Breast

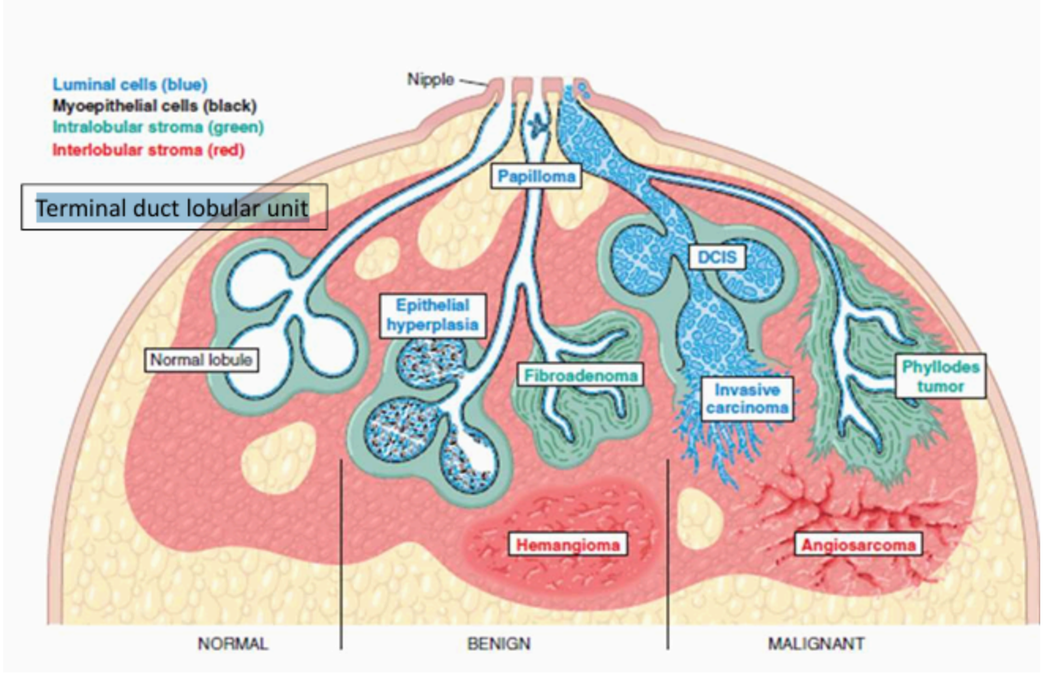
Notes
Lobule (The functional unit of the breast).
Epithelial cells: produce milk during lactation.
Myoepithelial cells: have contractile function to aid in milk ejection and also help support the basement membrane.
The ducts: conduits for milk to reach the nipple.
The size of the breast is determined primarily by interlobular stroma, which increases during puberty and involutes with age.
Each normal constituent is a source of both benign and malignant lesions. Check the table below ↗ HY ORGIN-LESION STRUCTURES.

HY ORGIN-LESION STRUCTURES:

Breast Structure	Associated Lesions
Terminal Duct-Lobular Unit (TDLU)	- **Invasive mammary carcinoma** (ductal/lobular types) - Invades **stroma** → **loss of myoepithelial cells**
Intralobular Stroma	- **Fibroadenoma** (benign) - **Phyllodes tumor** (can be benign, borderline, or malignant)
Interlobular Stroma	- **Lipoma**, **Liposarcoma** (mesenchymal origin) - **Hemangioma**, **Angiosarcoma**
Major Ducts	- **Intraductal papilloma** (benign tumor, can cause bloody nipple discharge)
Ducts	- **Ductal Carcinoma In Situ (DCIS)** (non-invasive neoplasia within ductal epithelium)
Epithelial Cells	- **Epithelial hyperplasia** (usual vs atypical; precursor to carcinoma)

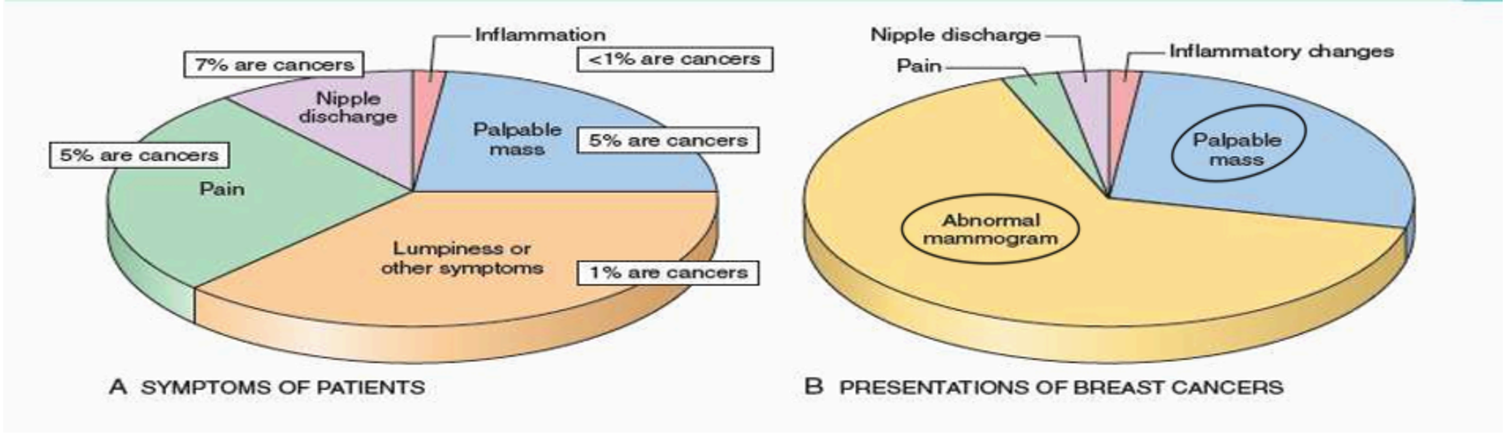
In males -> No acini, only duct and ductules - > less than 1% to get breast cancer

Terminal duct lobular unit = acini + ductules (primary site for the milk formation) -> then all goes to the major ducts -> nipple -> ejection
All also surrounded by intralobular and interlobular stroma
Interlobular stroma = outside the terminal duct lobular unit
Intralobular stroma = inside the terminal duct lobular unit



HY Clinical presentation of breast diseases
Most symptomatic breast lesions (>90%) are benign.
Regardless of presenting symptom, the likelihood of malignancy increases with age.
Of women with cancer, about 45% have symptoms, whereas the remainder 55% come to attention through screening tests. ↗ Statistics
Breast cancer is most commonly detected by: - Palpation of a mass in younger women and in unscreened populations. - Mammographic screening in older women (>50 yr old)
If young px -> benign If old px -> malignant (Family hx supportive, and other factors [[]])

Statistics



L M P N I

Symptoms	**L**umpiness (most common)	**M**ass (palpable, and non-palpable)	**P**ain	**N**ipple discharge	**I**nflammation	Gynecomastia
	Diffuse nodularity throughout the breast (associated with aging) Not a defined mass Once lumpiness discovered its mainly an indication of Benign lesion (It is usually a result of normal glandular tissue) When pronounced, imaging studies may help to determine whether a discrete mass is present Summary: This nodularity occur with aging due to a benign or disease condition called the FIBROCYSTIC change in the Breast Lumpiness is already present in the breast cuz we said between each 2 lobules we have a stroma	Can arise from proliferations of stromal cells or epithelial cells Are generally detected when they are 2 to 3 cm and above in size Can not be detected if it is less than 2cm (only by screening tests) (U/S, mammography, MRI) If mass present in young -> benign Most (~95%) are benign; these tend to be round to oval and to have circumscribed borders If old -> malignant Malignant tumors usually invade across tissue planes and have (ill define) irregular borders (It's hard, not movable, ill-Defined). With secondary changes (edema, inf, orange skin that means cancer on the skin, teetering the skin) However, because some cancers grow deceptively as circumscribed masses, all palpable masses require evaluation Some breast tumors like fibroadenoma has extremely rare probability to make malignant transformation. Some lesions have high risk to malignancy if lesions accompanied with atypia Breast imaging-reporting and data system = BI-RADS (U/S, mammography, MRI) (Impressions on the behavioral of the tumour that is detected on the radiology) (the higher	Most likely benign Menses (due to cyclic edema and swelling) Localized pain: ruptured cyst or trauma to adipose tissue (fat necrosis) (In lactating women -> trauma -> rupture of lobule/cysts) but for unknown reasons, a small fraction of cancers (about 10%) cause pain usually in late stages (perineural invasion)	May be normal when small in quantity and bilateral Blood or milk The most common benign lesion producing a nipple discharge is a papilloma arising in the large ducts below the nipple Discharges that are spontaneous, unilateral , and bloody are of greatest concern for malignancy	Edematous and erythematous breast and hotness surrounding the outer skin of breast Infection during lactating (trauma) Breast special type carcinoma (inflammatory) -> Unilateral , rare Obstruction -> rupture -> 2 inf 2 skin cond. -> atopic contact dermatosis eczema -> bilateral IgG4 breast inflammation Granulomas diseases Vasculitis	The only common breast symptom in males There is an increase in both stroma and epithelial cells resulting from an imbalance between estrogens, which stimulate breast tissue, and androgens, which counteract these effects Male breast may get malignant conditions but not related with Gynecomastia

Symptoms	Lumpiness (most common)	Mass (palpable, and non-palpable)	Pain	Nipple discharge	Inflammation	Gynecomastia
		the number the higher the malignancy) (0,1,2,3 benign while 4 likely malignant, 5 and 6 sus for malignancy so they have to be confirmed by histology) (mammogram in older px can detect 1cm lesions and larger, if its less than 1cm then we can use US and MRI) Mammogram: Mammographic screening was introduced in the 1980s Detects early, non-palpable, asymptomatic breast carcinomas before metastatic spread has occurred The average size of invasive carcinomas detected by mammography is about 1 cm, and only 15% will have metastasized to regional lymph nodes at the time of diagnosis {mammogram contribute in decreasing the mortality rate by detecting the early Tumors(small tumors)cuz there probability of distant metastasize and lymph node metastasize is less so have a better prognosis.} Mammogram used in women with 45 year or more, less than 45 year screening by U/S + MRI especially women with family history of breast cancer must be screened by MRI or U/S.				