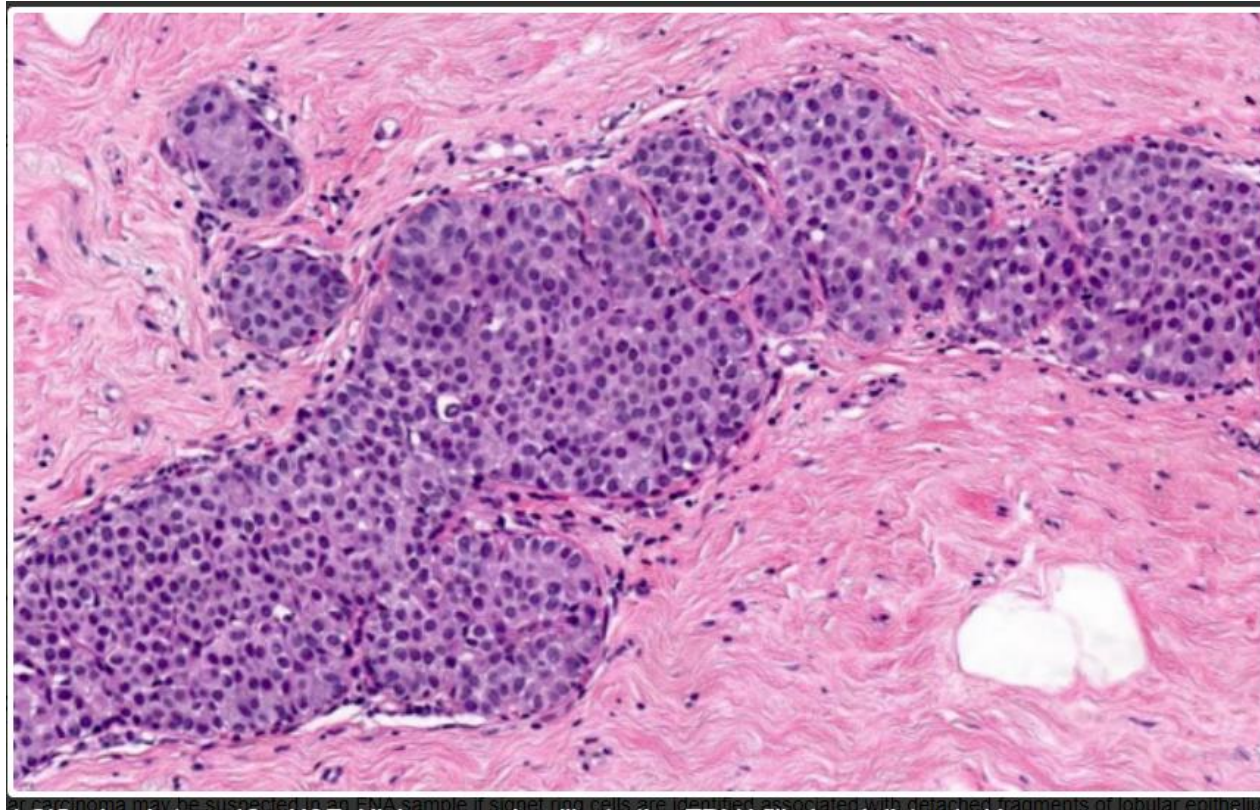


**PAPILLARY**



**SOLID**

- Lobulocentric proliferation of small uniform cells which fill and distend most of the acini in the involved lobule



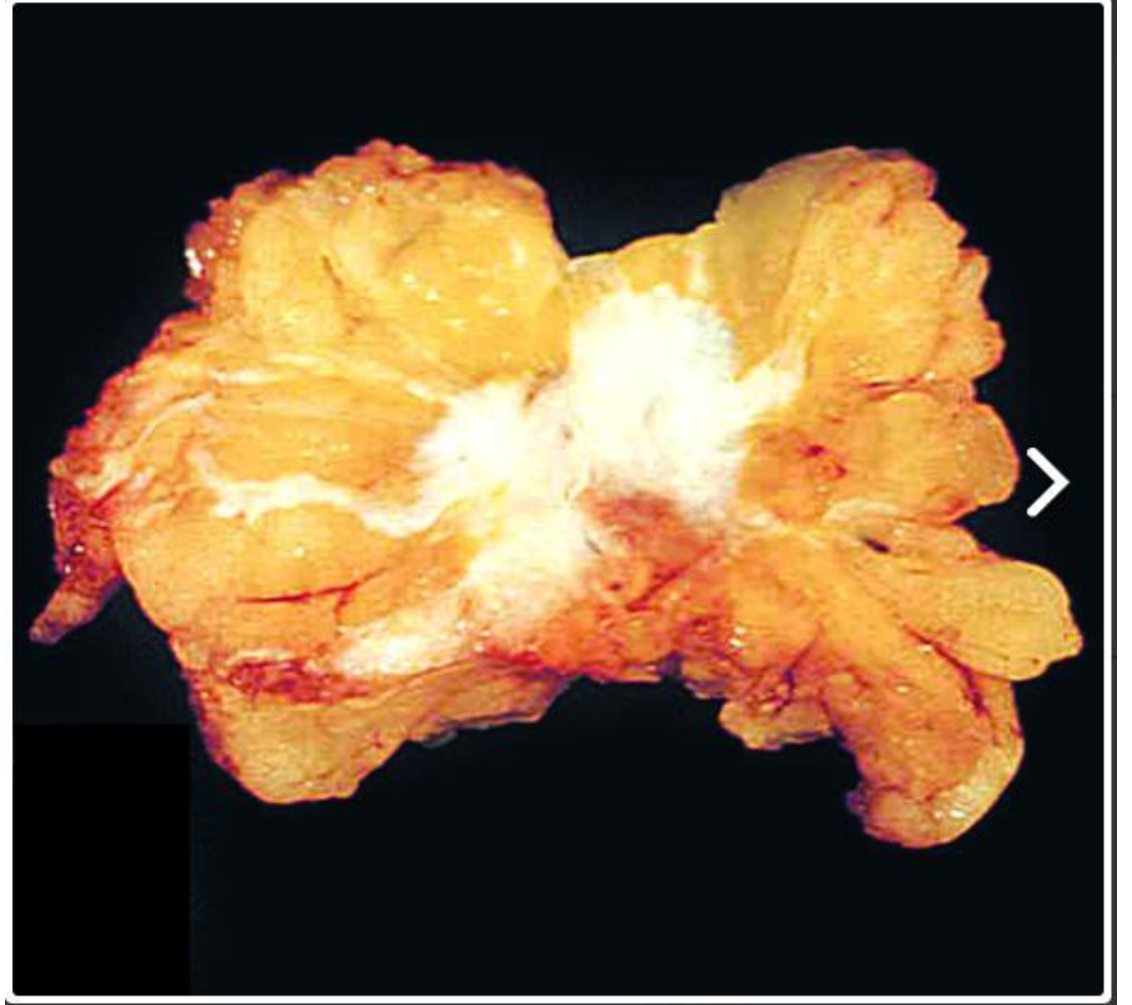
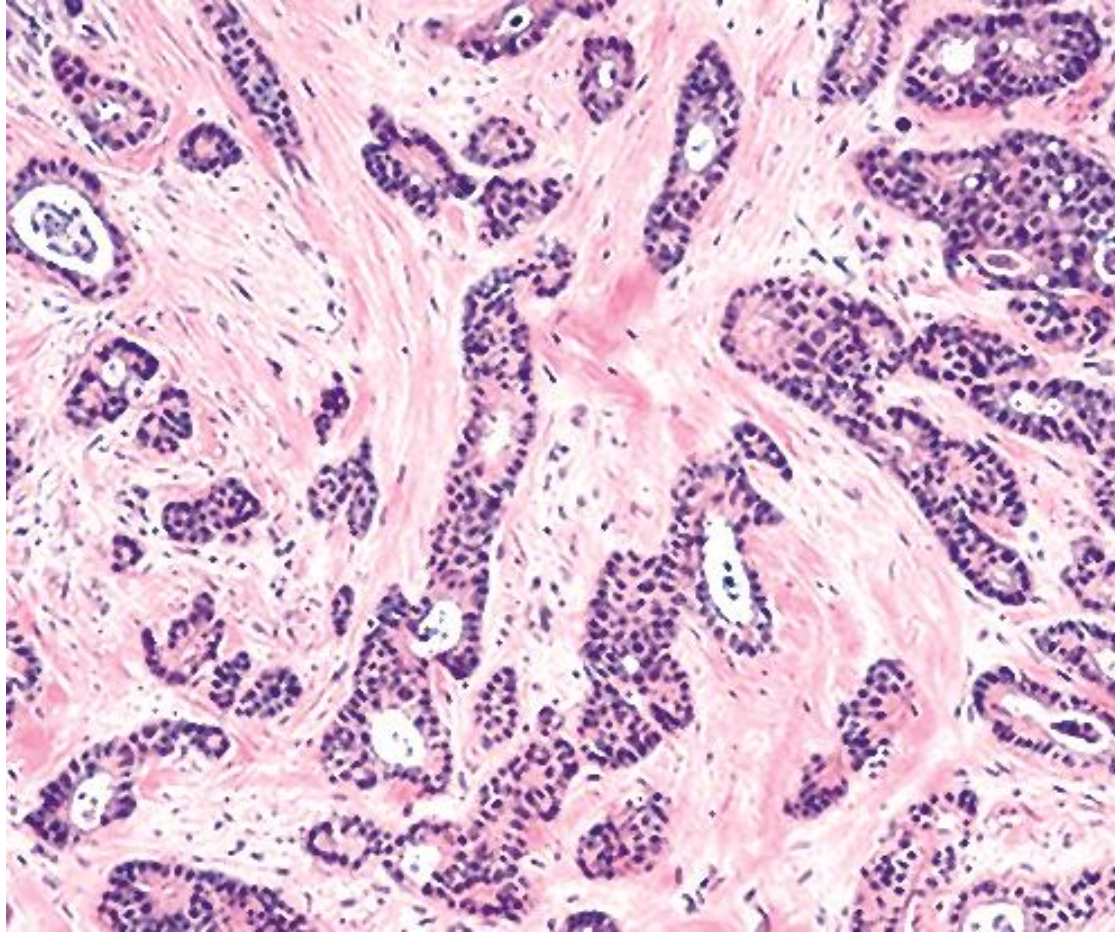
LCIS

→ multifocal

# Invasive ductal carcinoma (IDC)

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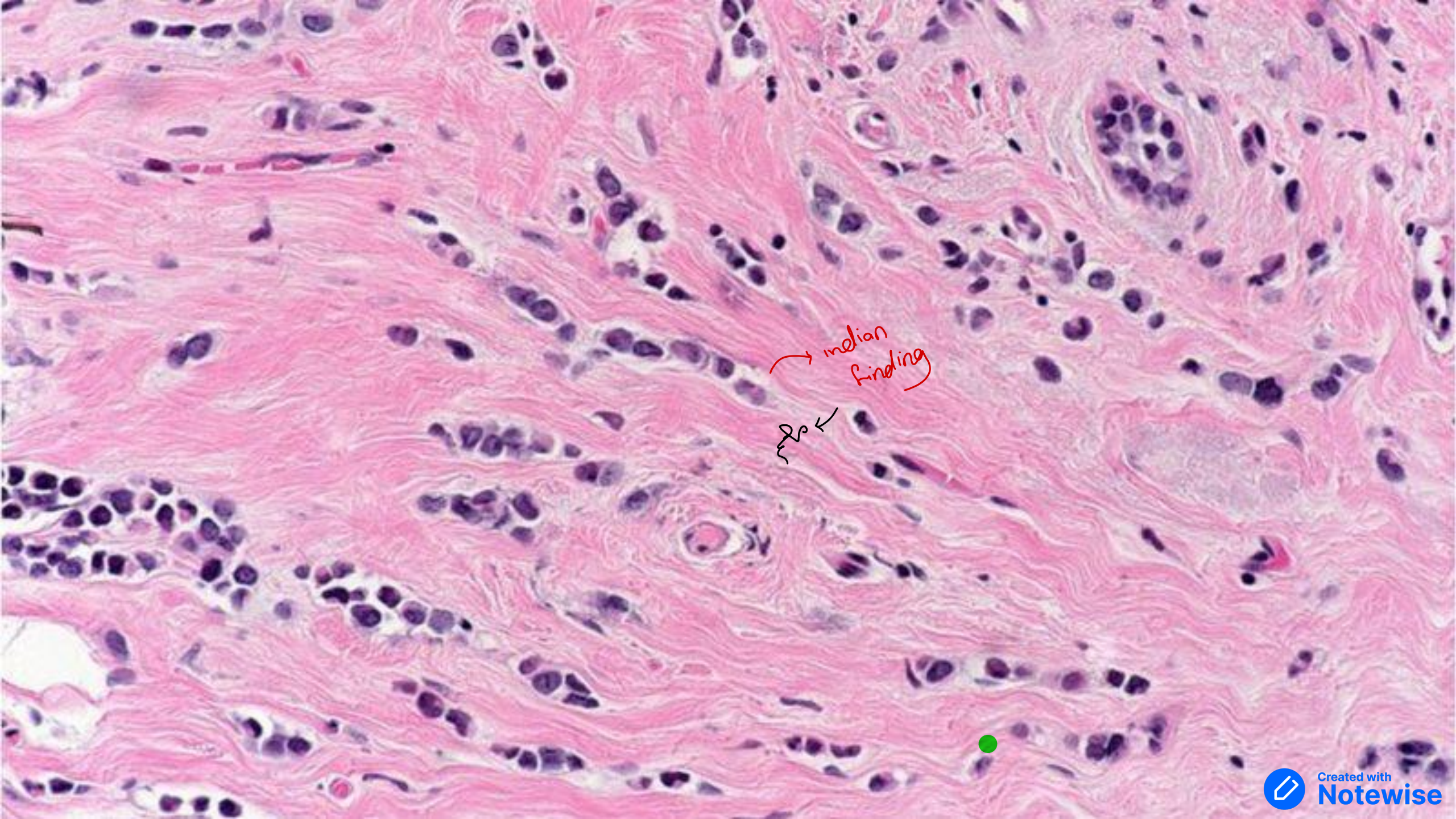
- All carcinomas that cannot be subclassified into one of the specialized types, 70-80%.
- Associated with DCIS (precursor).
- **Gross:** Mostly produce a desmoplastic response that replaces normal breast fat (& a mammographic density) & appear as a hard, palpable infiltrative mass.
- **Microscopic:** ranging from well-developed tubules & low-grade nuclei to tumors consisting of sheets of anaplastic cells.



# Invasive lobular carcinoma

(Indian finding)

- Infiltrating cells similar to tumor cells in LCIS, ~10-15%.
- Associated with LCIS (precursor),
- Cells invade stroma individually.
- Most manifest as palpable masses or mammographic densities (as IDC).
- Commonly multicentric or bilateral.
- Almost all lobular carcinomas express hormone receptors, HER2 overexpression is rare.



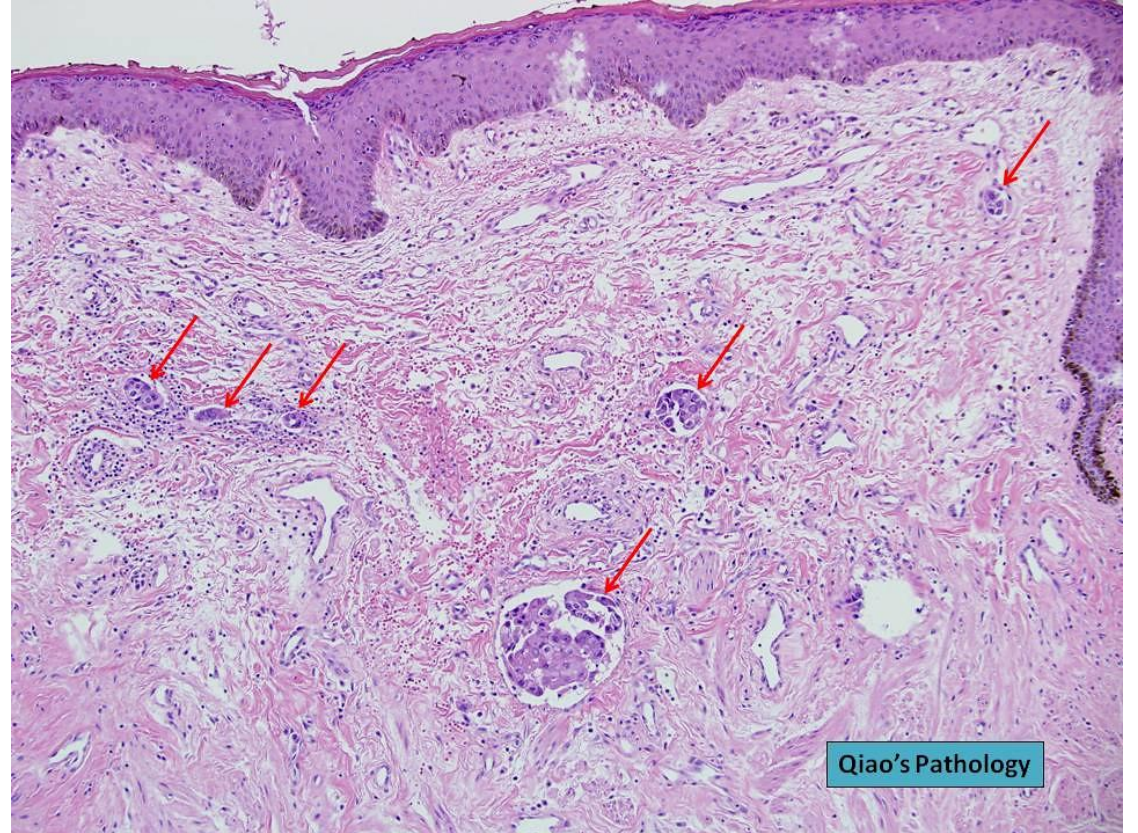
median finding

→

# Inflammatory carcinoma

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- Defined by its clinical presentation.
- **Presentation:** breast swollen & erythematous, skin thickening → **Peau d'orange**
- **Microscopic:** Invasive carcinoma, generally poorly differentiated & diffusely infiltrates and obstructs dermal lymphatic spaces, causing the “inflamed” appearance; true inflammation is absent.   
 \* occlusion of the blood vessel
- Most of these have distant metastases & the prognosis is extremely poor.





The most clinically useful classification of breast cancers → based on expression of hormone receptors {estrogen (ER) & progesterone (PR) receptors & the expression of the human epidermal growth factor receptor 2 (HER2, ERBB2):

1. ER positive (HER2 -ve ; 50%-65% of cancers).
2. HER2 positive (ER +ve or -ve ; 10-20% of cancers).
3. Triple negative (ER, PR, & HER2 -ve ; 10-20% of cancers).

Good prog

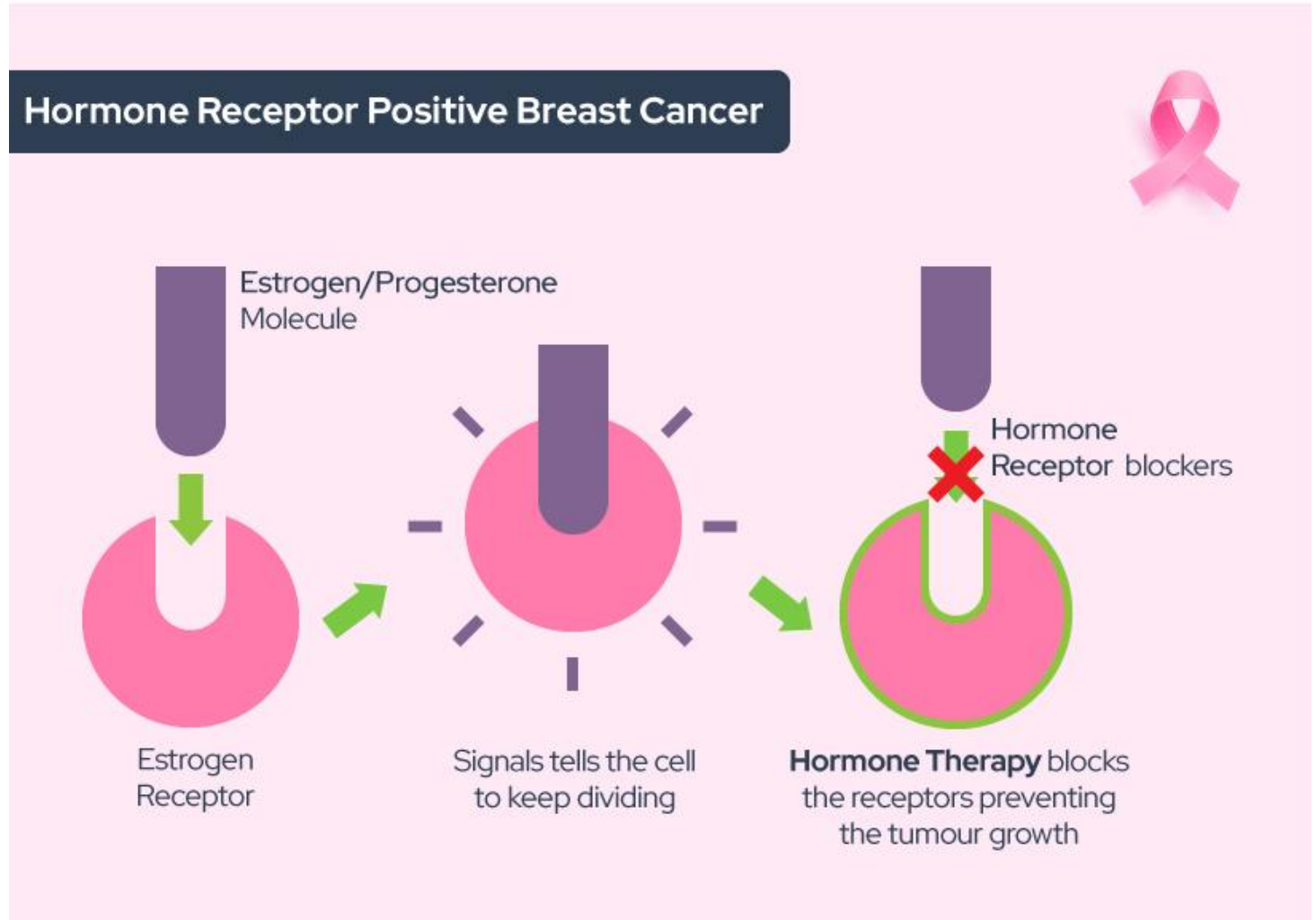
bad

↳ very worst  
Prign

مهم زي اللى حطيناه  
فوق

# Hormonal therapy

- Hormone receptor positive breast carcinomas may be treated with neoadjuvant endocrine therapy with lower toxicity and cost than the alternative of neoadjuvant chemotherapy



# clinical outcome

Patients with **distant metastases** have very **poor survival**.

Favored **metastasis** are the **bone, lungs, skeleton, liver**.

**Axillary lymph** node status is the **most important prognostic factor** for **invasive carcinoma** in the absence of **distant** (risk ↑ with ↑ size of the primary tumor).

# Clinical outcome

predicted based on:

- **Biologic type**: evaluated by a combination of histologic appearance, grade, expression of hormone receptors, & expression of HER2.
- **Tumor stage**: a measure of the extent of tumor at time of diagnosis. (primary tumor (T), involvement of regional lymph nodes (N), & presence of distant metastases (M))  
+ The majority of cancers first metastasize to regional (axillary) nodes

# clinical outcome

- The **availability of treatment modalities:** 80% of women with breast cancer who receive **optimal** therapy will survive.