summary up here as usual

Pathology of the Breast

APPROVED

Rex Bentley, M.D

Department of Pathology

Today's Goals:

By the end of the lecture you will be able to:

1. Describe the clinical presentation of common breast pathologies
2. Explain what "fibrocystic change" means and discuss several of the most common benign lesions of the breast
3. Recognize and describe the pathology associated with the common types of breast cancer
4. List and discuss the major prognostic factors in breast cancer
5. Explain why testing for expression of estrogen receptor and Her2/neu is an important part of breast cancer analysis

Structure of Lecture

1. Review anatomy/histology
2. Clinical presentations of breast disease
3. Benign breast diseases
4. In-situ neoplasms
5. Malignancies
   a. Classification
   b. Prognosis/treatment
6. Additional topics (not covered in lecture)
   a. Special presentations of breast cancer
   b. Male breast

breast is a modified sweat gland that forms on the mammary ridge

Embryology of the Breast

- Modified sweat gland
- Mammary ridge in embryo --multiple potential breasts

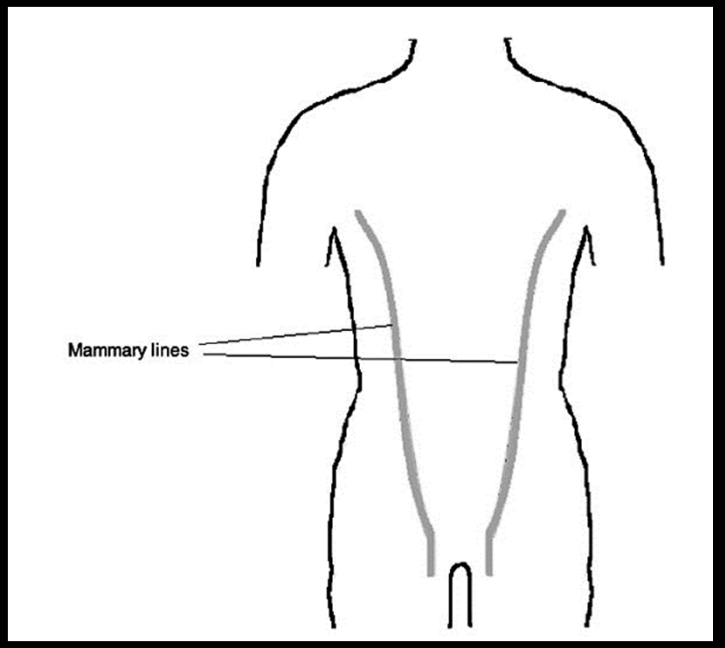
multiple nipples in development--as for cats and dogs--but people usually only develop one on each half of the body

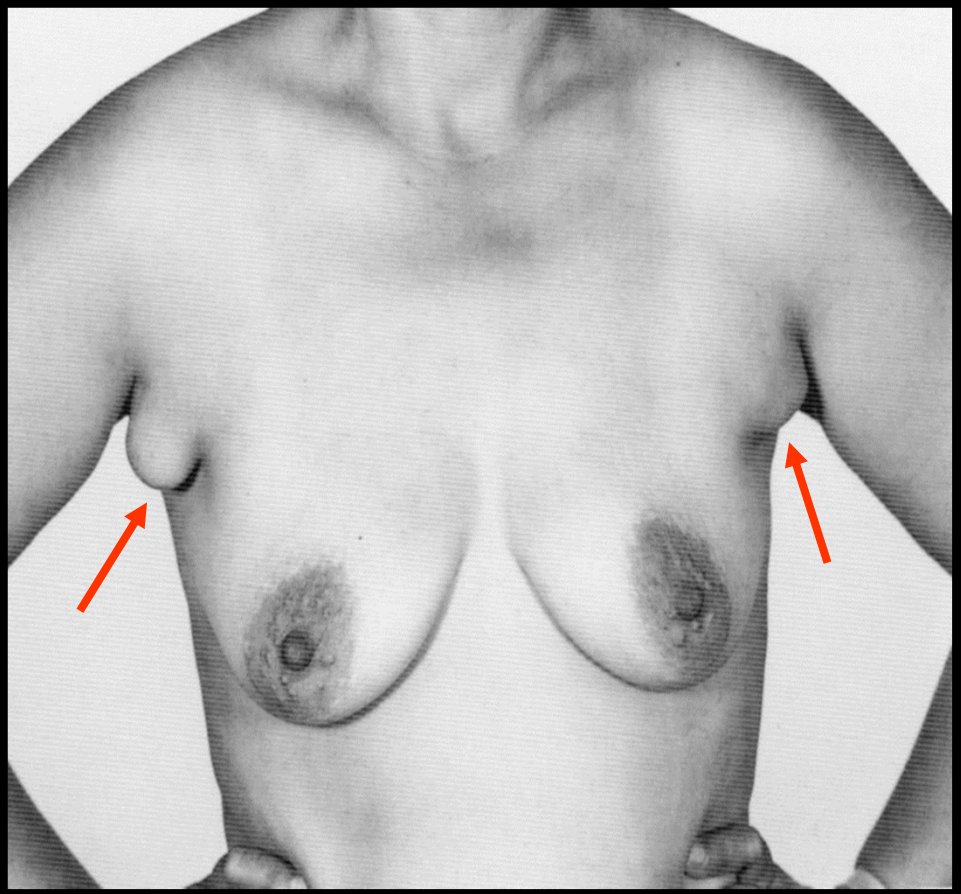
- Only one on each side develops normally
- Accessory breasts 1% of population, male or female, anywhere on mammary ridge from axilla to groin

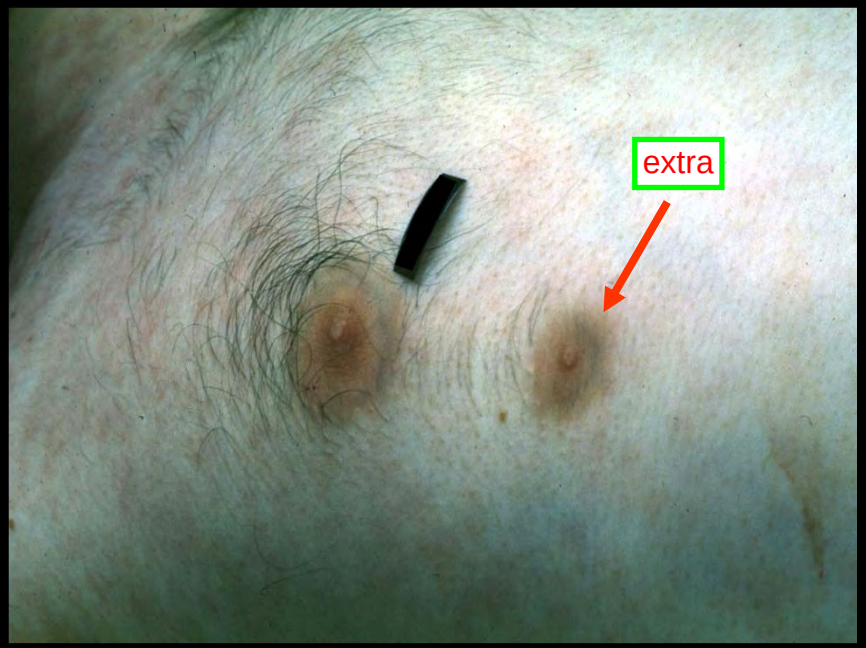
you will see the mammary ridge on the next slide

usually just cosmetic addition, but anything that can occur in a normal breast can occur in an accessory breast (eg cancer)

Accessory Breast



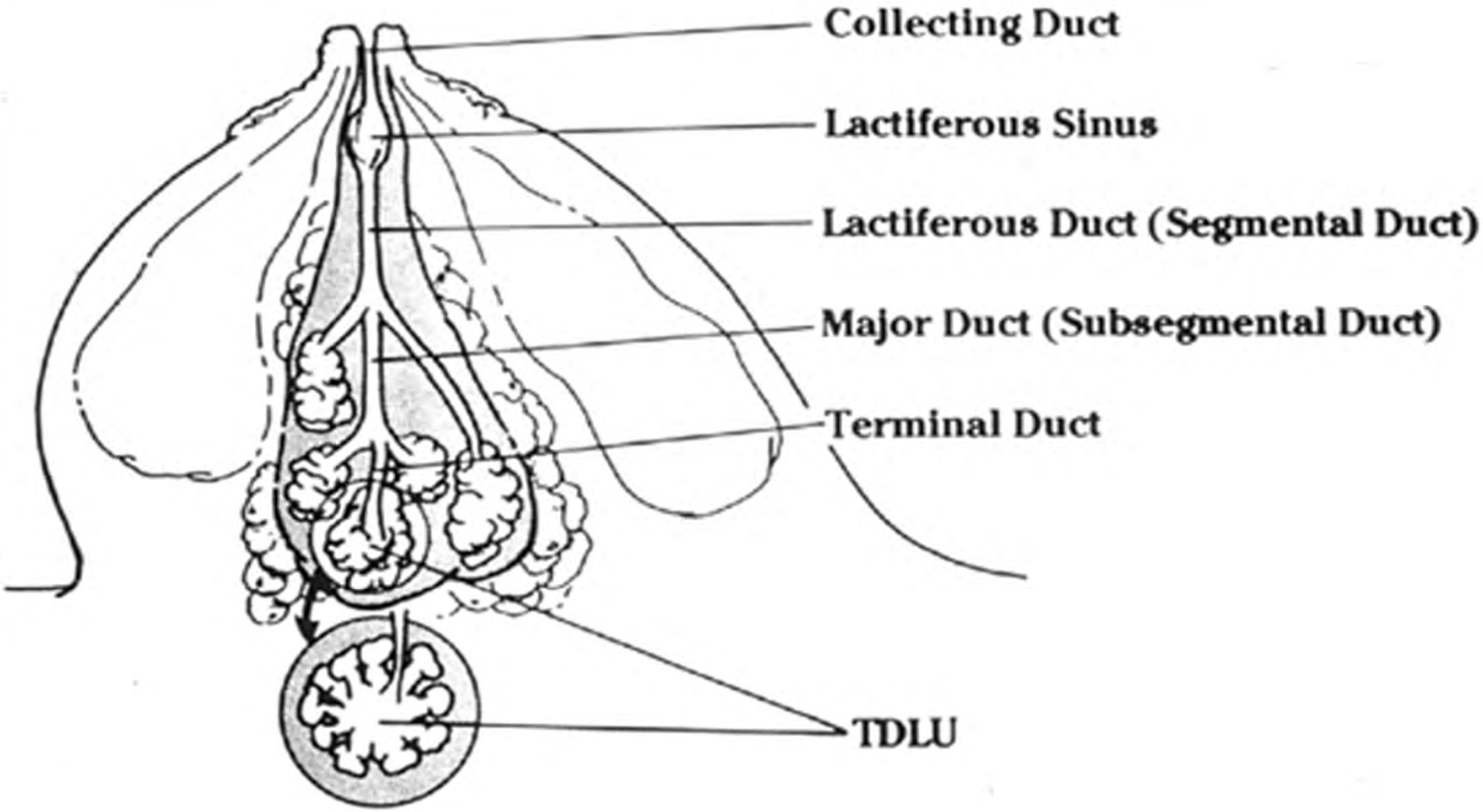




basically two components: ducts and lobules

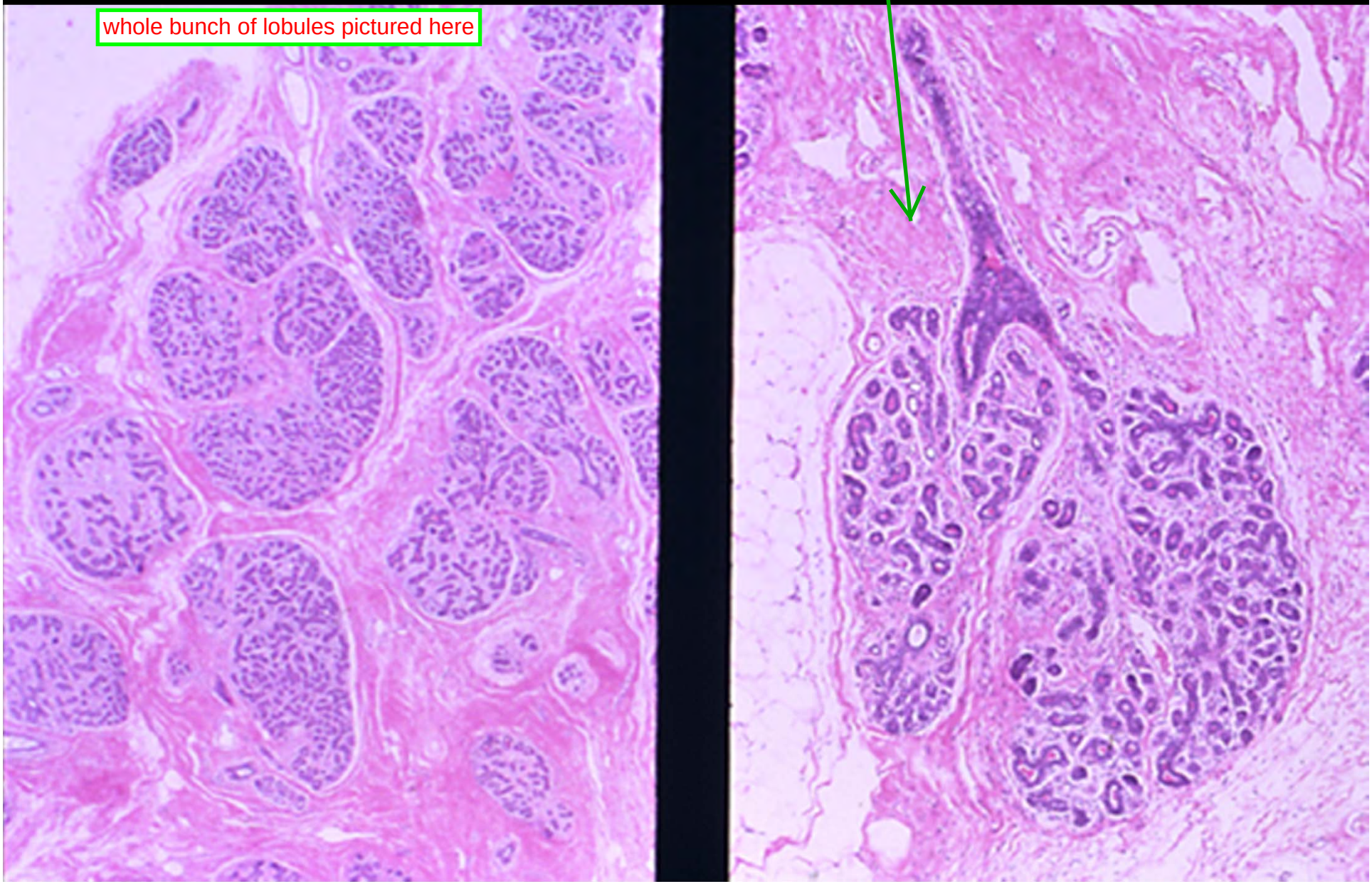
what you see in the following slides is **NORMAL**

Breast, Anatomy



lobules (which aren't super distinct in the breast tissue) make milk that empty into ducts

Breast, Normal TDLU



TDLU is a lobule composed of acini that develops at puberty (tho suppressed by testosterone in men)--composed of two cell layers

TDLU

Terminal Duct Lobular Unit

- **Lobule (acini)** composed of small glands
- Acini grow at **puberty; suppressed** by even low levels of **testosterone**
- Acini and duct lined by **2 cell layers**
  - **Myoepithelial** cells (outer cell layer)
    - Flattened cells, often clear cytoplasm
  - **Epithelial** cells (inner cell layer)--most cancers derived from this layer

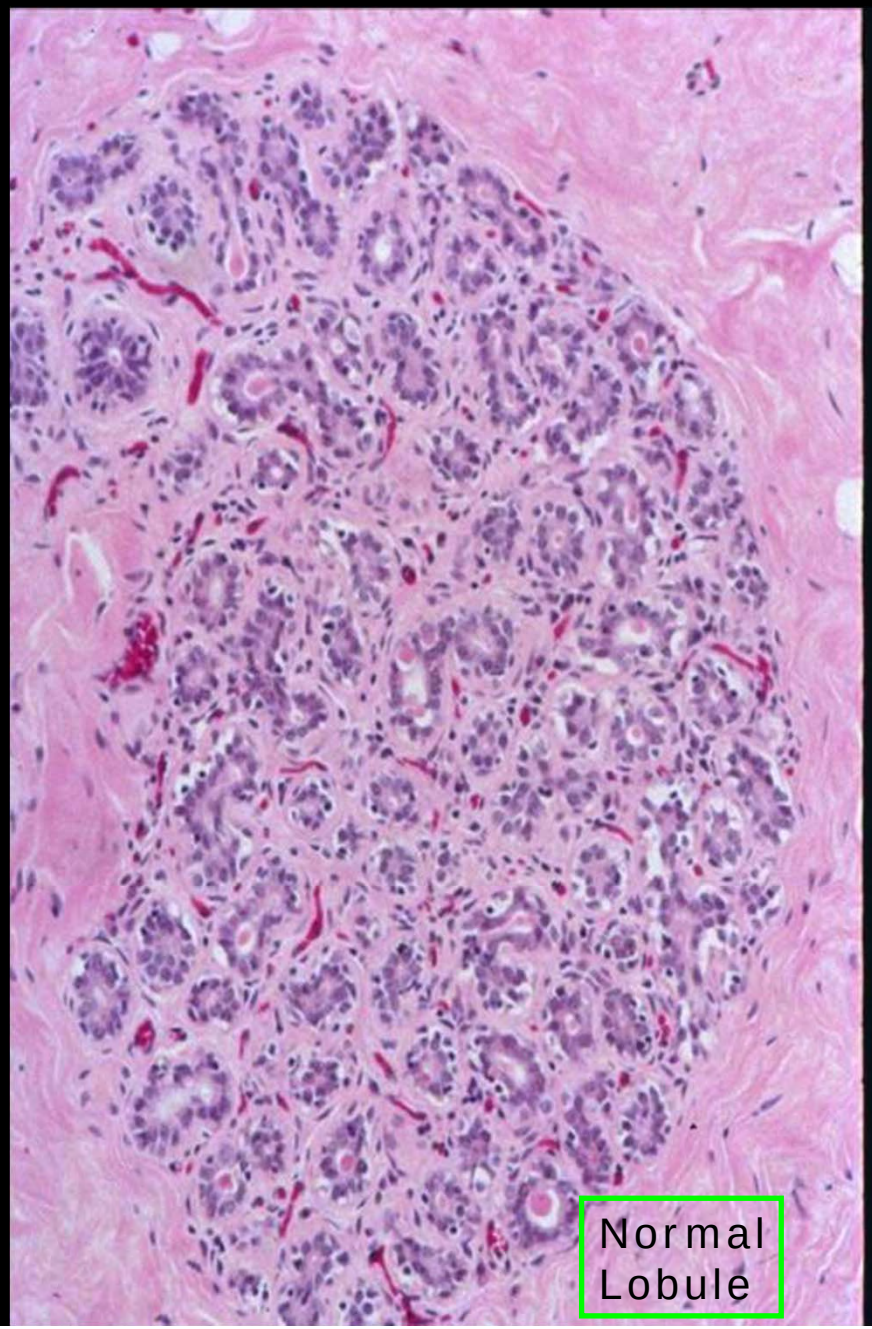
in men (do not usually have these acini

smooth muscle features; fairly inconspicuous histologically; pushes milk out

this layer makes most of the milk and most cancers are derived from this layer

Histology of TDLU

Breast Anatomy



Stroma is unique from person-to-person; lots of variation between individuals and within individuals over lifetime

Stroma

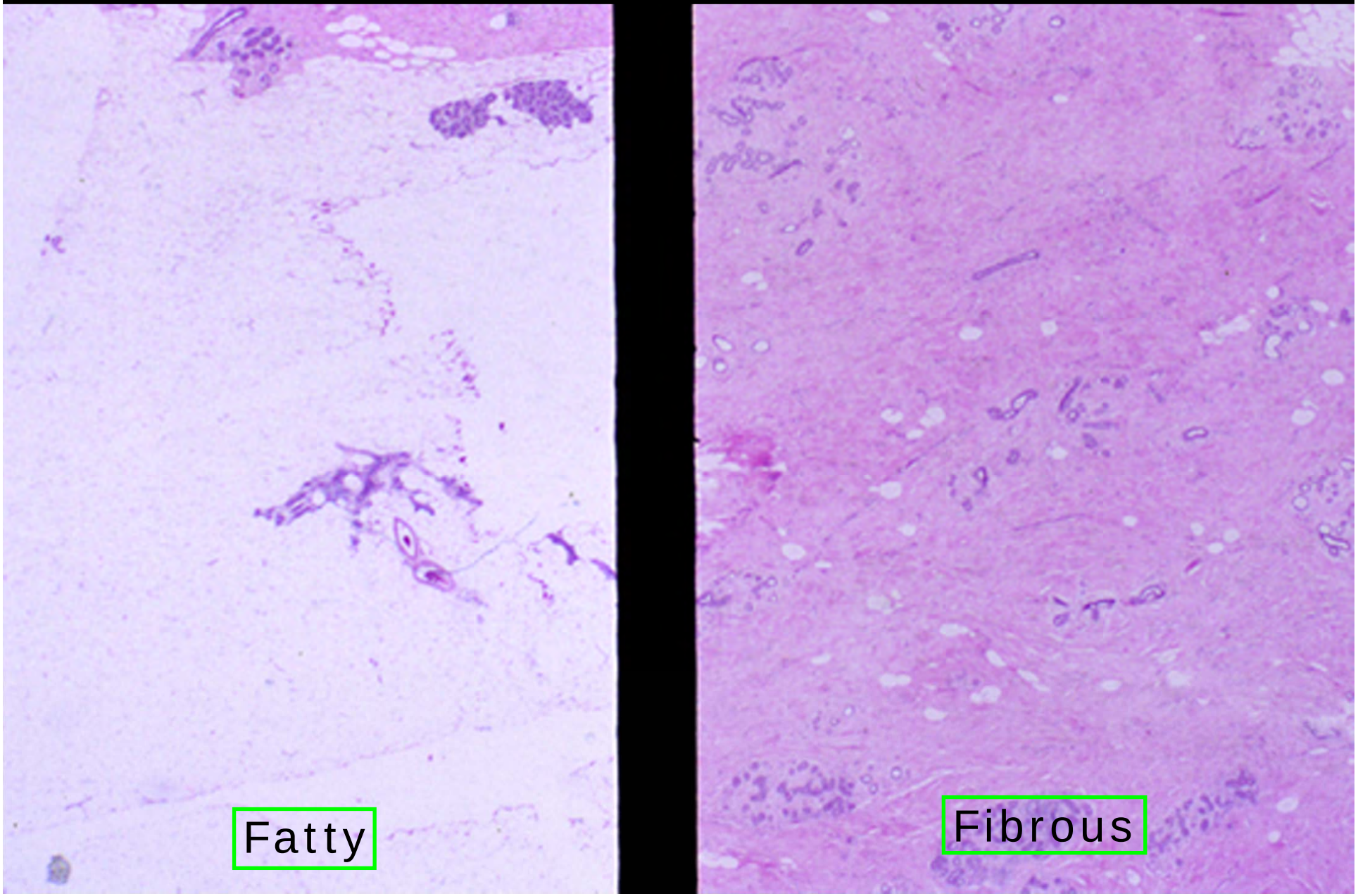
doesn't cause a lot of pathology, but there is a lot of variation between person-to-person (breast-to-breaset

uniqueness can create problems for mammographers

- Large **variation** in amount of fibrous stroma
- Varies **between individuals,** and with menopause/hormone status **within individual over time.**

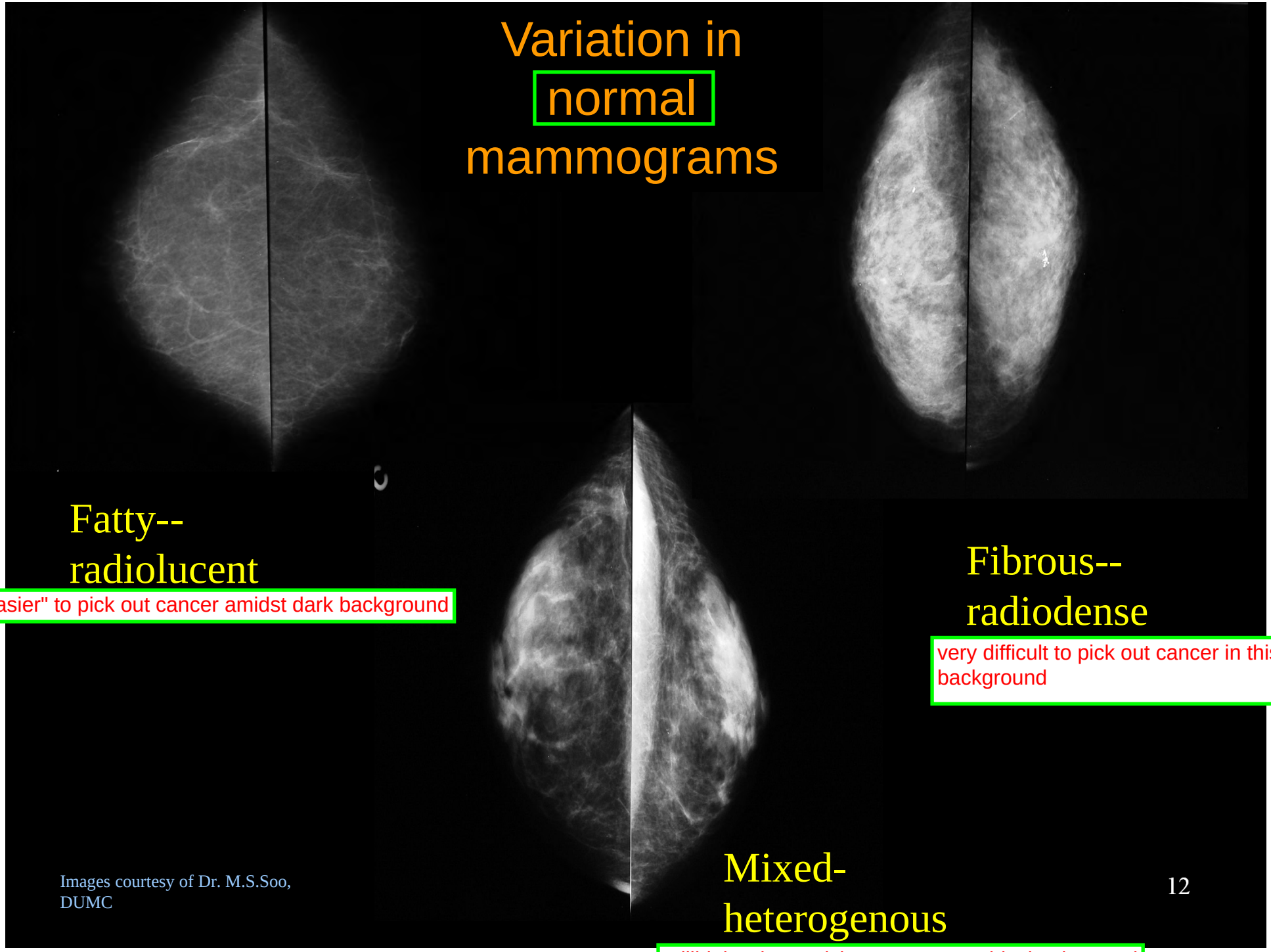
both images are totally normal: fatty and fibrous

Normal Breast



examples of how variation in normal stroma from individual to individual can challenge current mammographry

Variation in normal mammograms



Fatty--radiolucent

"easier" to pick out cancer amidst dark background

Fibrous--radiodense

very difficult to pick out cancer in this background

Mixed-heterogenous

a lilbit harder to pick out cancer amidst background

Images courtesy of Dr. M.S.Soo, DUMC

Now we're talking about **BENIGN ABNORMAL** breast tissue

Benign Breast Lesions

- Non-neoplastic
  - Inflammatory
  - Fibrocystic changes
  - Proliferative breast changes
  - Proliferative breast disease with atypia
- Benign neoplasms

why do we care about benign breast lesions? MIMICRY, RISK FACTORS, THEY'RE MORE COMMON

Benign Breast Lesions

Why do we care?

- **Many can mimic malignancy:**
  - **Lumps on physical exam**
  - **Microcalcifications or masses on mammograms**
  - **Bloody nipple discharge**
- **Some are risk factors for developing future breast cancer**
- **Benign lesions are much more common than cancers.**

again, benign breast lesions are COMMON

Breast Disease:

A common reason to see the Doctor!

- 16% of women in large group practice sought medical attention for breast symptoms over 10 year period
- Only 4% of visits for breast symptoms resulted in dx of cancer

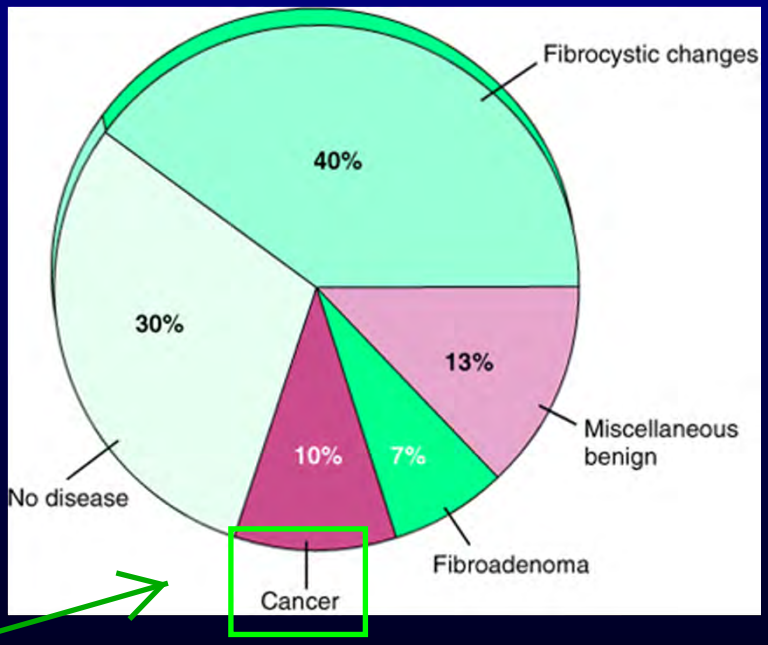
symptoms (even some mimicry of cancer) for benign breast lesions: Pain, Lump, Discharge, Mammogram abnormalities (MCs, Density)

Breast Disease:
Most common clinical presentations

- **Pain**
  - **Rarely is sole sign/symptom of CA**
- **Palpable mass (“lump”)**
- **Bloody nipple discharge**
- **Mammographic Abnormalities**
  - **Density (mass)**
  - **Microcalcifications.**

again, most breast lesions are benign

Unlike medical school professors, most breast lesions are benign



not very much

Pathologic findings in women with “lump”

Mastitis is inflammatory condition that can be described as ACUTE (bacterial) or PLASMA CELL (non-bacterial)

we're talking about INFLAMMATORRY conditions for the next several slides

Inflammatory Conditions

Mastitis

- **Acute** mastitis: **Bacterial infection,** usually while **beginning nursing**
  - Red, hot, swollen, painful breast
  - Can develop abscess, extensive tissue destruction
- **Plasma cell** mastitis: **Non-bacterial,** chronic irritation from secretory products
  - Usually in **multiparous** woman, nursing

usually when skin breaks

Fat Necrosis--occurs after trauma to fat>>marked inflamm response>>scarring>>MIMIC of cancer

Inflammatory Conditions

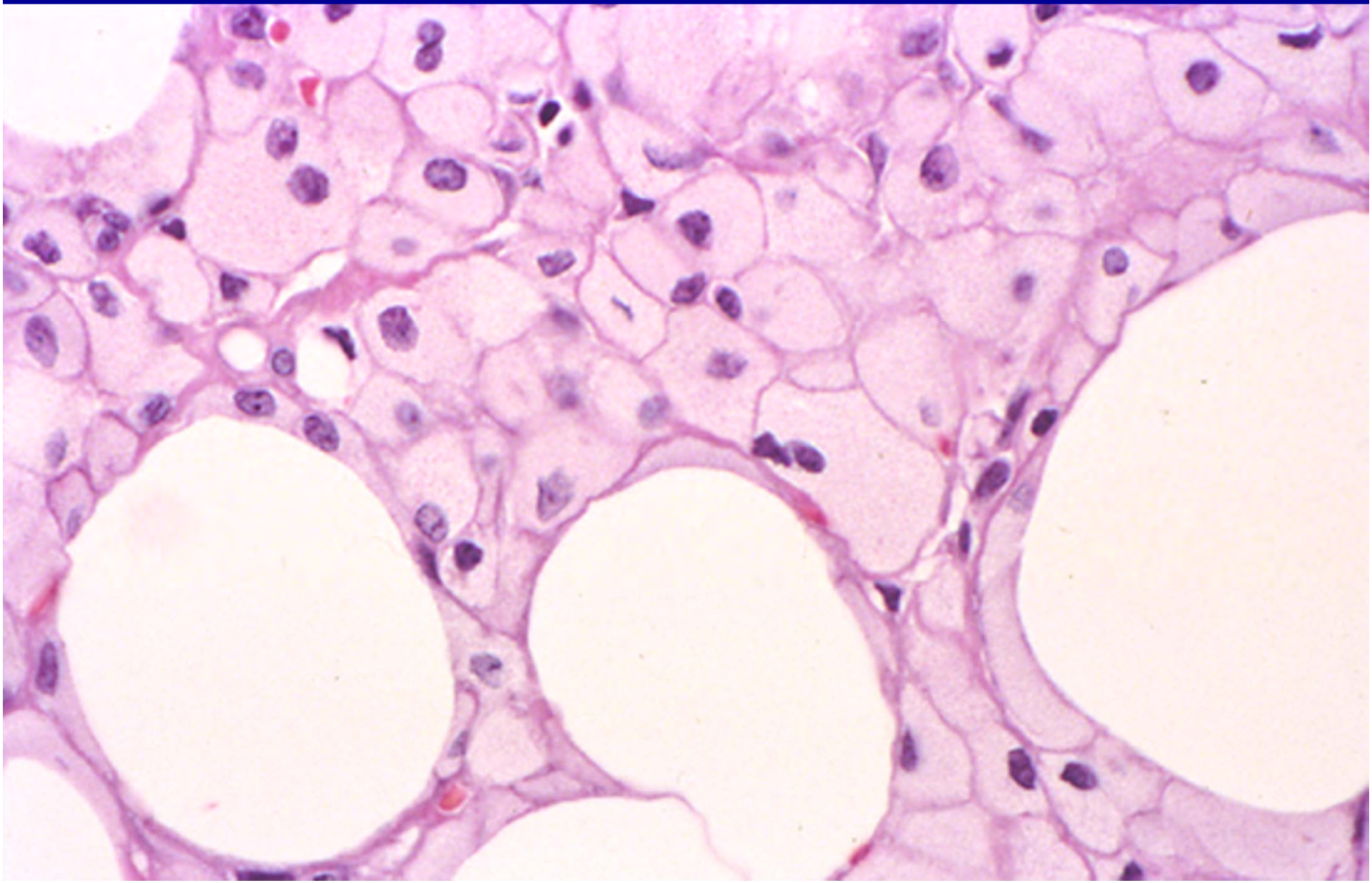
Fat Necrosis

the trauma doesn't have to be "that severe" for this to occur

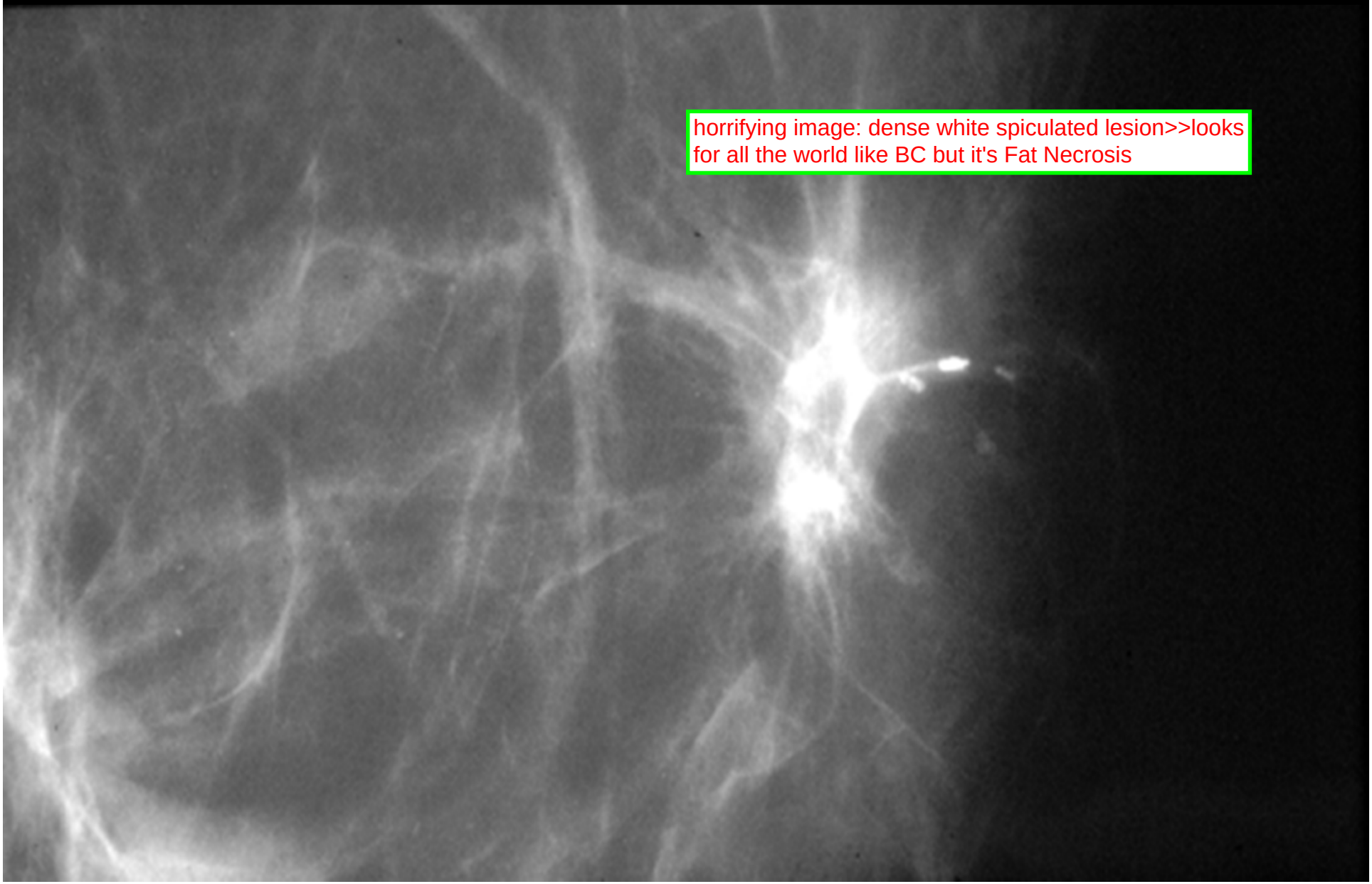
- **Trauma to fat, release of fatty acids with marked inflammatory response**
- **Heals by scarring**
- **Excellent cancer mimic**
  - **Rock hard, spiculated mass**
  - **Microcalcifications on mammogram**

macrophages full of fat help to distinguish Fat Necrosis from Breast Cancer--phew!

Histology of fat necrosis



Mammogram, fat necrosis



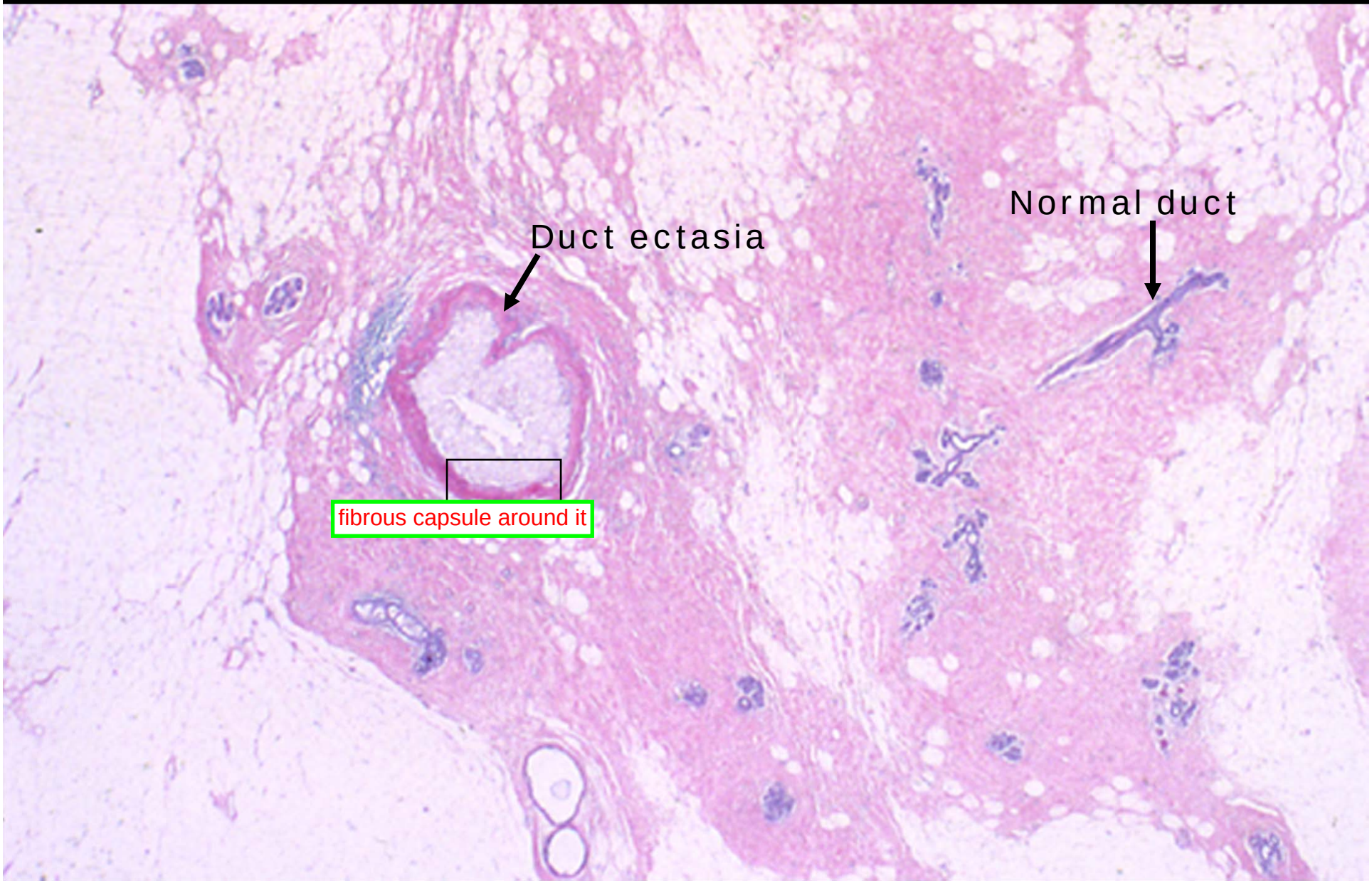
Duct Ectasia: inflamm destroys duct wall>>nipple discharge>>microcalcifications mimic cancer

Inflammatory Conditions

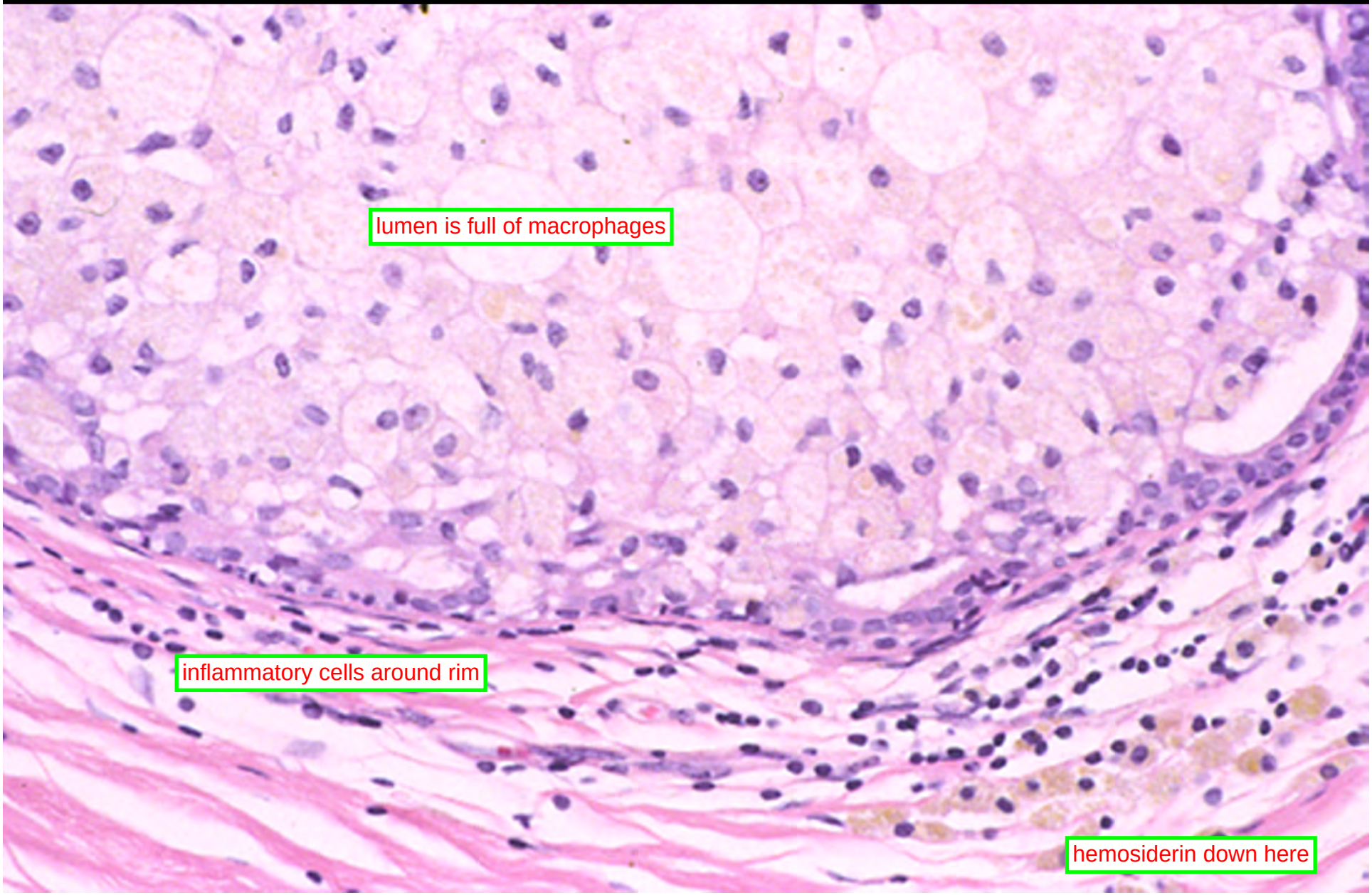
Duct Ectasia

- Inflammation destroys duct wall
- Common cause of nipple discharge
- Microcalcifications can mimic cancer

Duct Ectasia: low power



Duct Ectasia: high power



Dividing this category up into Nonproliferative and Proliferative

MORE BENIGN LESIONS; we're moving on from benign inflammatory

Benign Epithelial Lesions

- Nonproliferative changes
  - Fibrocystic change
  - Fibroadenoma
- Proliferative breast disease
  - Epithelial hyperplasia
  - Sclerosing Adenosis
  - Radial Scar
  - Intraductal papilloma

Fibrocystic change is not a disease; rather, it's a common exaggerated response some women have to hormonal stimulation
No increased risk for BC

Fibrocystic Change

- **Not a disease!** normal change, doesn't hurt patient at all; starts 30s-40s in women
- **A group of processes which are related only by the fact that they tend to occur together.**
- **Represents exaggerated response to hormonal stimulation**
- **Present in most women (>80%)** common
- **No increased risk for cancer**

ABSOLUTELY NONE

three characteristics of fibrocystic change: Fibrosis and cysts (hence the name); also, metaplasia

Fibrocystic Change

aka Non-Proliferative Breast Changes

- Fibrosis
- Cysts
- Metaplasia
  - Apocrine
  - Columnar

lots of emphasis on how NORMAL fibrocystic change is>>you find lots of fibrous tissue in breast anyway

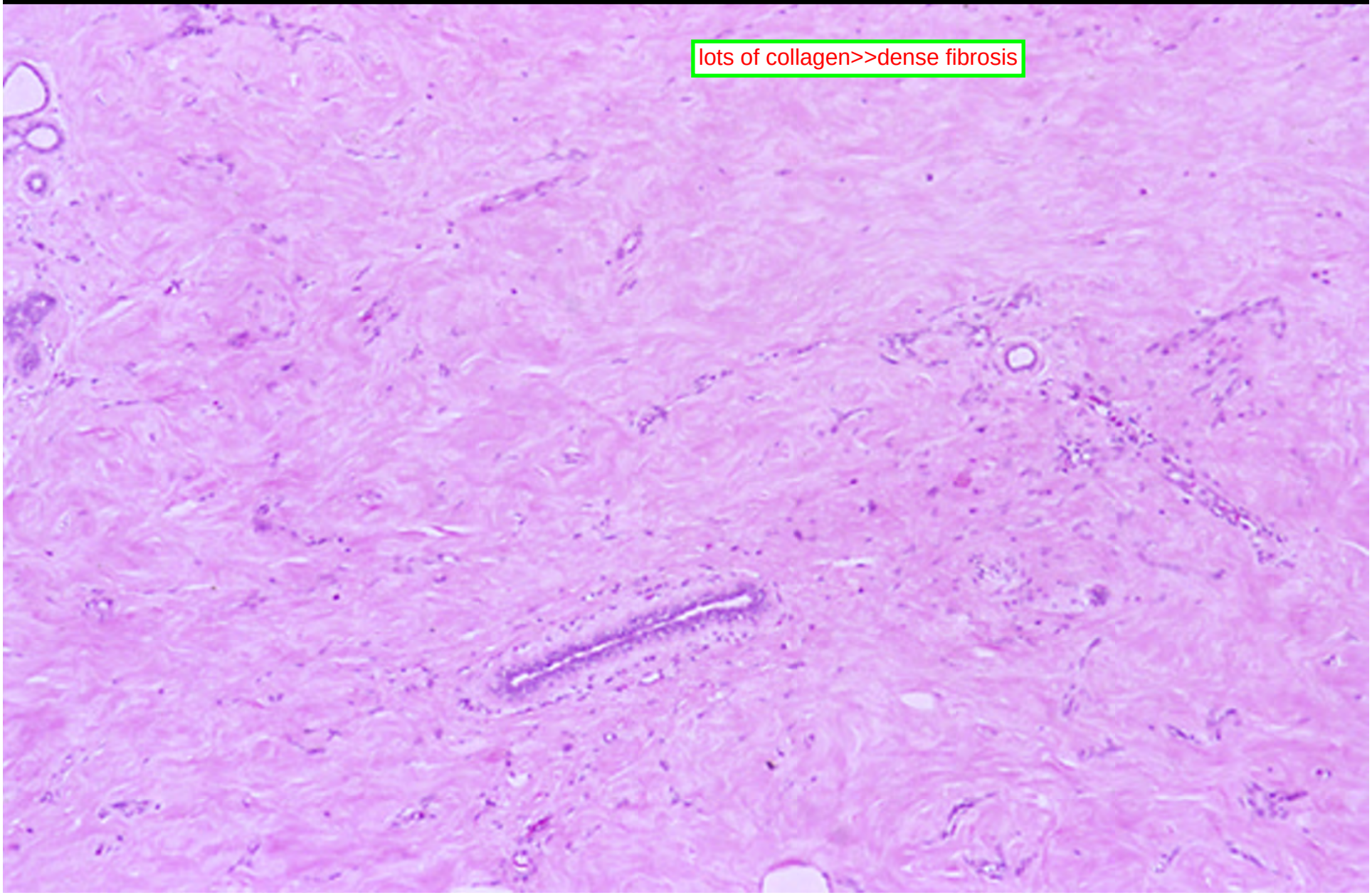
Fibrocystic Change

"Fibrosis"

1/3 parts of FCC

- Localized areas of fibrous tissue is common cause of **lump**
- This gets called "fibrosis" implying an **increase over normal**…but **it is just normal** breast tissue.
- Fibrous tissue in breast is **NORMAL**

Breast, fibrosis



again, cysts are common>>they fluctuate and can go away if you "pop" them

Fibrocystic Change

Cysts

2/3 Parts of FCC

- Cysts are extremely common
- Multiple, bilateral
- Fluctuate over time
- Disappear with fluid aspiration

cysts are generally bluish in color, are filled with clear fluid, and are lined by simple cuboidal epithelium

Fibrocystic Change

Cysts

- Translucent "blue dome" cysts
- Clear colorless fluid
- Lined by simple cuboidal epithelium

can be quite dramatic clinically--multiple cysts/breast

Most common metaplasia in FCC is apocrine

Fibrocystic Change

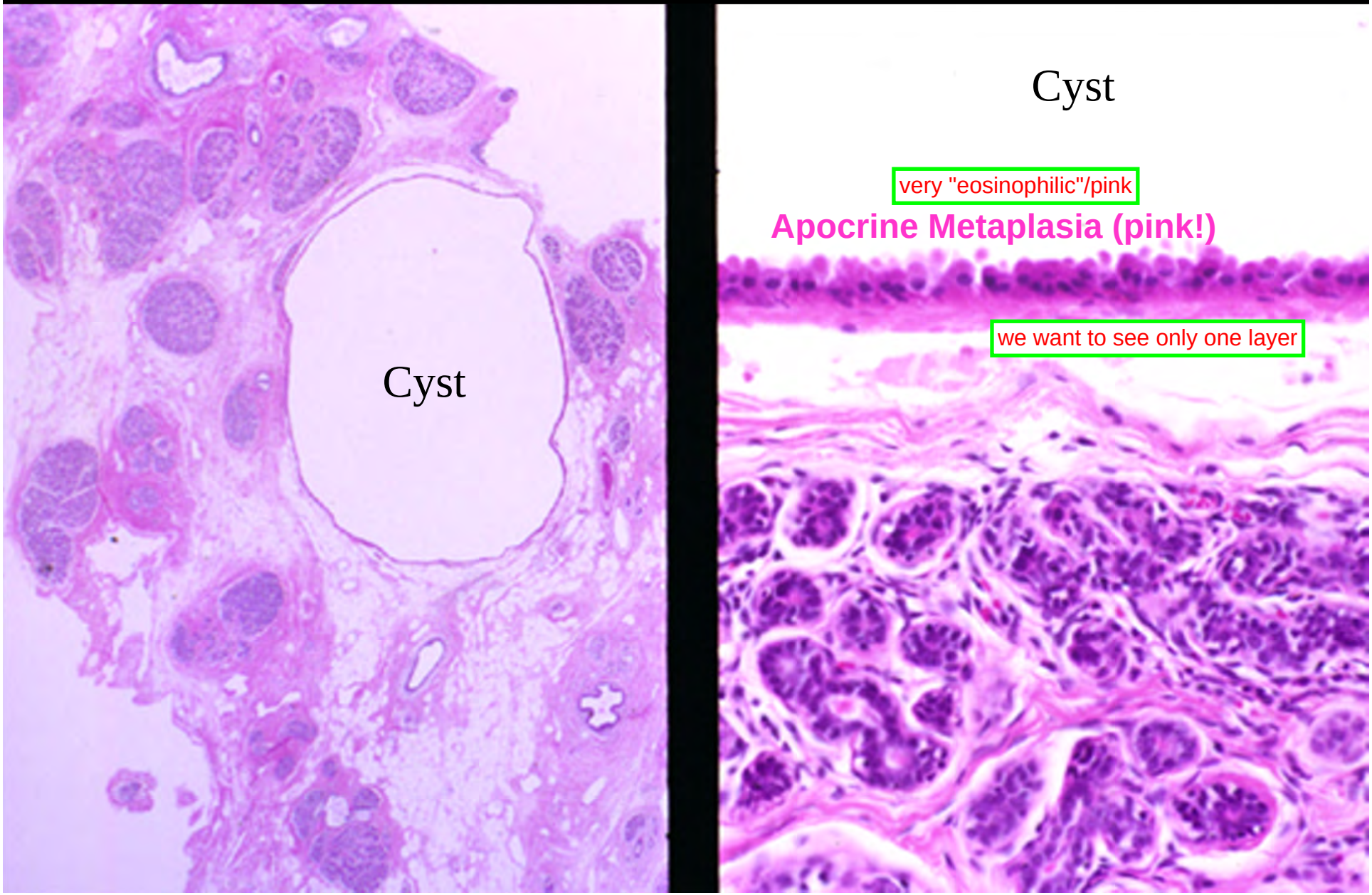
Apocrine Metaplasia

3/3 part of FCC

- **Replacement** of ducts or lobules with apocrine-type epithelium
  - Apocrine epithelium **normal in axillary and groin** sweat glands
  - **No clinical significance**
  - Often seen **in cysts**

apocrine metaplasia: very eosinophilic (pink)

Cyst with Apocrine Metaplasia



Fibroadenoma: biphasic (but think younger women) distribution; most common benign lesion; hard/round/well-circumscribed--often not removed

think "younger women"

Fibroadenoma

- **Most common benign** neoplasm of the breast
- Most common in **teens** and **twenties;** second peak around **menopause**
- Proliferation of ducts AND stroma -- "**biphasic** neoplasm"

together..leads to "biphasic" designation

- **Hard, round, well circumscribed** nodule; can mimic cancer

very characteristic characteristics

mobile, doesn't grow into other structures to get fixed

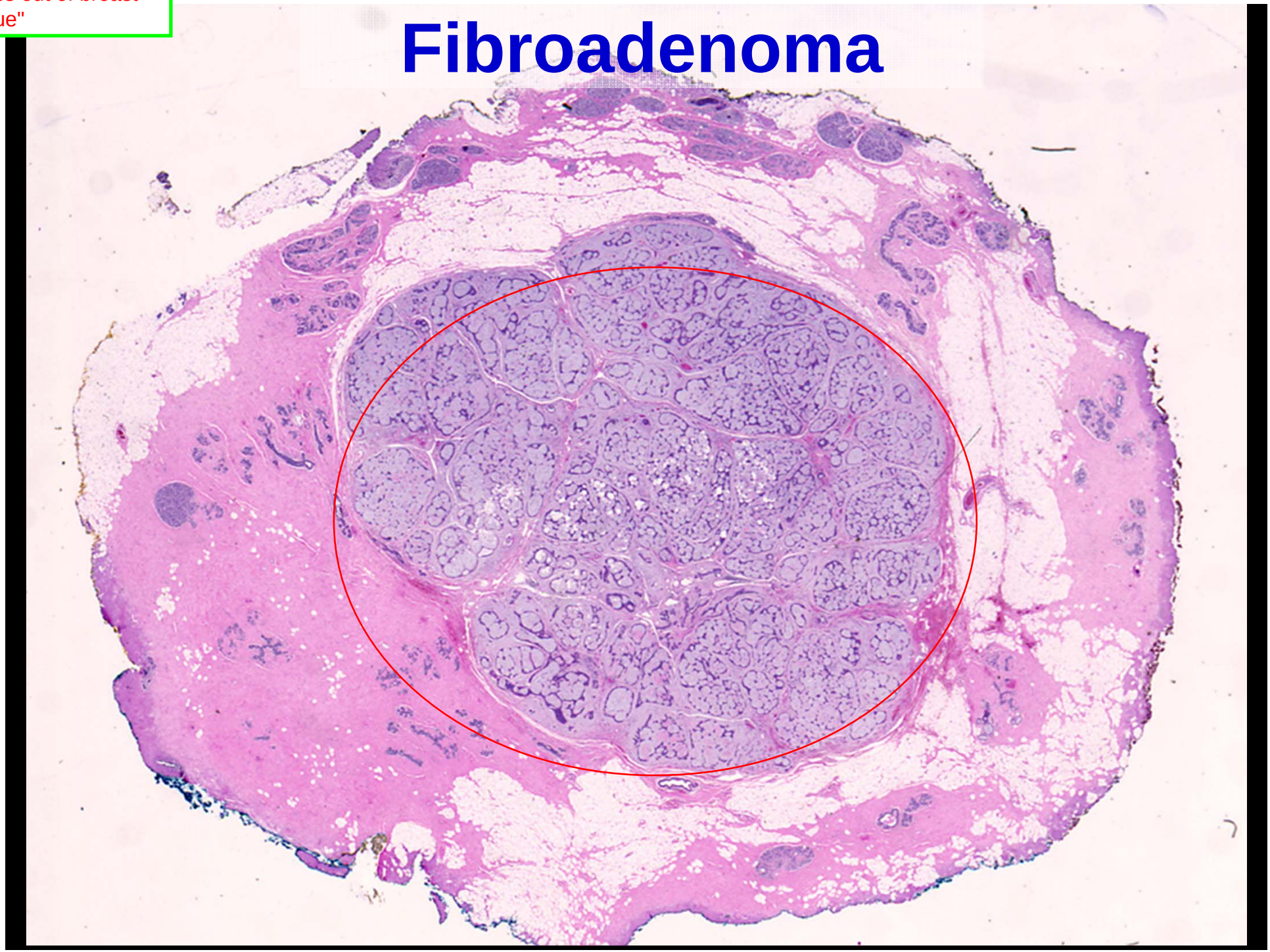
- Often **diagnosed clinically,** not biopsied

left in breasts "if everybody is comfortable"

Pop quiz: name the characteristics of fibrocystic change

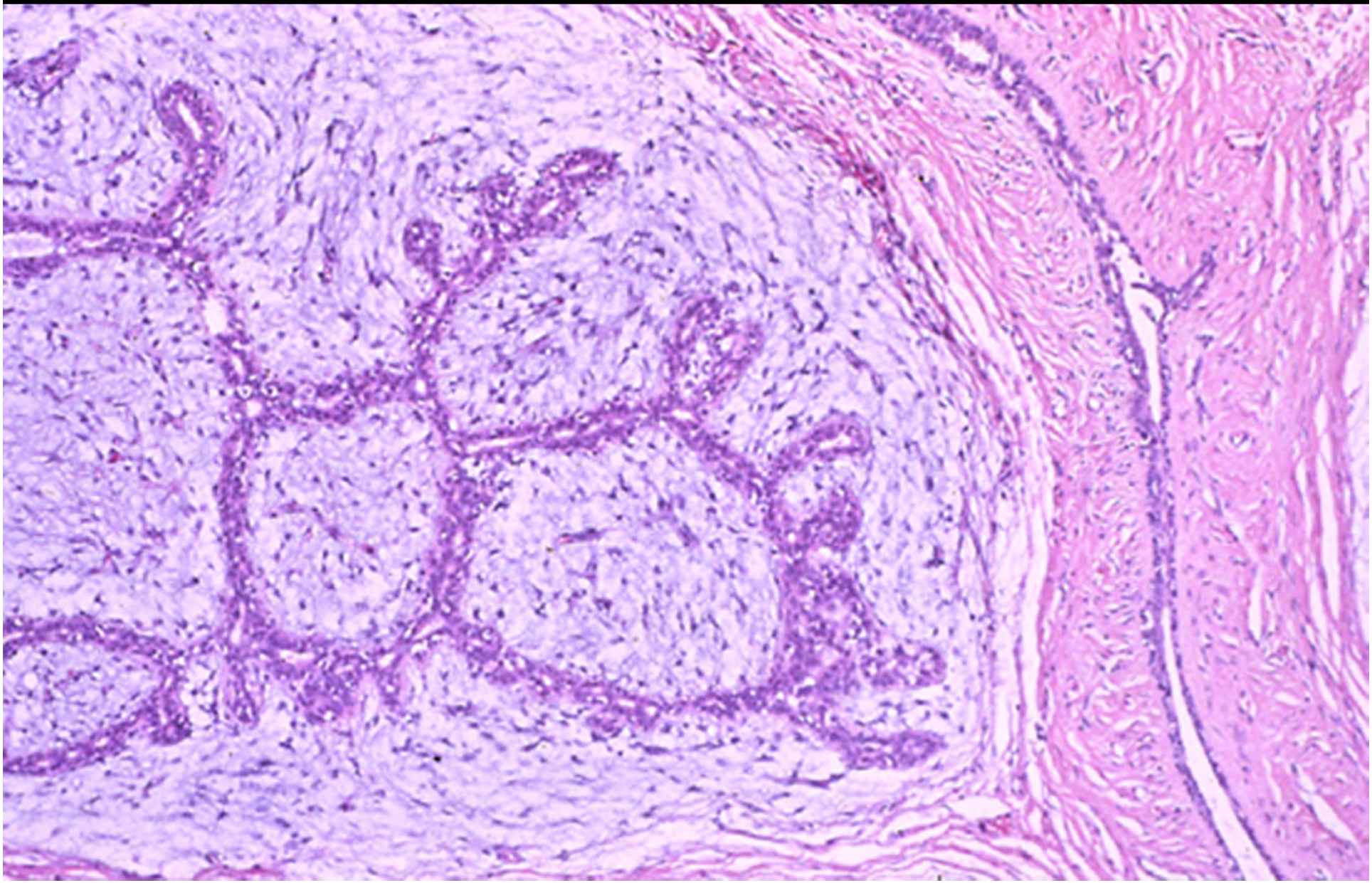
sharply circumscribed "pops out of breast tissue"

Fibroadenoma



proliferating DUCTS and STROMA
it is pushing things out of the way,
NOT invading
(these are classic features for a "benign" neoplasm)

Fibroadenoma



we're going to look at the four listed

now we're talking about lesions that DO INCREASE THE RISK for BC

Proliferative Breast Disease

A group of benign proliferative processes, distinct from non-proliferative change because they are markers for a slightly increased risk (1.5-2x) for breast cancer in the future

not concurrently

these are findings that lead to increased RISK

- **Moderate to florid epithelial hyperplasia**
- **Sclerosing adenosis**
- **Radial scar/complex sclerosing lesions**
- **Papilloma**

Epithelial Hyperplasa--ducts or lobules

Proliferative Breast Disease

Epithelial Hyperplasia

- Proliferation of epithelial cells within ducts and acini
- Classified as ductal (usual type) or lobular

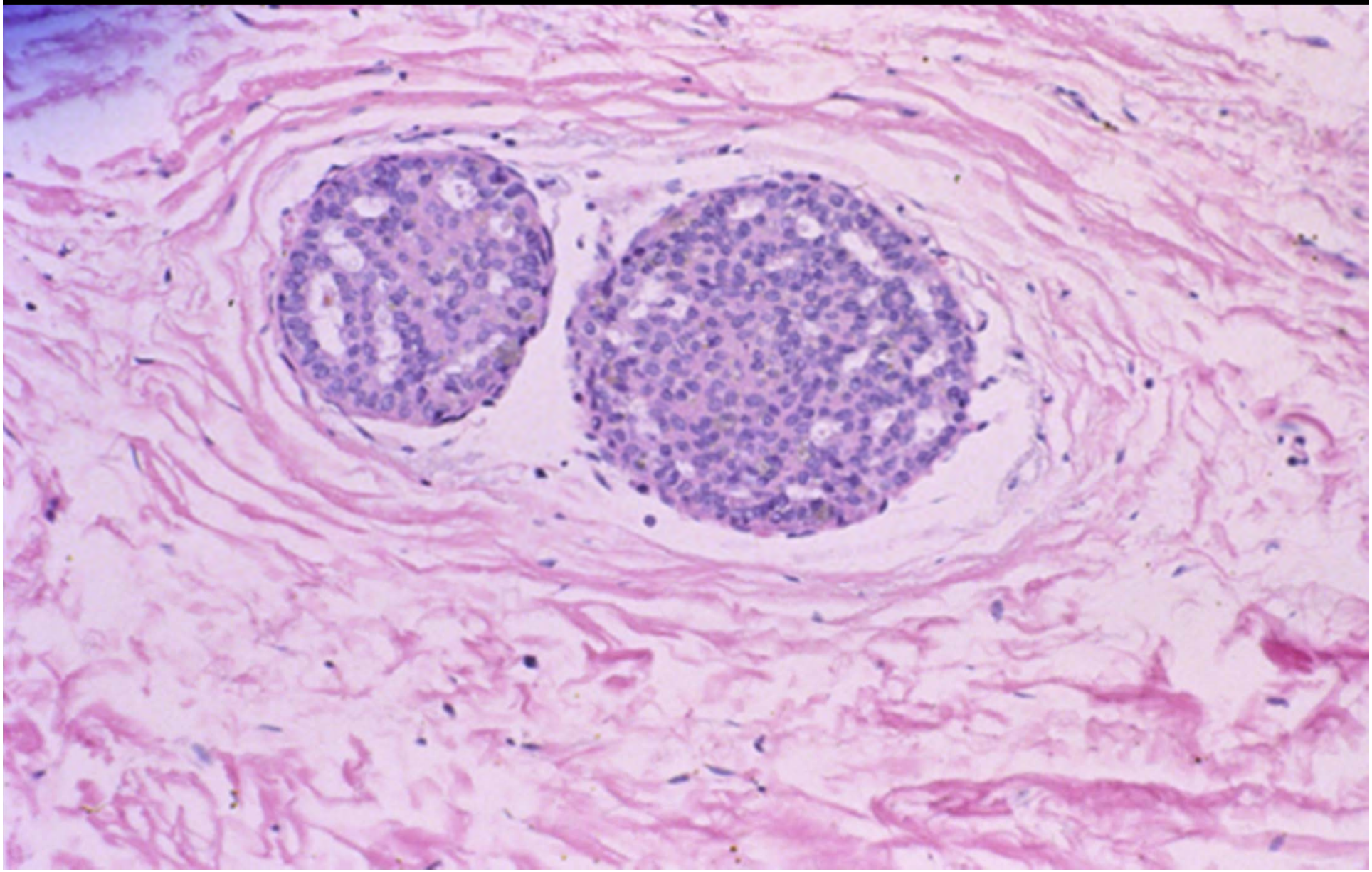
EH: incidental finding, doesn't really mimic BC, increases risk

Proliferative Breast Disease
Epithelial Hyperplasia

- Always an incidental finding
- Does not make lump or microcalcifications
- Graded from mild to severe (florid)
- Important mostly as risk factor
  - Patients with moderate/florid hyperplasia have 1.5-2.0 relative risk for developing breast cancer over 20 year f/u.

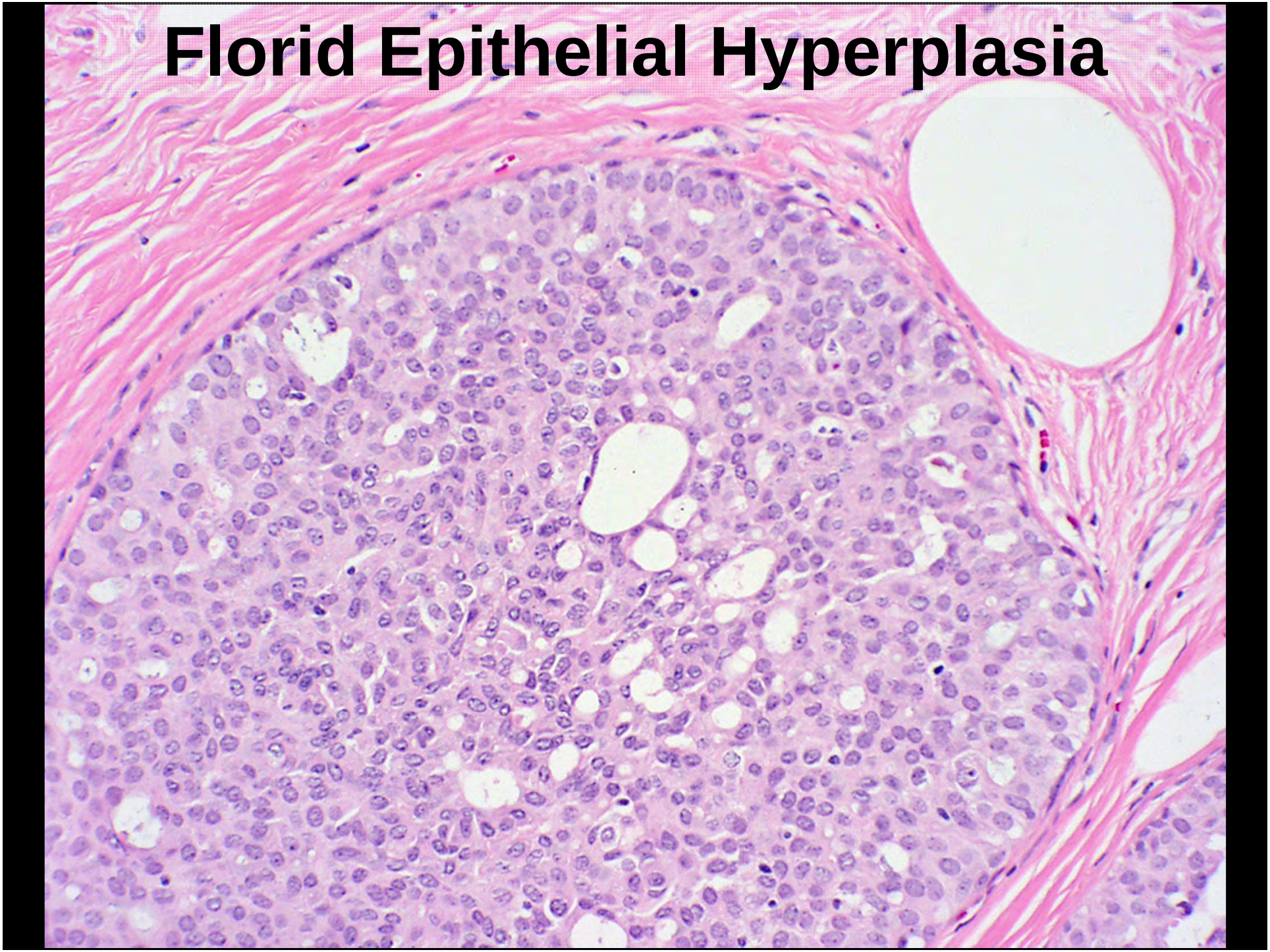
increase in ductal epithelial cells

Mild Epithelial Hyperplasia



severe hyperplasia

remember, still "benign" only serves as a risk factor



SA: more ducts and fibrous tissue by definition; fairly common, can mimic cancer

Proliferative Breast Disease

Sclerosing Adenosis

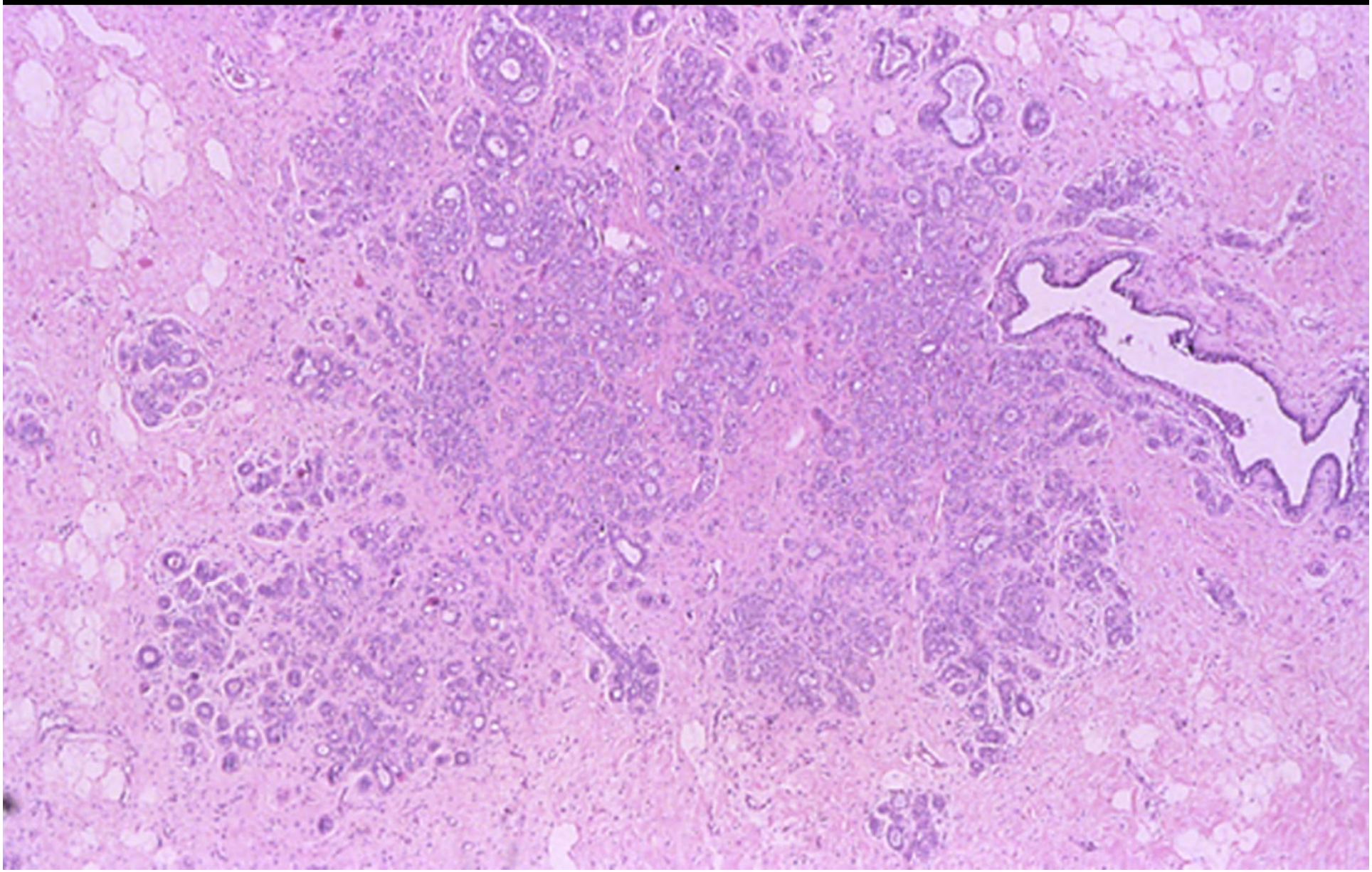
- **Adenosis** = Proliferation of small acini and terminal ducts
- **Sclerosing** Adenosis: Most common type
  - Adenosis with associated stromal fibrosis
  - Found in 12% of biopsies
  - Can mimic cancer, mass and microcalcifications

that's quite COMMON

big lobule, expanded terminal duct
pink stuff is vast sclerosis (fibrosis)

again, increased risk of breast cancer

Sclerosing Adenosis



Radial Scar--not related to trauma, stellate proliferation, mimics cancer

Proliferative Breast Disease

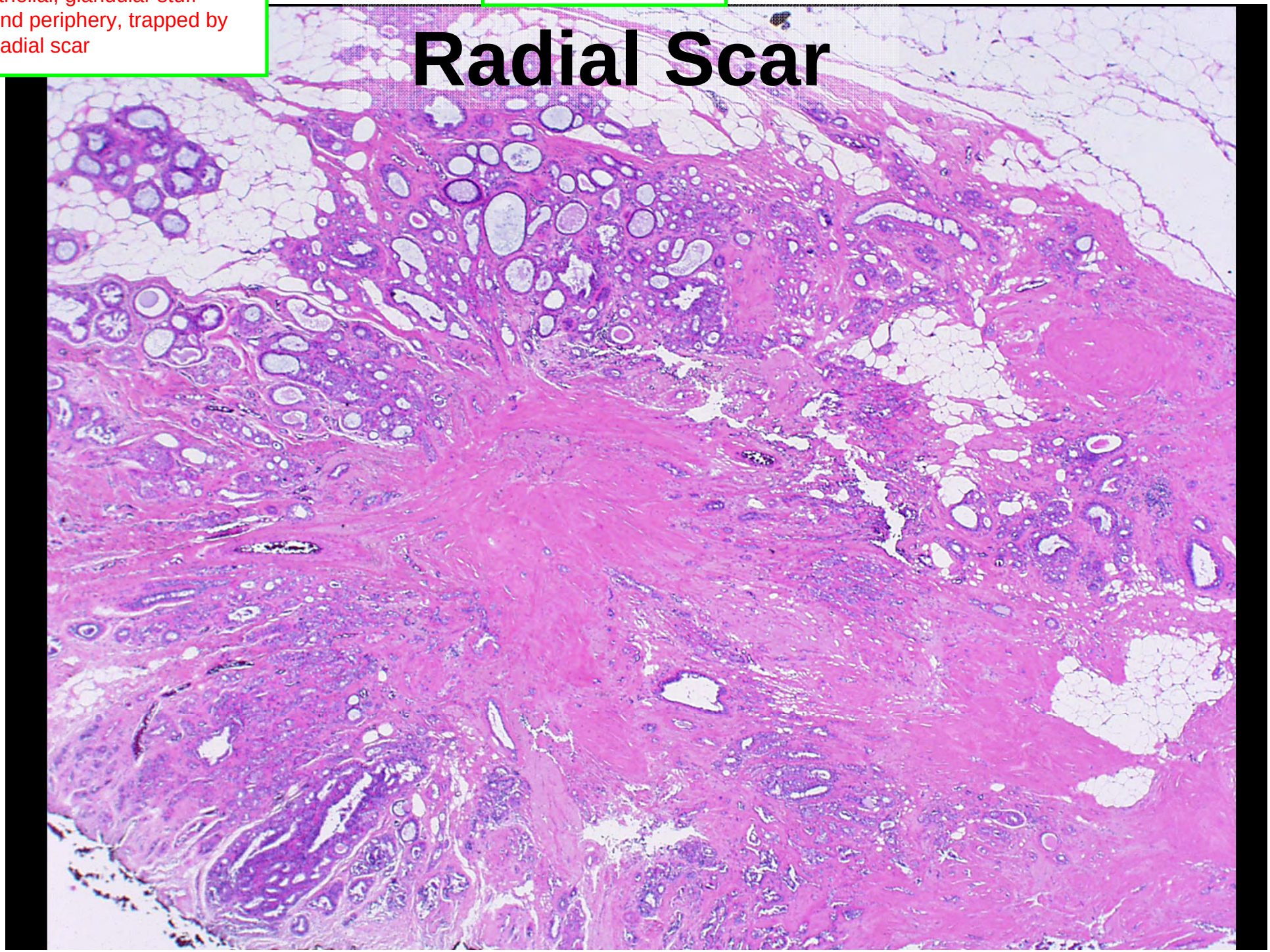
Radial Scar

- Misnomer, not related to trauma
- Stellate proliferation of ducts and acini around a central scar-like area of fibrous and elastic tissue.
- Often mimics cancer mammographically (spiculated mass with microcalcifications)

>scar-like, has "arms"
>epithelial, glandular stuff around periphery, trapped by the radial scar

not a scar in literal sense

Radial Scar



IP: most common cause of bloody nipple discharge; appears like a cauliflower

Intraductal Papilloma

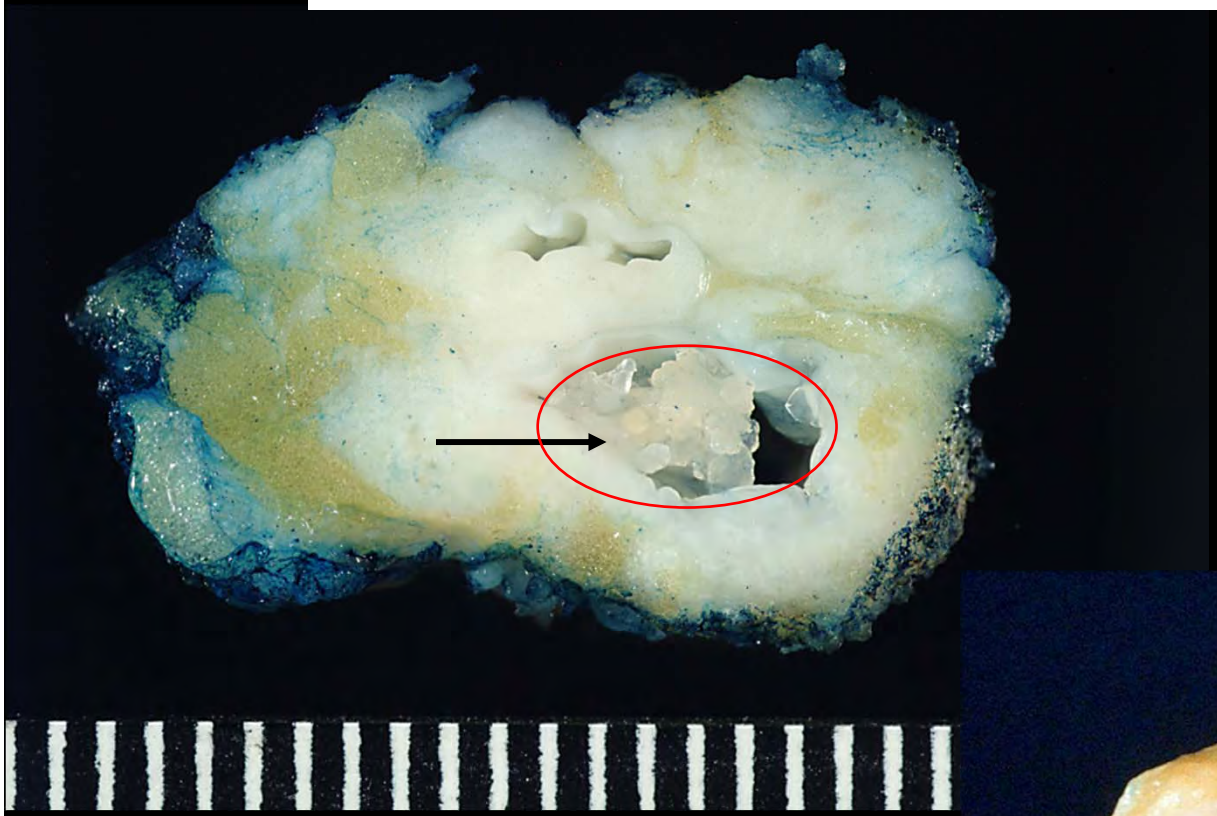
"cauliflower"

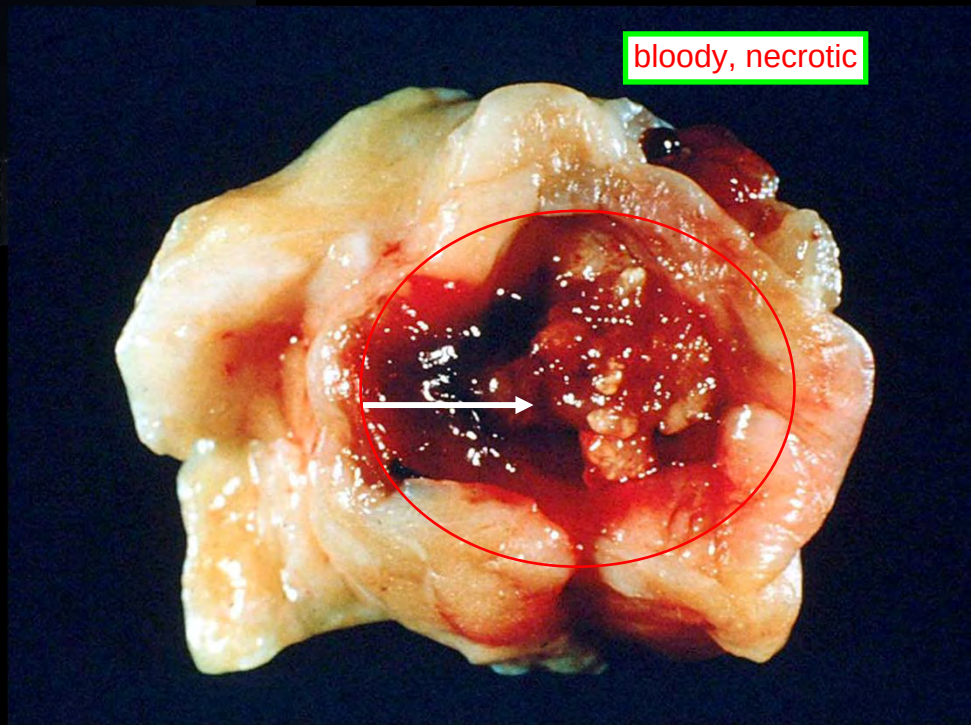
- Proliferation of papillary fronds within dilated duct
- Large ducts beneath nipple
- Most common cause of bloody nipple discharge

typically resected because bloody nipple discharge an often signify something terrible wrong

typically grows in large ducts

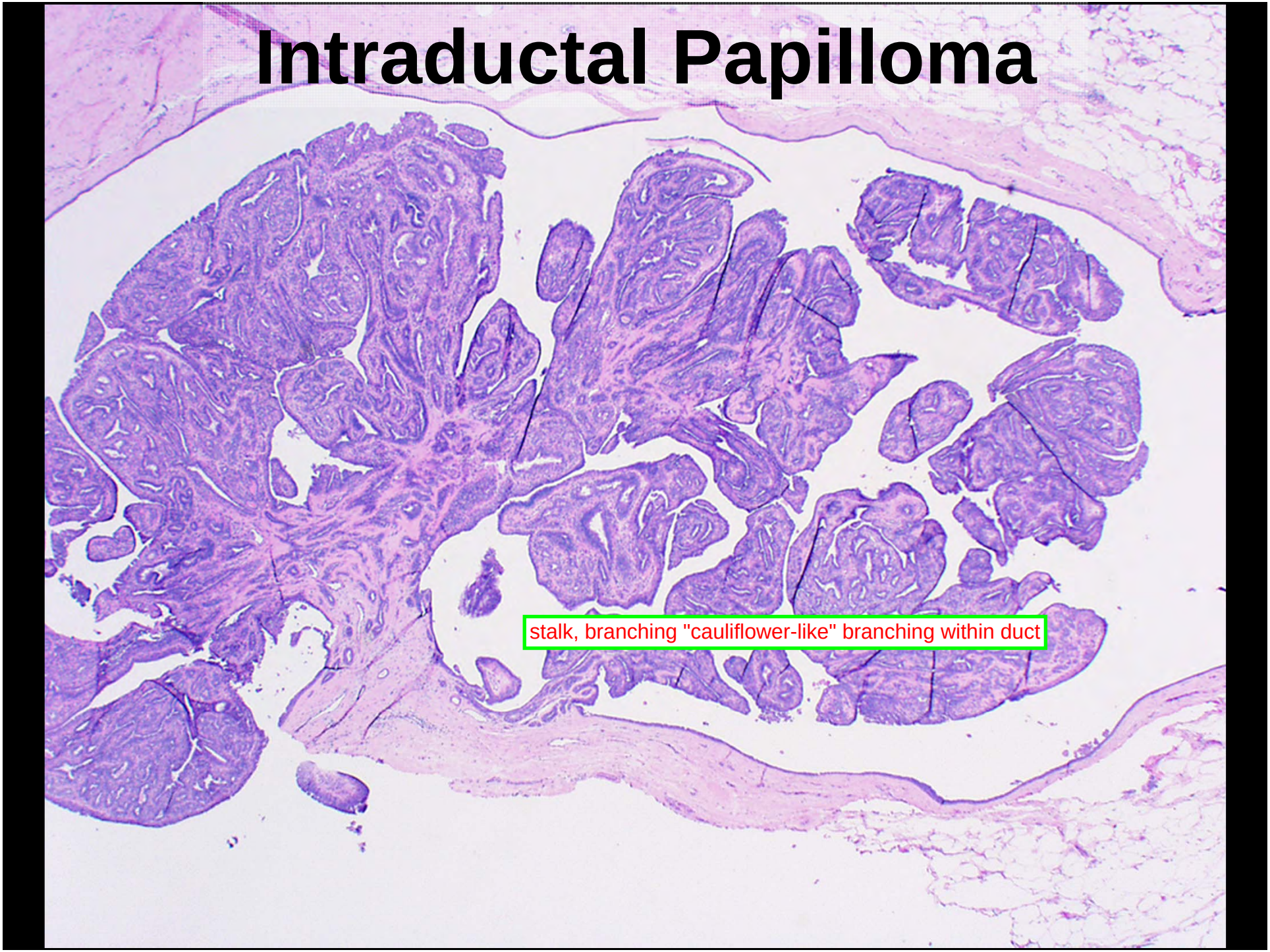
Intraductal Papillomas





bloody, necrotic

totally benign, but causes bloody nipple discharge



note the word ATYPICAL for PBD w/ ATYPIA

now lesions with LARGER INCREASE IN RISK for BC

Proliferative Breast Disease With Atypia

A group of benign proliferative processes, distinct from fibrocystic change because they are markers of high risk (4-5x) for breast cancer in the future

- **Atypical** Ductal Hyperplasia
- **Atypical** Lobular Hyperplasia

ADH: probably a precursor for ISC; detected for its microcalcifications

intermittent stage between hyperplasia and full on in-situ carcinoma

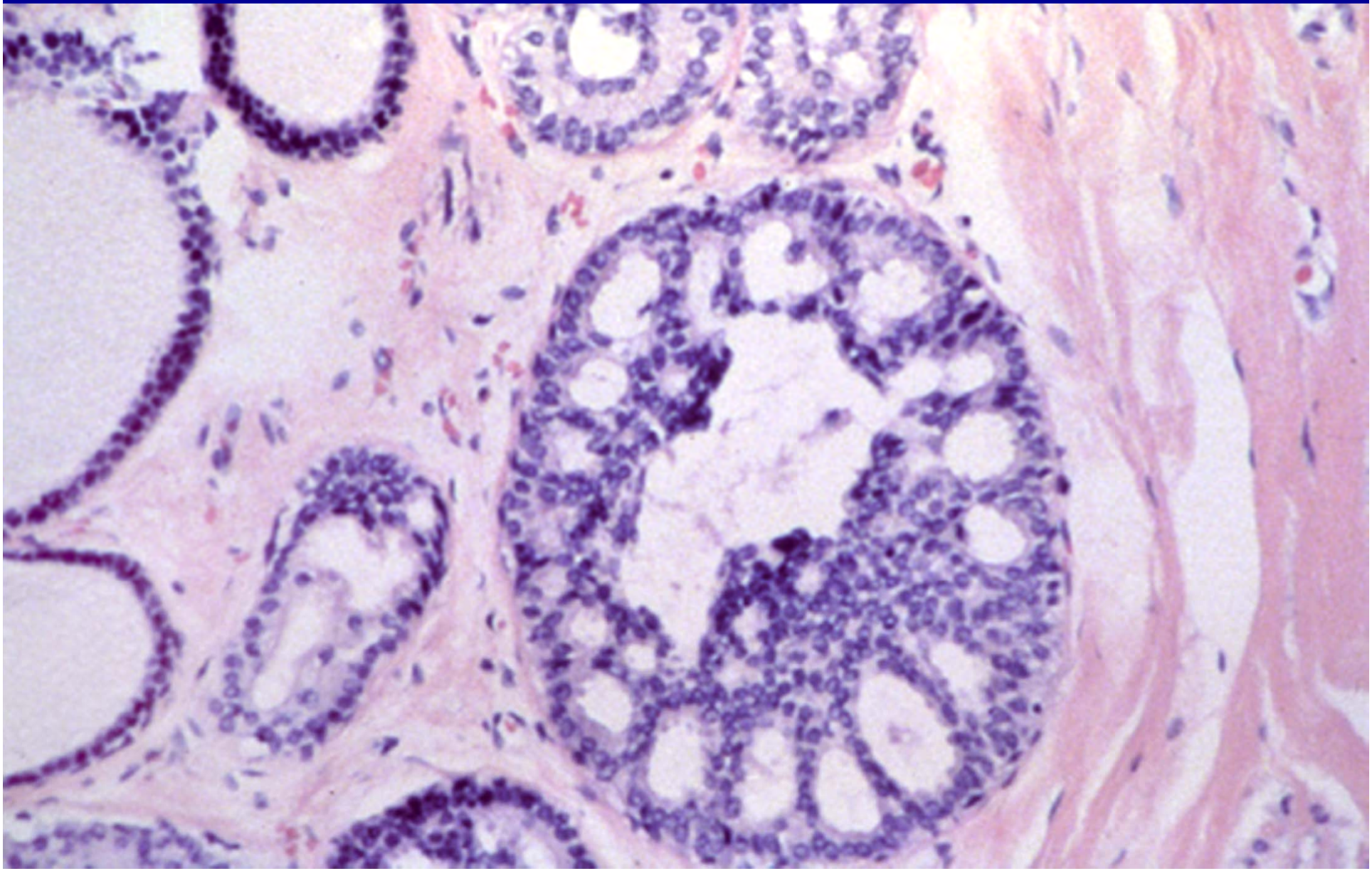
Proliferative Breast Disease With Atypia

Atypical Ductal Hyperplasia

- Has some but not all features of in-situ carcinoma
  - Probably precursor to in-situ carcinoma, like dysplasia in cervix
- Usually detected because of Ca++ (calcifications)
- Approximately 5% of biopsies
- Moderate increase in risk for cancer (x4-5)

atypical because the punched out lumen is pattern for in situ carcinoma

Atypical Hyperplasia



that's all for benign--they increase RISK

Malignant Neoplasms of the Breast

we ARE seeing a reduction now

Breast Cancer

- Subject of intense scientific investigation
- Major advances in breast-conserving therapy and reconstruction
- Major focus of cancer screening (mammography, self-exam)
- Only recent years have seen a modest impact on mortality rate

overview slide for MALIGNANT

Malignant Neoplasms

- Basic epidemiology
- In-situ carcinoma
  - Ductal carcinoma in-situ
  - Lobular carcinoma in-situ
- Invasive carcinoma
  - Ductal
    - Special ductal subtypes
  - Lobular
- Prognostic and treatment factors
  - ER/PR, Her2/neu, genomic
- Special presentations of breast cancer

BC is common cancer in women

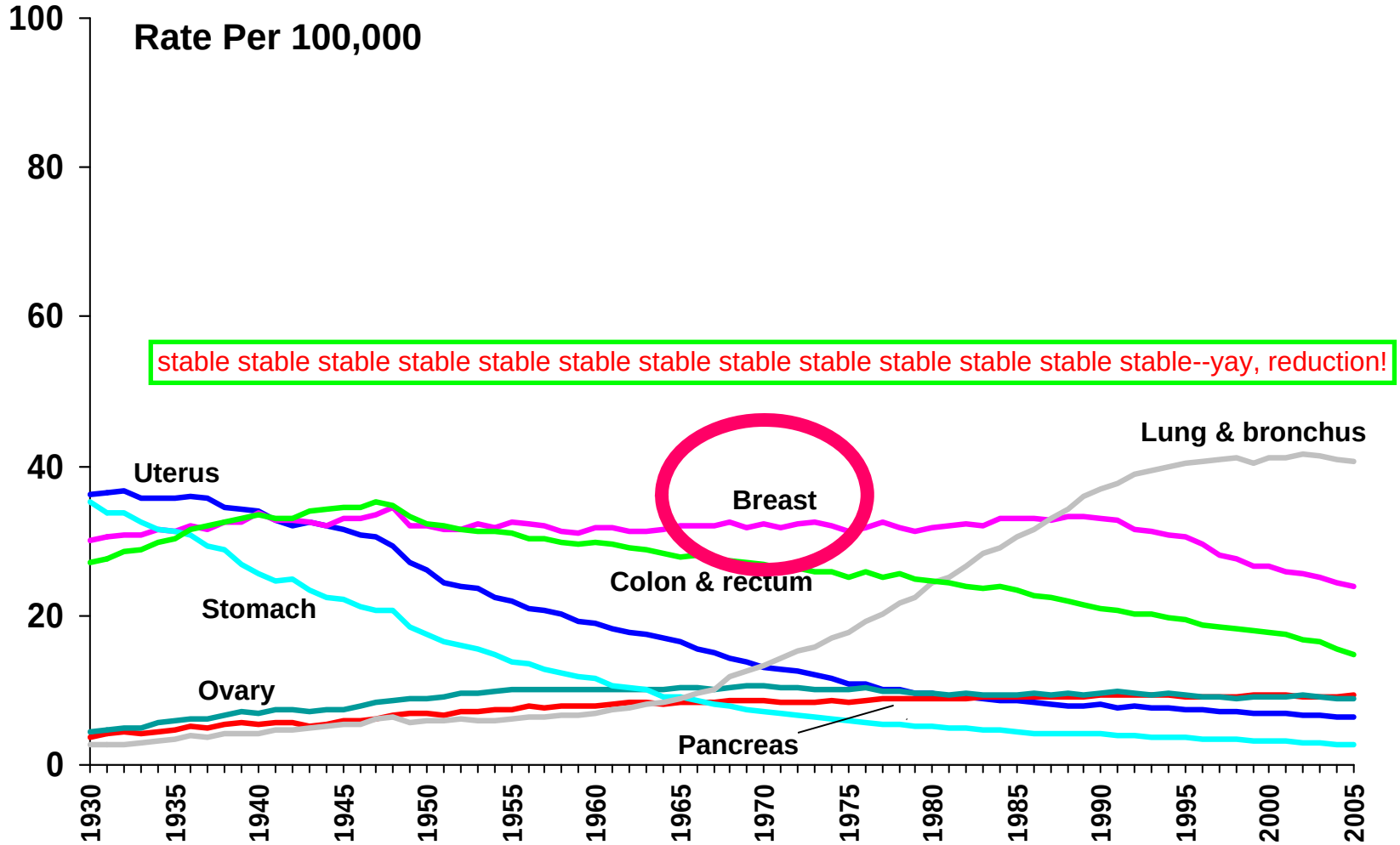
Breast Cancer
Fast Facts

- 192,370 est. new cases 2009
  - 40,170 deaths
- One in 8 women will develop breast cancer
- One in 35 women will die from breast cancer
- 31% of all cancers in women

excluding skin cancers, which are always excluded it seems

Death Rate--mostly stable but now have downward trend

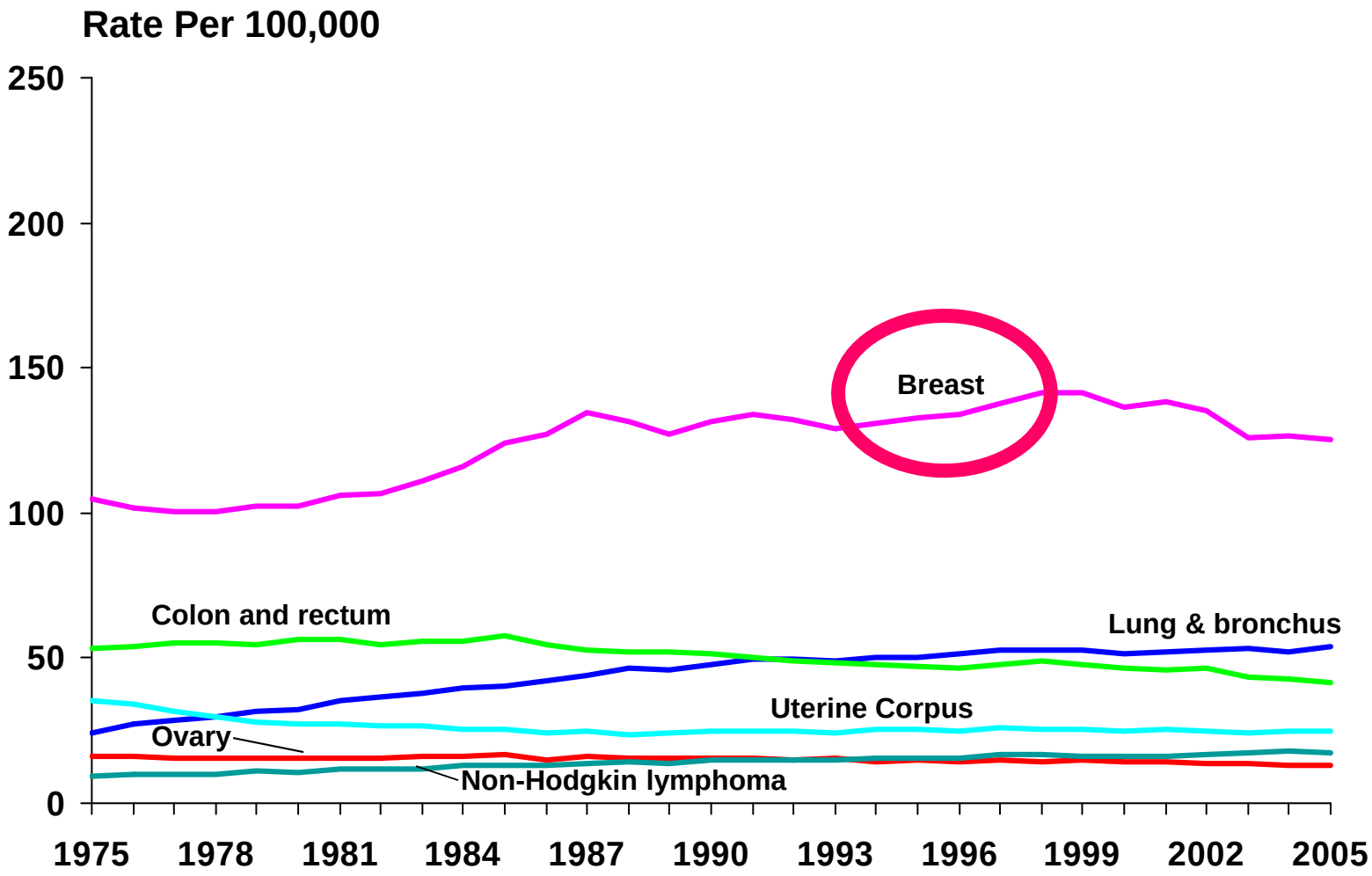
Cancer Death Rates* Among Women, US,1930-2005



*Age-adjusted to the 2000 US standard population.
Source: US Mortality Data 1960-2005, US Mortality Volumes 1930-1959,
National Center for Health Statistics, Centers for Disease Control and Prevention, 2008.

by far the most common cancer in women

Cancer Incidence Rates* Among Women, US, 1975-2005



*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting.
Source: Surveillance, Epidemiology, and End Results Program, Delay-adjusted Incidence database: SEER Incidence Delay-adjusted Rates, 9 Registries, 1975-2005, National Cancer Institute, 2008.

RFs for BC: age, FHx, genetics (tho most BC is spontaneous)

Risk Factors for Breast Cancer

- Age
- Family history
- Specific gene mutations: **BRCA1, BRCA2, p53**
  - very high risks (50-80%) for affected families, but uncommon causes of breast cancer overall
  - also have increased risk of other cancers (ovary, other)

most breast cancer is SPORADIC--the above mutations are relatively rare and contained intrafamilially

more RFs for BC: estrogen, late/no pregnancy, previous breast findings, radiation

breastfeeding DECREASES the risk for BC

Risk Factors...

- Prolonged **estrogen** exposure
  - early menarche, late menopause, birth control pills
- **Late or no** pregnancy lactation is protective
- High risk **findings** in previous breast biopsy
- **Radiation,** esp. as teenager or young adult
- Breast feeding is **protective**

DCIS: precursor to invasive carcinoma; can be very widespread, microcacifications

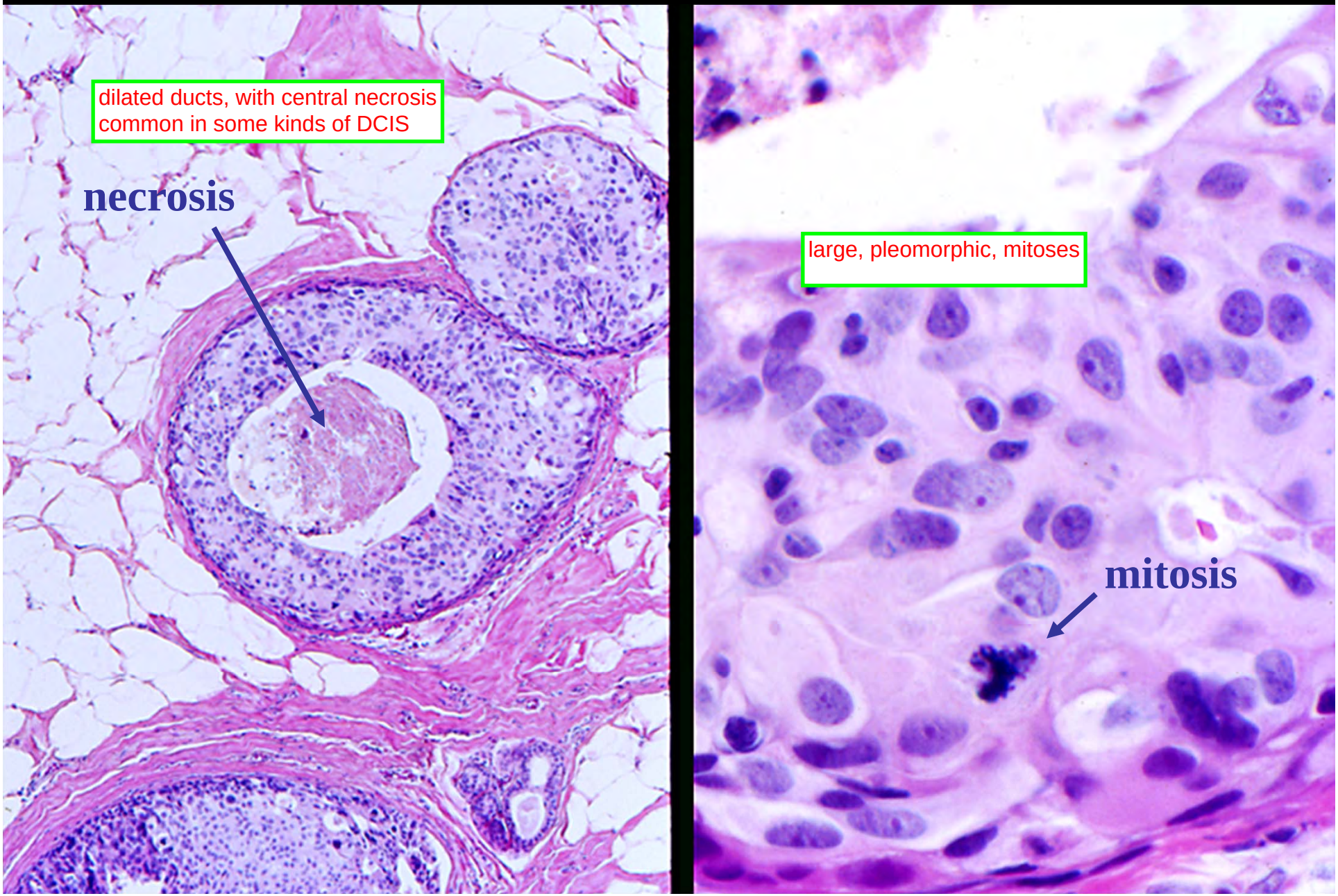
Pre-invasive Malignancy

- Ductal Carcinoma in Situ (DCIS)
  - Synonym: Intraductal Carcinoma
  - Direct precursor to invasive carcinoma.
  - Malignant cells proliferating within duct, no invasion through basement membrane (no metastatic potential)
  - Spread within duct system; can involve very large area
  - Microcalcifiations on mammogram

duct system acts like HIGHWAY system

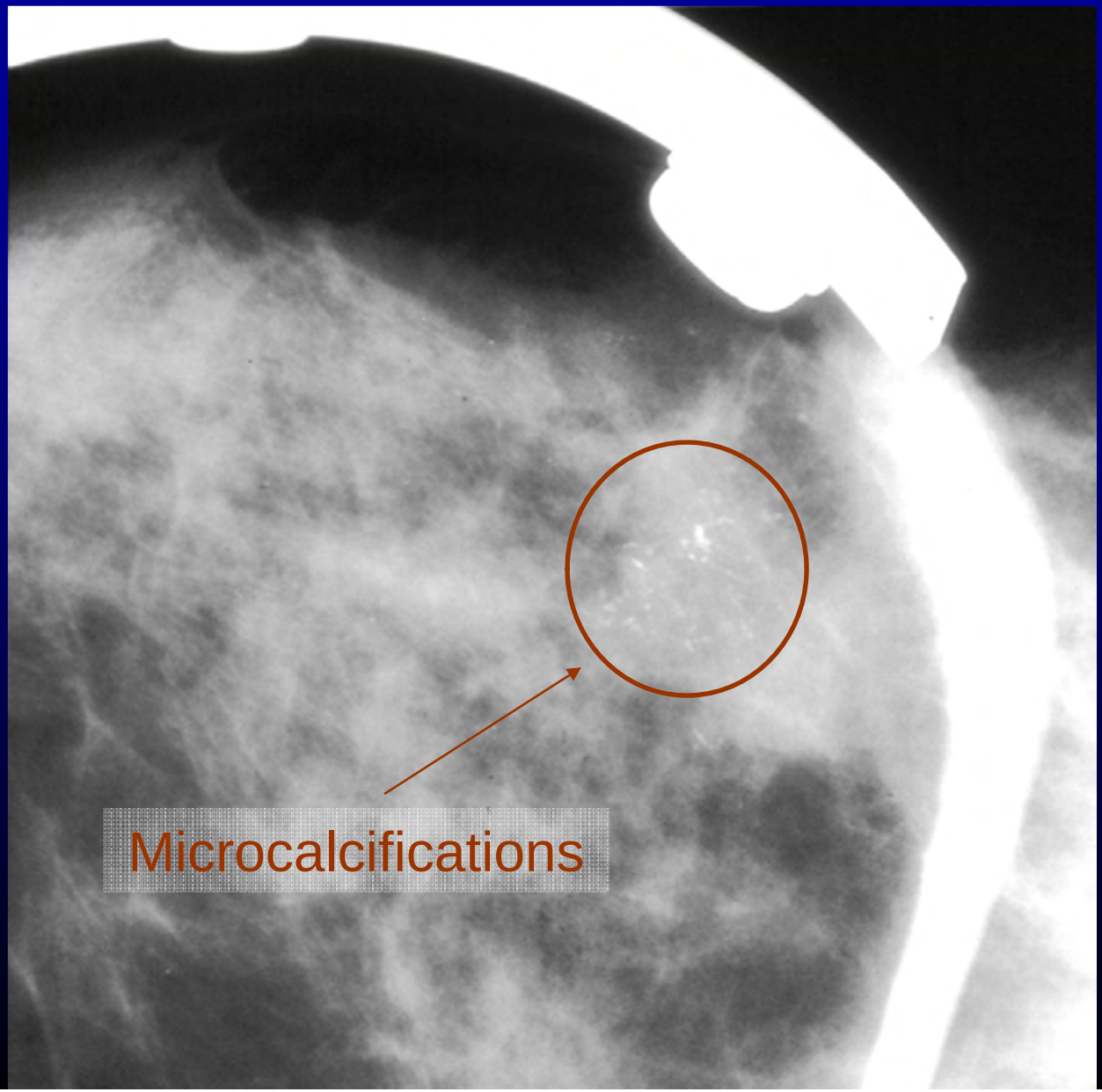
typically spot these by MCs on mammogram, not by mass lesion

Ductal Carcinoma In Situ



microcalcifications

Mammogram, DCIS



LCIS: likely NOT a direct precursor but rather a marker of risk; pts have increased risk of BILATERAL invasive cancer>>thus, it is treated differently

Pre-invasive Malignancy…

- **Lobular** Carcinoma in Situ (LCIS)
  - Proliferation of **small** bland cells within lobule

    small and uniform, grows in lobule as opposed to duct
  - Probably not direct precursor
    - patients have high risk of developing invasive cancer (10x), but risk is **bilateral,** not at site of LCIS
    - **Not really carcinoma in situ --just marker of risk**
  - **Treated differently** than DCIS

do not treat lobular carcinoma in situ as direct precursor lesion as you would DCIS (which you would remove)--it can occur in other breast! Treated very differently clinically

Two big categories

DUCTAL and LOBULAR`

Invasive Neoplasms

Two types of invasive Adenocarcinoma: ductal and lobular>>ductal is divided into not special and special

Invasive Adenocarcinoma
Classification

- Invasive **Ductal** adenocarcinoma
  - No special type (**NST,** NOS)
  - **Special** subtypes -- better prognosis
    - Medullary
    - Mucinous
    - Tubular

unique clincal presentation or behavior

- Invasive **Lobular** adenocarcinoma

IDA: most common but poorest prognosis; grows into surrounding tissue, inciting desmoplastic response>>hard, chalk-like

Invasive Ductal Adenocarcinoma

- **Most common,** 70% of breast cancers
- Incites prominent fibrous reaction (**"desmoplasia")** -- accounts for clinical presentation
  - **Rock hard, "scirrhous" or chalk-like,** spiculated mass
  - **Grows into** surrounding tissue--skin dimpling, nipple retraction
- **Poorest prognosis**

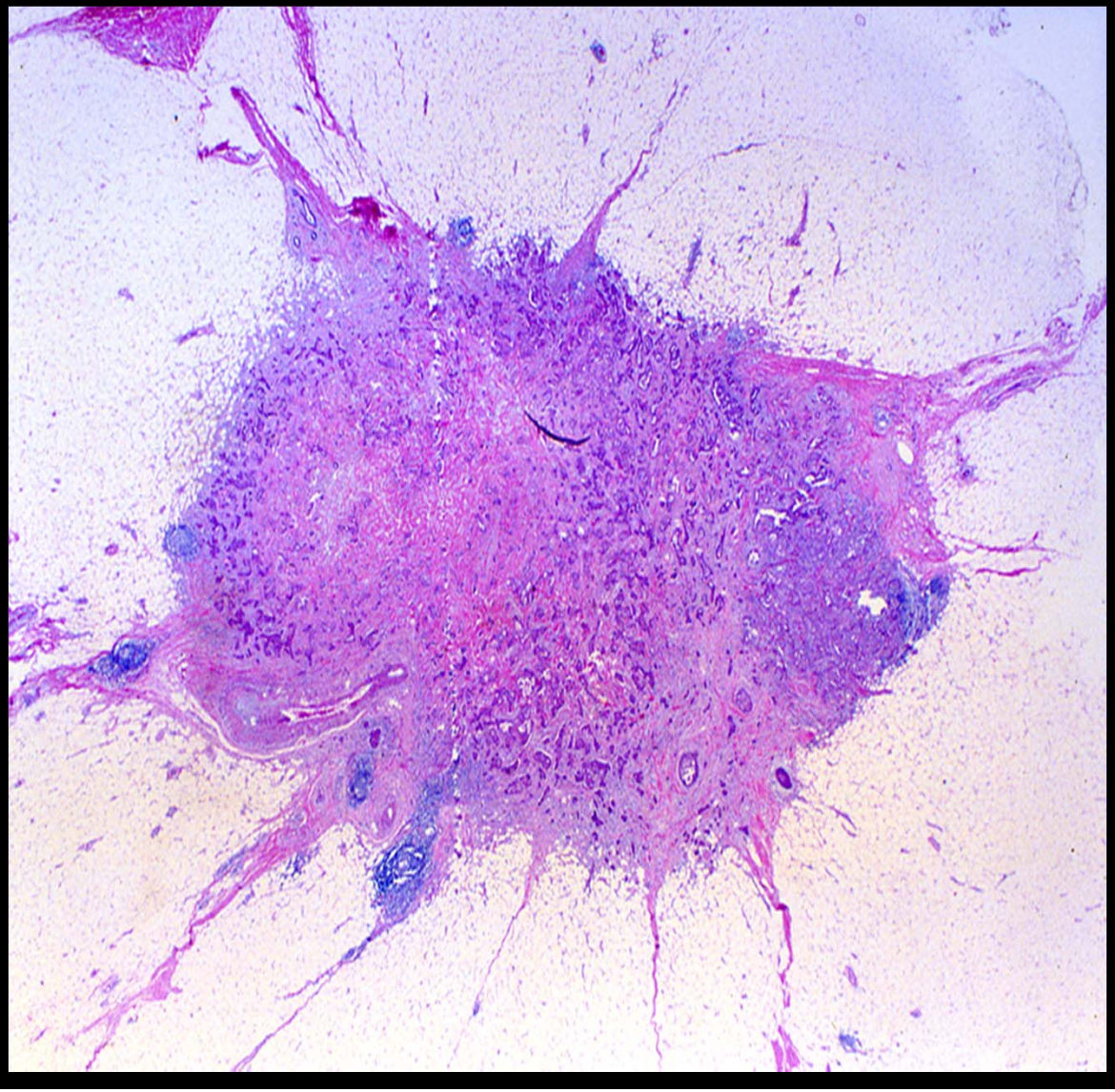
this is the typical pattern we think of for breast cancer

IDA-spiculated mass

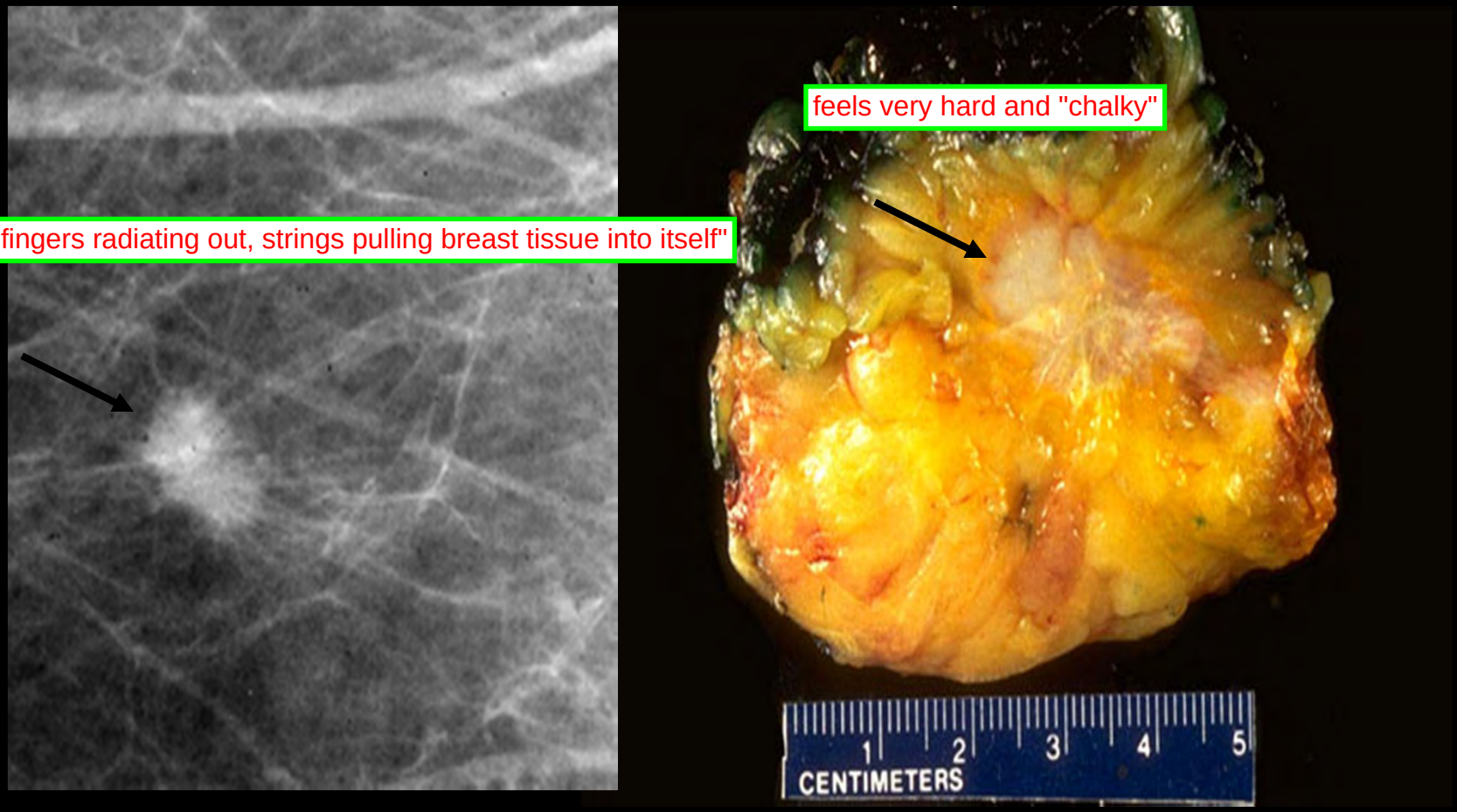
spreads out and pulls surrounding breast tissue into the lesion

Invasive Ductal Adenocarcinoma

Spiculated Mass



Invasive ductal adenocarcinoma



Mammogram

always think of these characteristics when describing cancer histologically

Invasive Ductal Adenocarcinoma

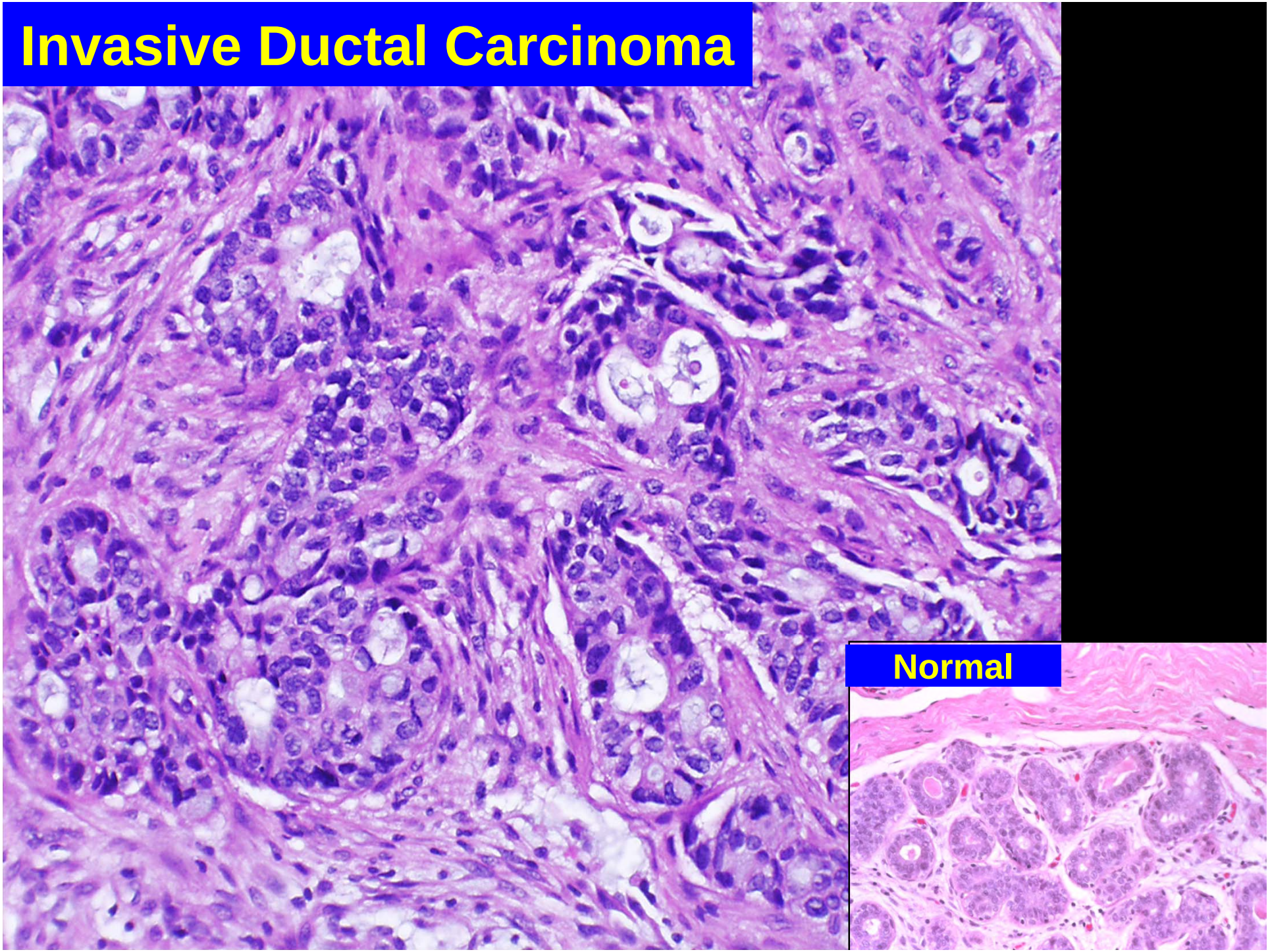
- **Irregular and complex** duct or gland-like structures
- **Malignant** epithelial cells
  - nuclear enlargement, pleomorphism
  - prominent nucleoli
  - frequent mitoses
  - no myoepithelial cell layer

also for prostate

irregular branching glands going thru surrounding stroma

"adeno"carcinoma

Invasive Ductal Carcinoma



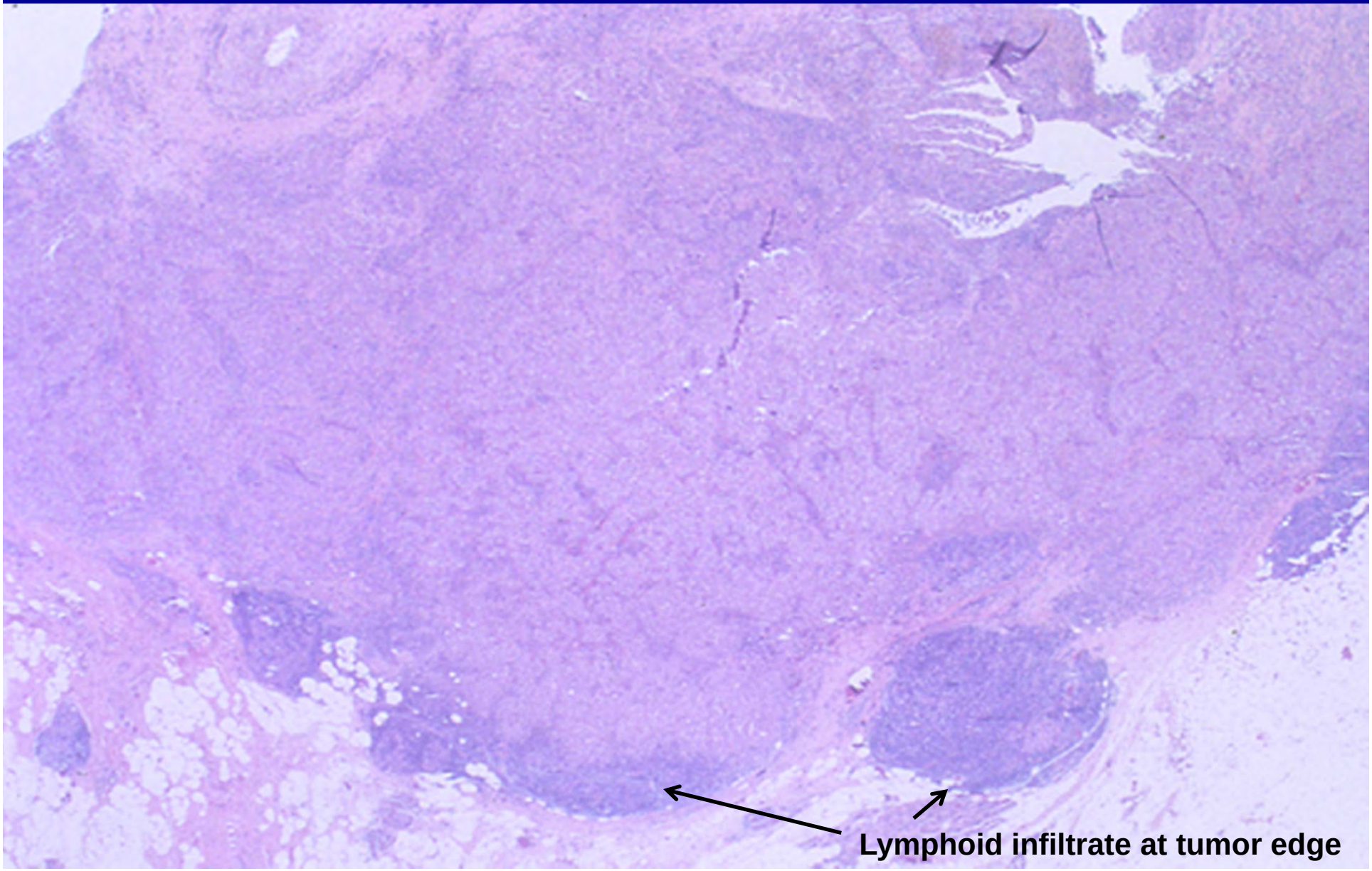
Medullary: soft and well-circumscribed; good prognosis but looks bad histologically

Special Types...

- **Medullary carcinoma** special 1/3
  - **Well circumscribed, soft**
  - **Prominent lymphoid infiltrate**
  - **Paradoxically, despite relatively good prognosis, most anaplastic tumor cells of any type.**
    - **No ducts or glands**
    - **High grade nuclei**
  - **Rare, less than 1% of breast cancers**

note that it is well-circumscribed

Medullary Carcinoma



Mucinous: well-circumscribed, soft--can fool clincally--full of mucin with tumor islands floating within

Special Types...

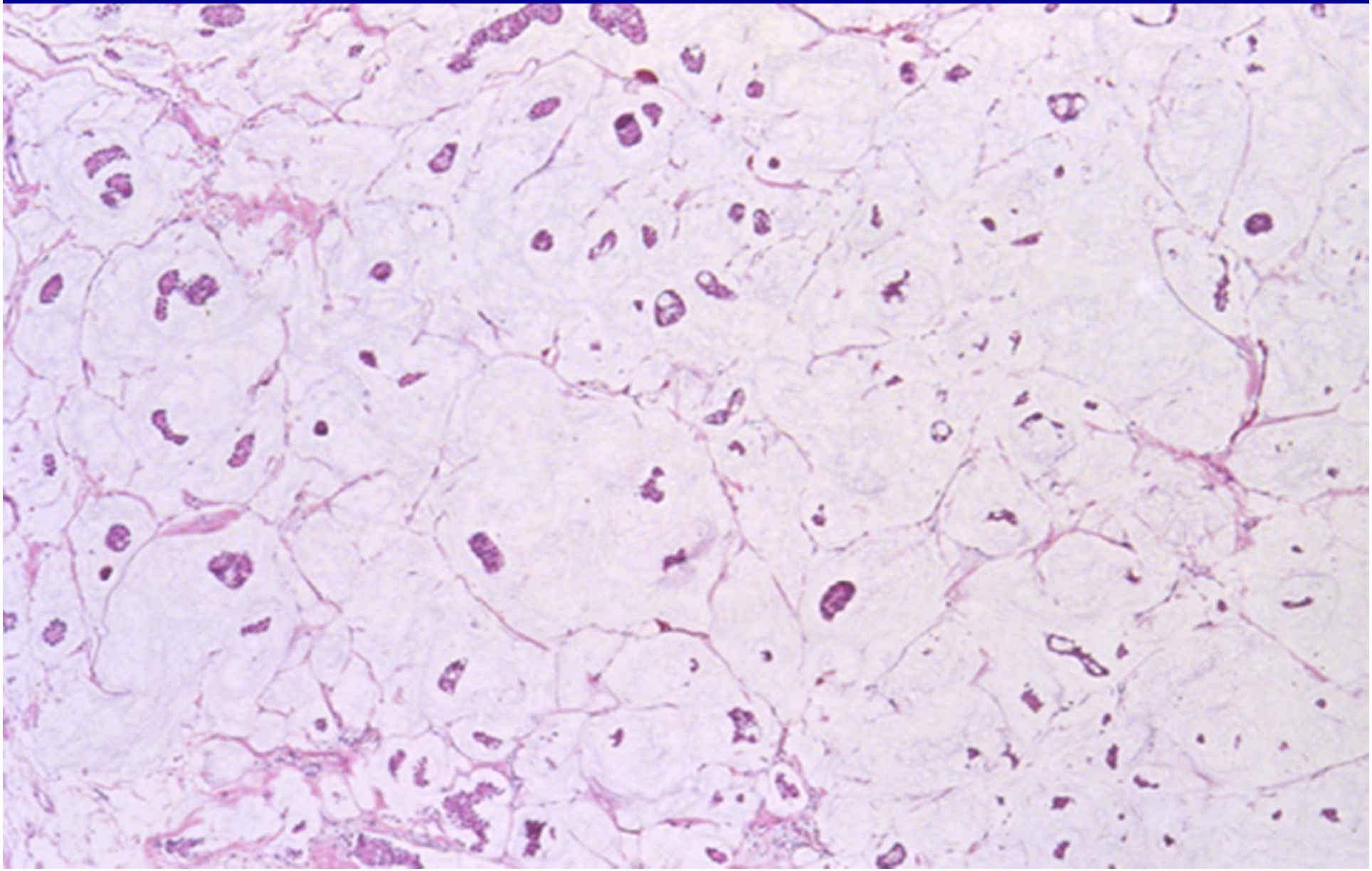
- **Mucinous Carcinoma**
  - Synonym: Colloid carcinoma
  - Well circumscribed, mucinous consistency
  - "Islands of tumor floating in a sea of mucin"
  - Approximately 1-5% of breast cancers

decently common

islands of tumor (blue) in mucin (white)

nice soft, mushy, circumscribed lump on exam

Mucinous Carcinoma



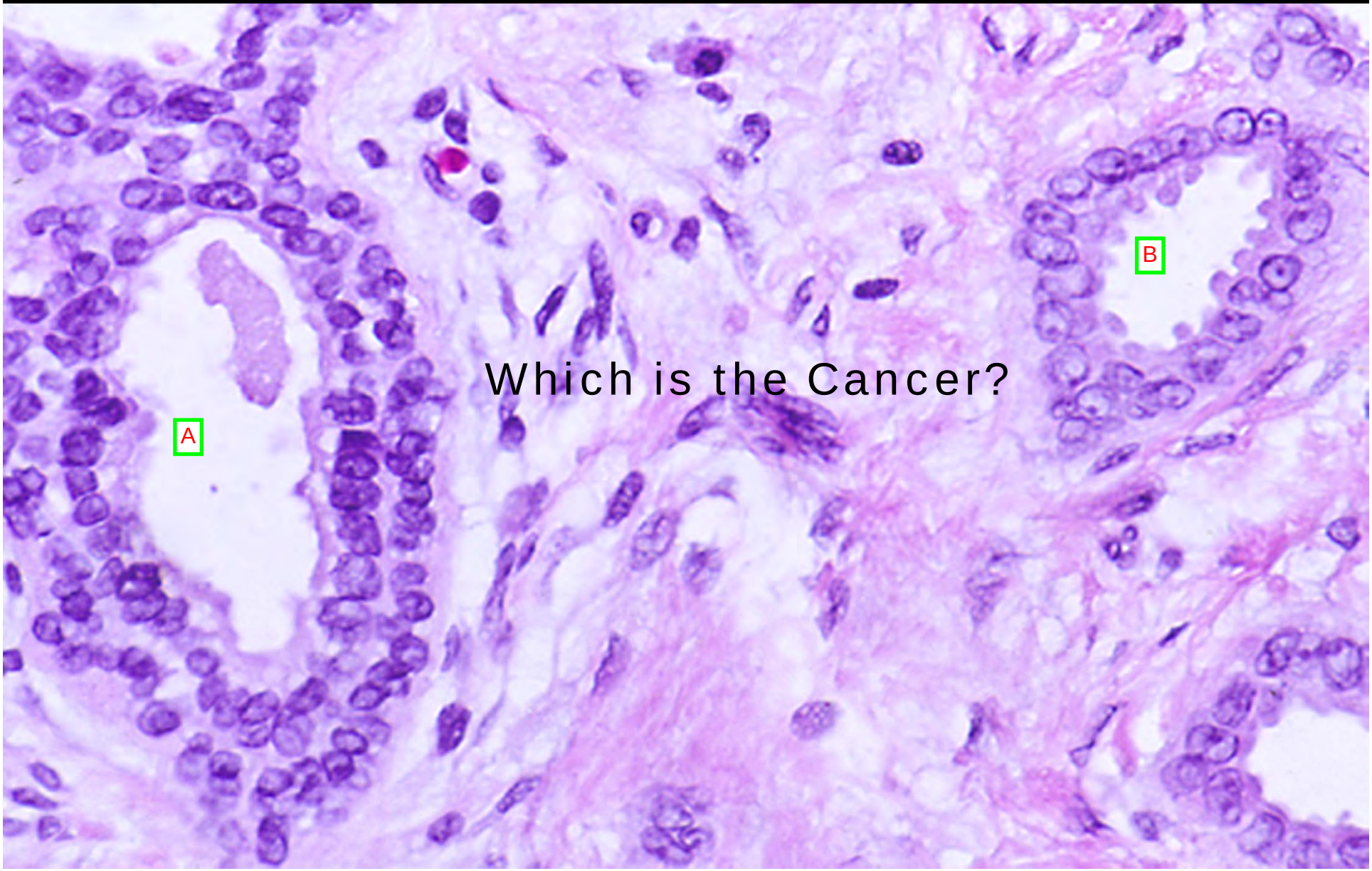
Tubular: extremely well-differentiated ductal cells; can be confused with benign lesion; great prognosis with excision

Special Types…

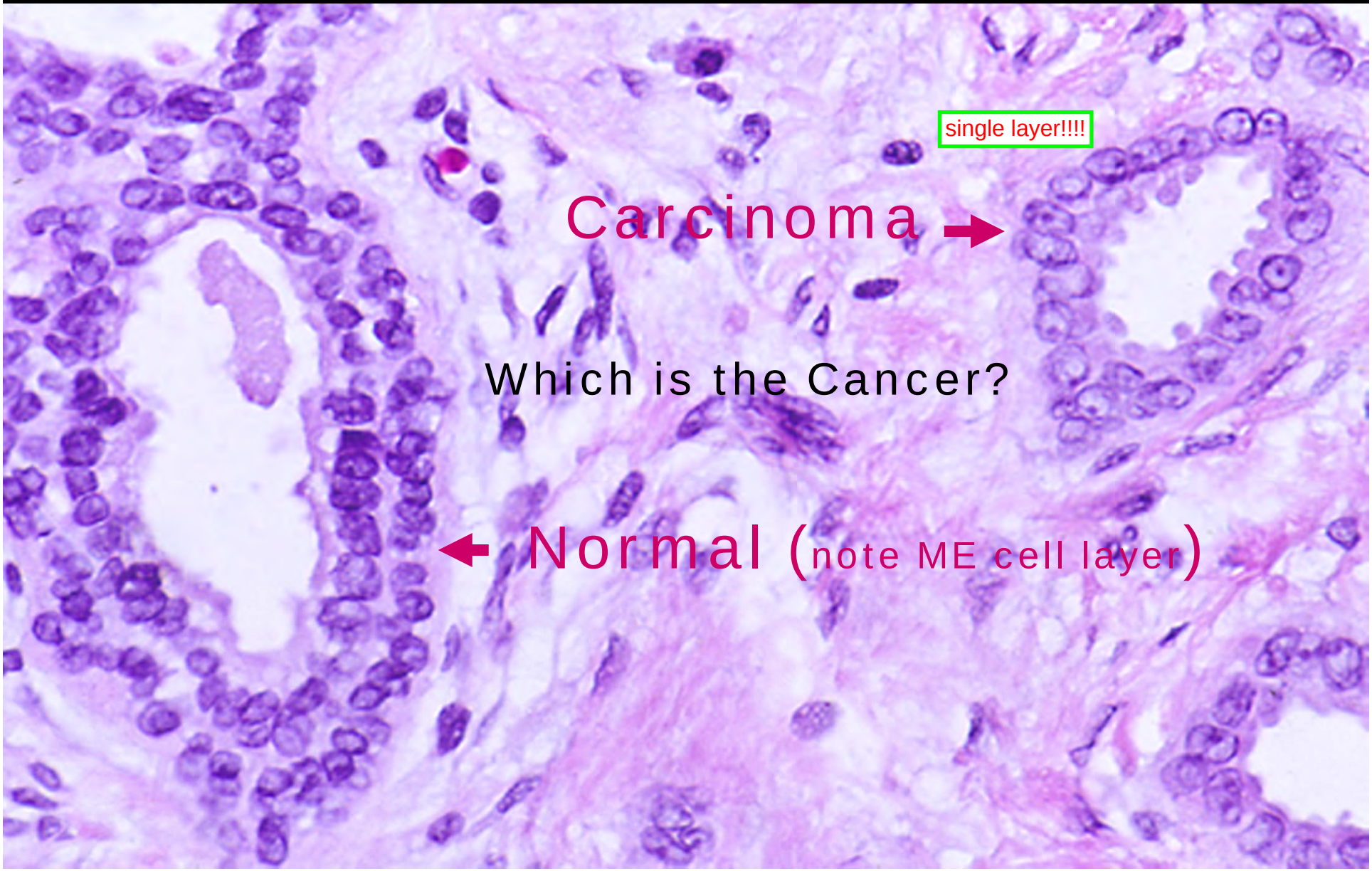
- **Tubular Carcinoma**
  - **Extremely well differentiated ductal carcinoma**
  - **Composed entirely of simple tubules lined by single layer of cells**
  - **Can be confused with benign lesions (radial scar)**
    - **No myoepithelial cell layer**
  - **Extremely good prognosis; no deaths reported when <1cm**
  - **5% of breast cancers**

can be treated less aggressively; excision, and patients survive ~100%

Tubular Carcinoma



Tubular Carcinoma

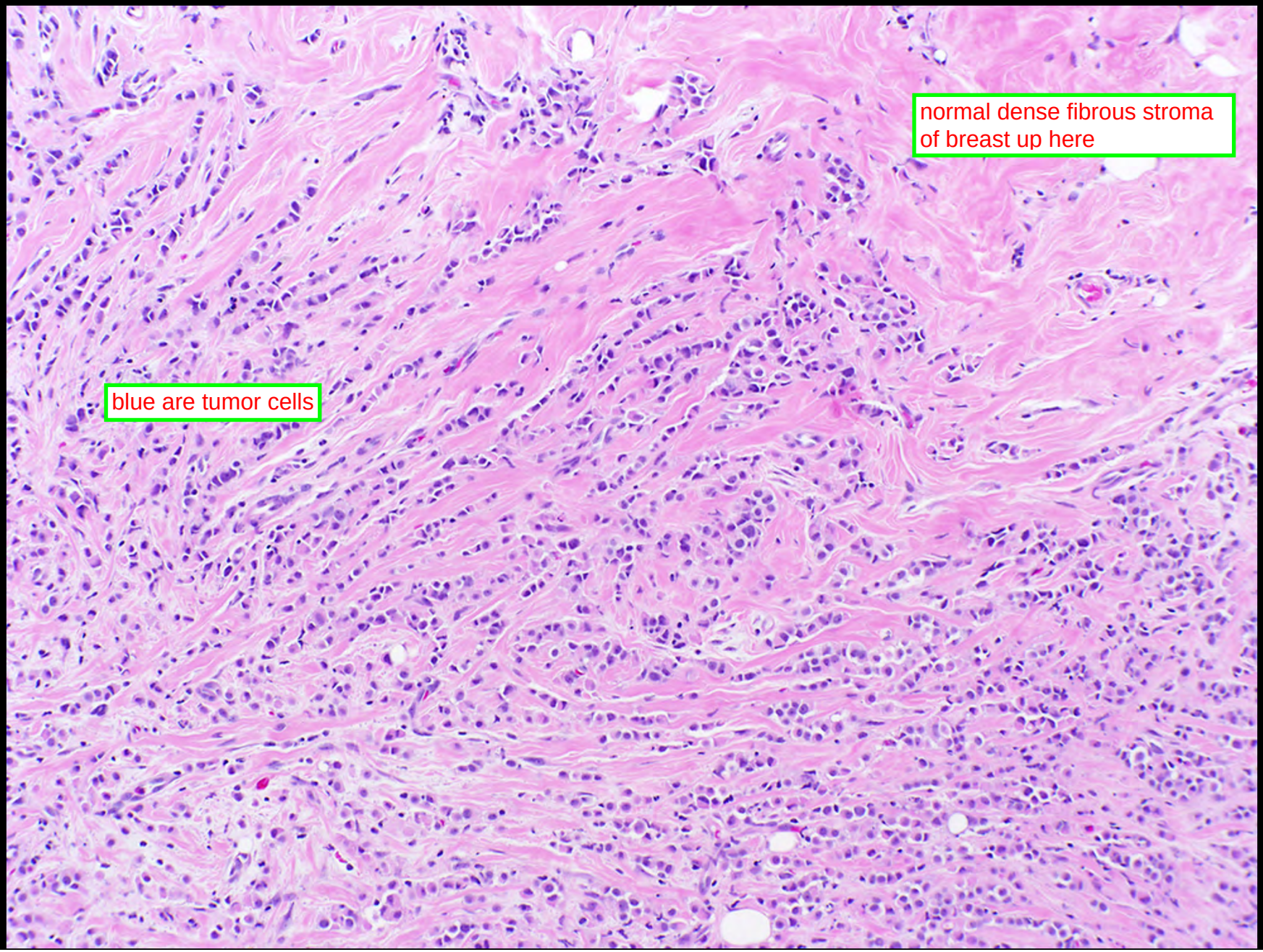


ILC: originates in TDLU, often mixed with ductal carcinoma; maybe no mass lesion detectable

Invasive Lobular Carcinoma

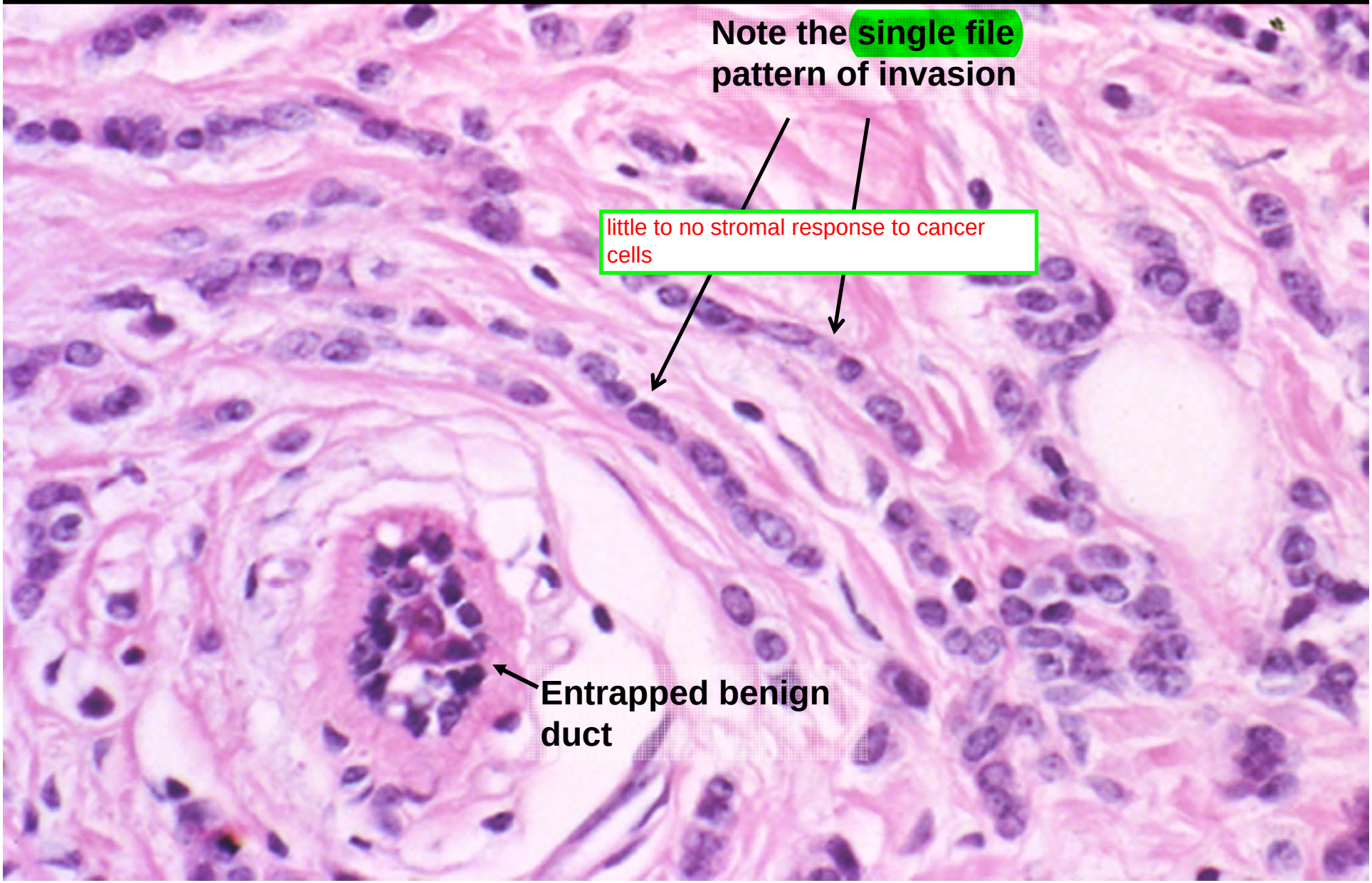
- 5-10% of breast cancers
- Originates in TDLU, same cell type as ductal
  - often mixed with ductal carcinoma on a spectrum together
- Does not incite fibrous response; may be difficult to detect maybe no mass lesion
  - Single file pattern of spread-"Indian file"
- Prognosis similar to ductal carcinoma, NST

Invasive Lobular Carcinoma



single file invasion, no stromal response

Invasive Lobular Carcinoma



BC can spread locally (skin or chest wall) or spread lymphatically (axillary nodes) or hematogenously (lung, liver, bone, brain)

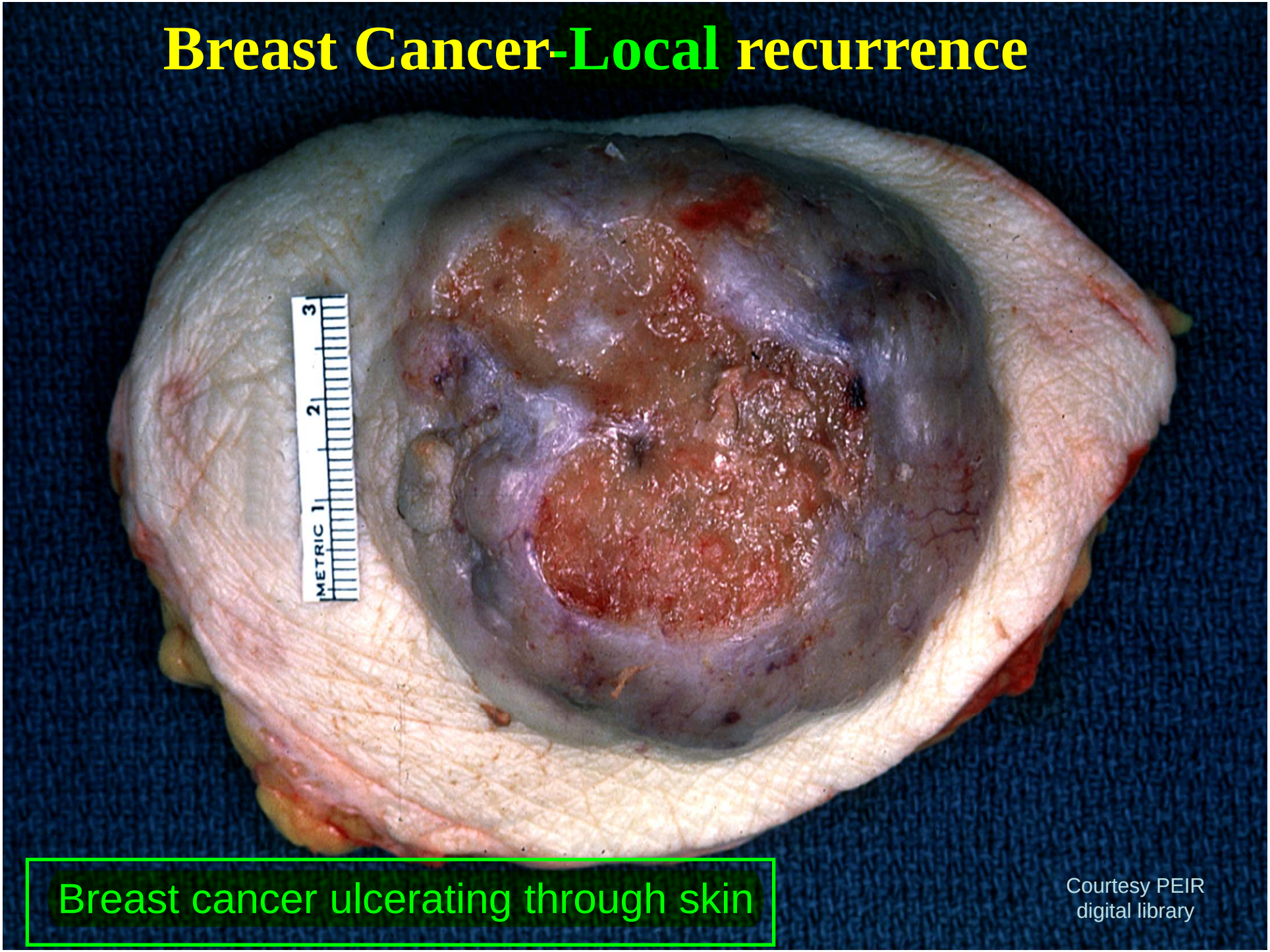
Behavior of Breast Carcinoma

- **Local** recurrence
  - Can **ulcerate through** skin, **invade** chest wall
- **Lymphatic/hematogenous** metastases
  - local metastases to **axillary nodes** (most common); internal mammary nodes, supraclavicular nodes less common
  - distant metastases to **lung, liver, bone, brain** common sites

into or out from body

local recurrence: skin

Breast Cancer-Local recurrence

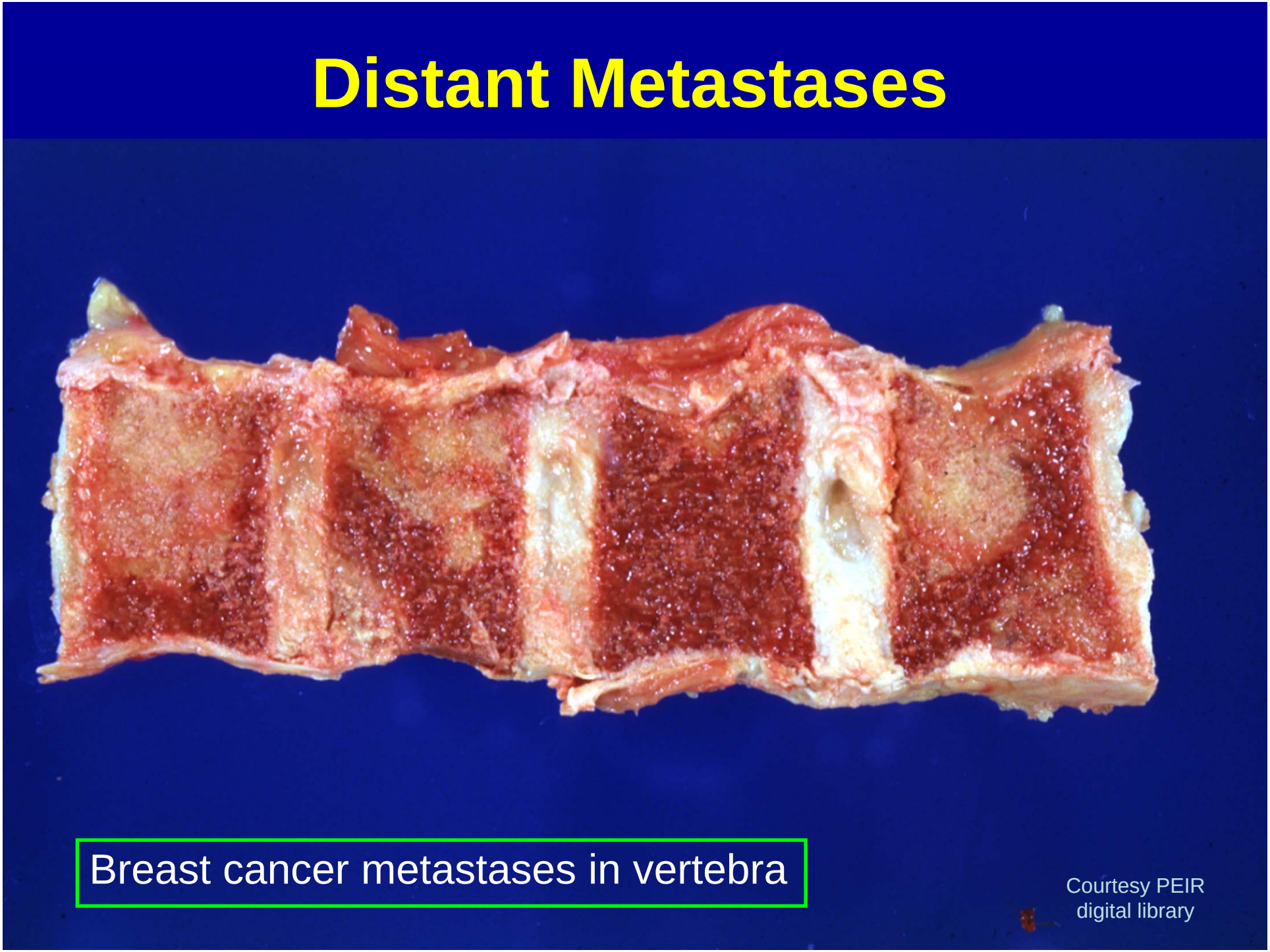


Breast cancer ulcerating through skin

Courtesy PEIR digital library

metastases to Bone

Distant Metastases



Breast cancer metastases in vertebra

Courtesy PEIR digital library

tihs bridge no longer exists!

For prognosis, we need to know stage and grade--axillary node status is CRITICAL

Key Prognostic Factors

(Tumor, Node, Metastasis)

single most important!!! Remember for your own lives in the future.

- **Stage** of disease
  - Tumor size
  - **Axillary node status** -- single most important prognostic feature, predicts distant metastases
- Tumor **grade:** well differentiated vs. poorly differentiated
- **Margins** of resection: local recurrence likely if tumor in margins

the presence of ER or PR indicates a more differentiated tumor and thus a better prognosis; cancers lacking these have poorer prognosis

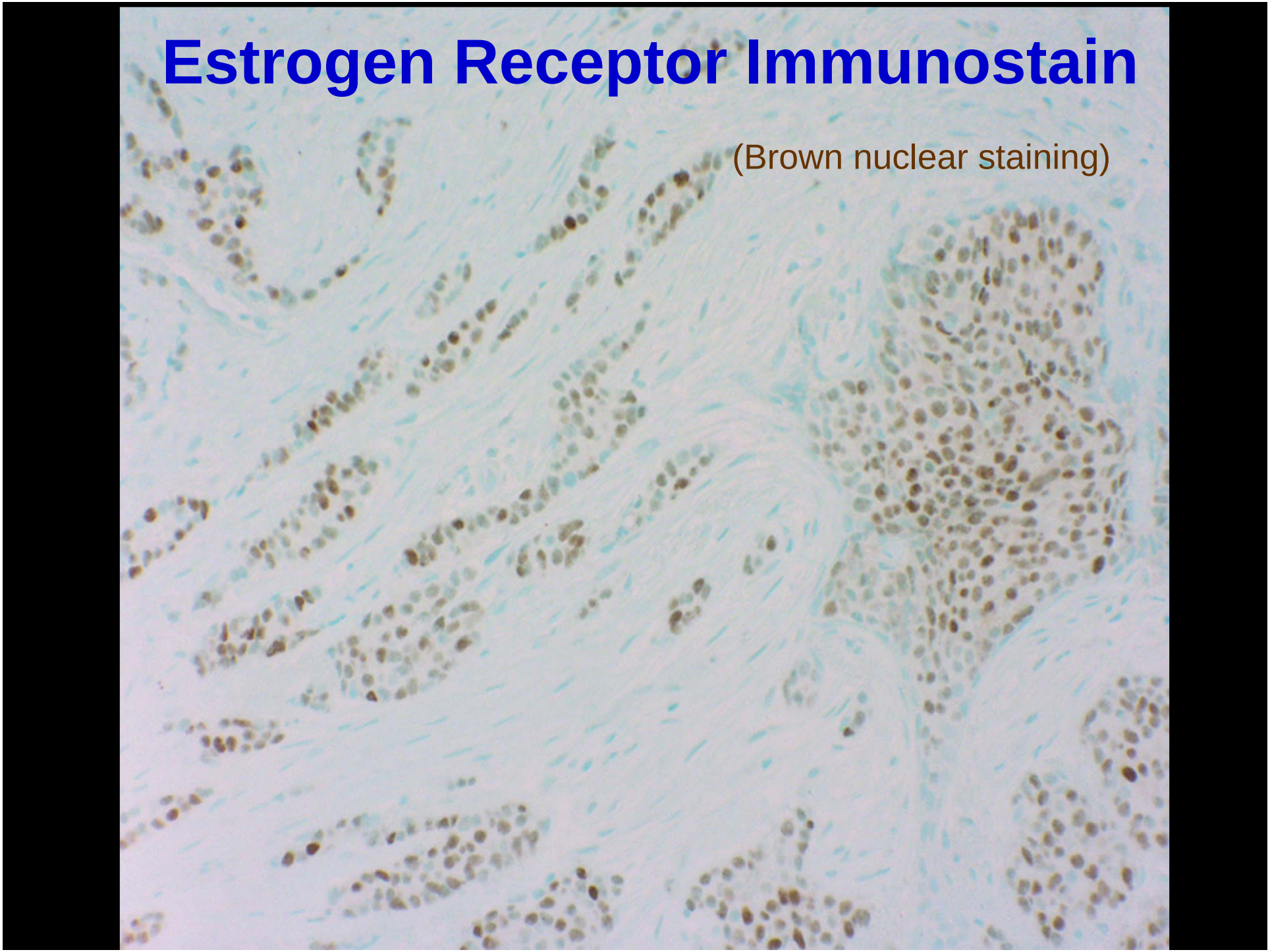
better treatment options

Estrogen/Progesterone Receptors

Important for both prognosis AND treatment

- **ER/PR negative tumors have worse prognosis**
- **ER/PR positive tumors respond to anti-estrogen agents (e.g. tamoxifen, raloxifene, aromatase inhibitors)**

Staining for ER



Her2/neu--another important marker, present in ~1/4 BCs; epidermal growth factor protein overexpression

good treatment option

Her2/neu

- Aka c-erb-B2, human epidermal growth factor receptor 2
- Gene is amplified in 25% of breast cancers, with associated protein overexpression
- Her2 amplified tumors respond to treatment with anti-Her2 antibody (Herceptin)

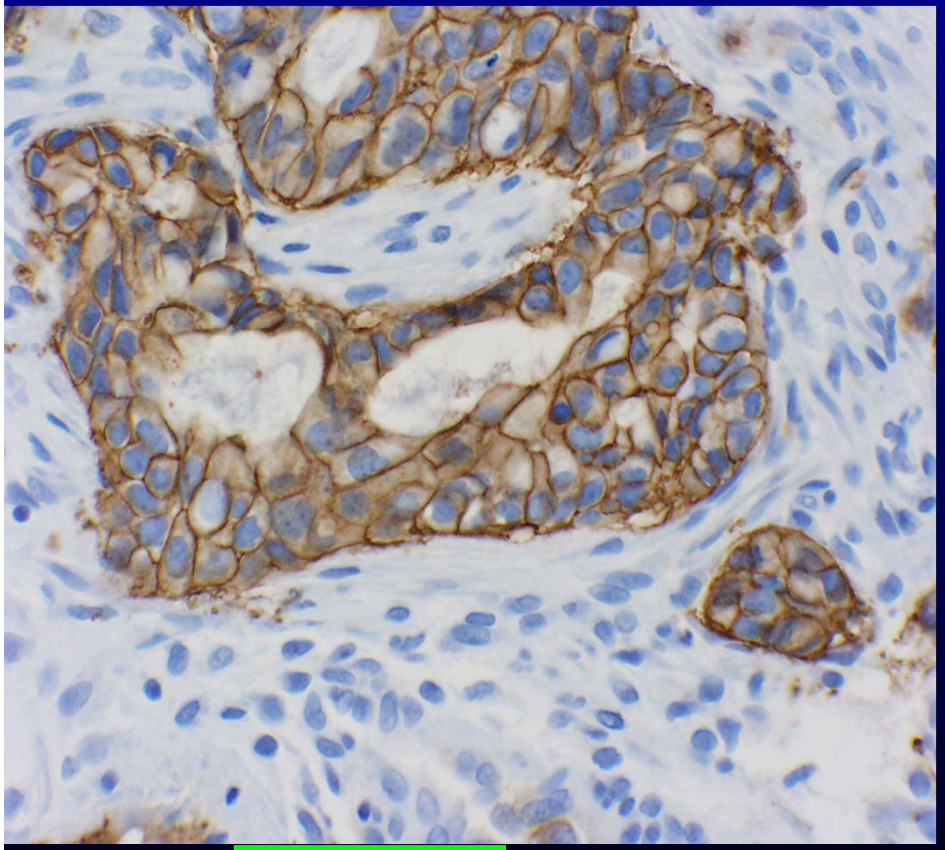
and other small molecules--good treatment options

staining--chicken wire on membrane

her2 amplification

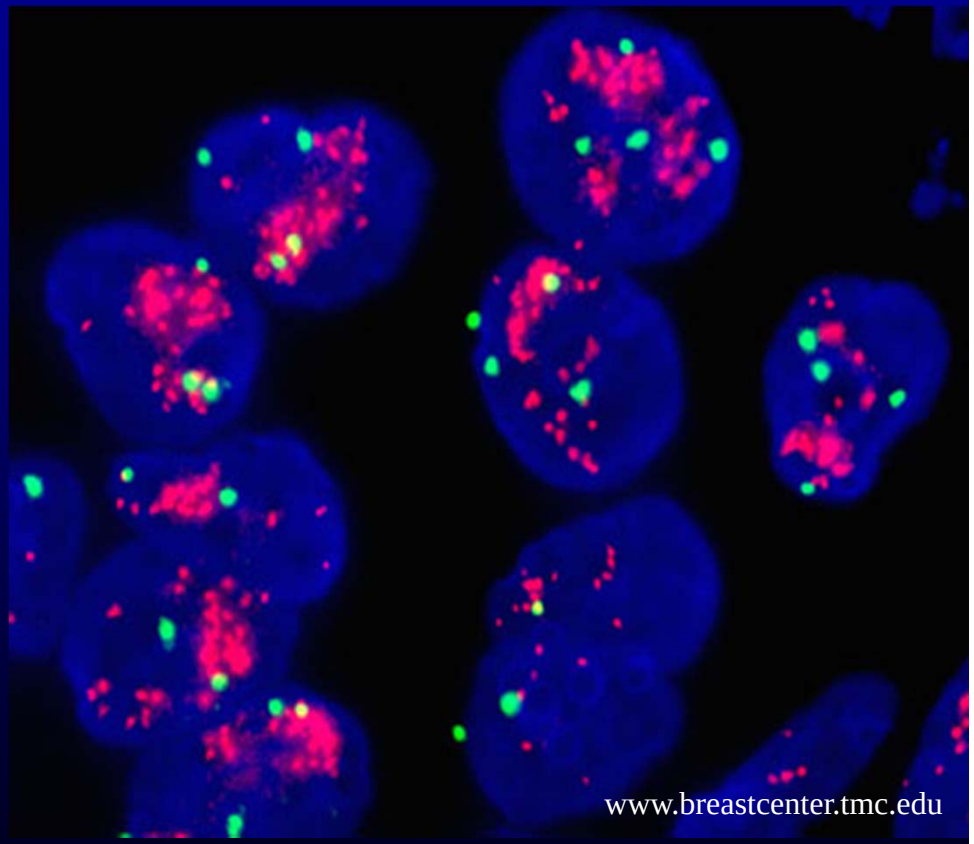
Her2 in Breast Cancer

Immunohistochemistry



Strong membrane staining

FISH- Her2 amplified



Her2 signal >> Centromere 17 signal

molecular studies are prognostic and predictive

Molecular Studies

- Oncotype Dx
- 21 gene rtPCR molecular test
- First of many likely molecular tests for breast cancer
  - **Prognostic:** Predicts 10 year disease free survival in ER positive tumors
  - **Predictive:** Likelihood of response to chemotherapy.

first generation of these molecular tests that predict survival and various responses to chemo agents

Summary

- Described the clinical presentation of common breast pathologies
- Explained what "fibrocystic change" means and described several of the most common benign breast lesions.
- Described the common types of breast cancer
- Discussed major prognostic factors in breast cancer
- Explained why testing for expression of estrogen receptor and Her2/neu is an important part of breast cancer analysis

END OF LECTURE--but there's more material that follows if you're thirsty for knowledge

Contact information:

Rex Bentley
M216A Duke South Green Zone
684-6423
Rex.Bentley@duke.edu

For more details Pathology 448C—Practical Surgical Pathology (4th year elective)


Additional slides for those who have an unquenchable thirst for knowledge

Unique Manifestations of Breast Cancer

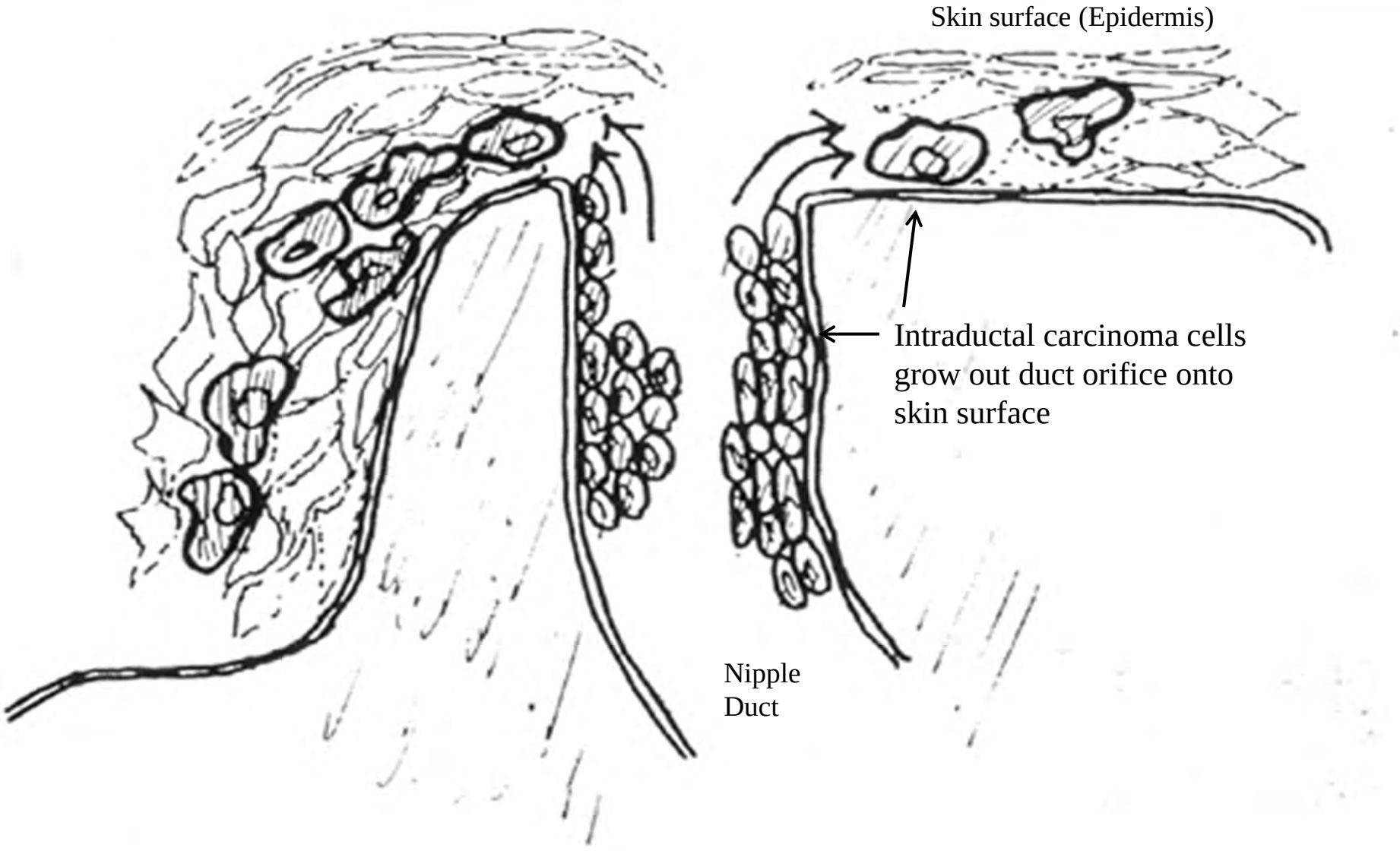
Or two things to know about that will help you avoid unpleasant encounters with malpractice lawyers!

Paget's Disease

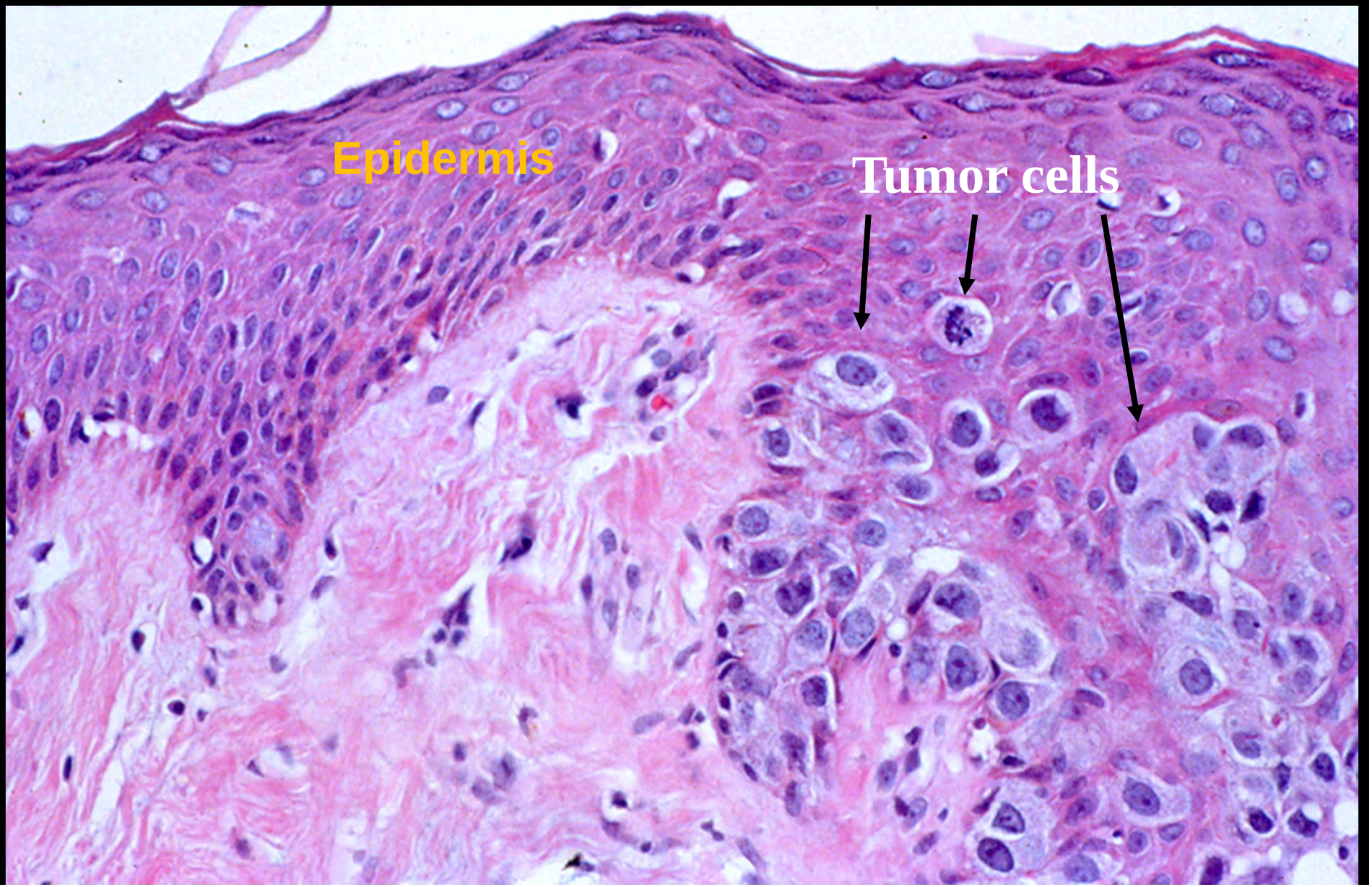
- Eczematous, scaly, red rash around nipple
- Represents ductal carcinoma in-situ invading epidermis of nipple
- Frequently not recognized clinically—diagnosis of breast cancer delayed

Paget's Disease

Diagram of Paget's



Paget's Disease of the Nipple



Remember…

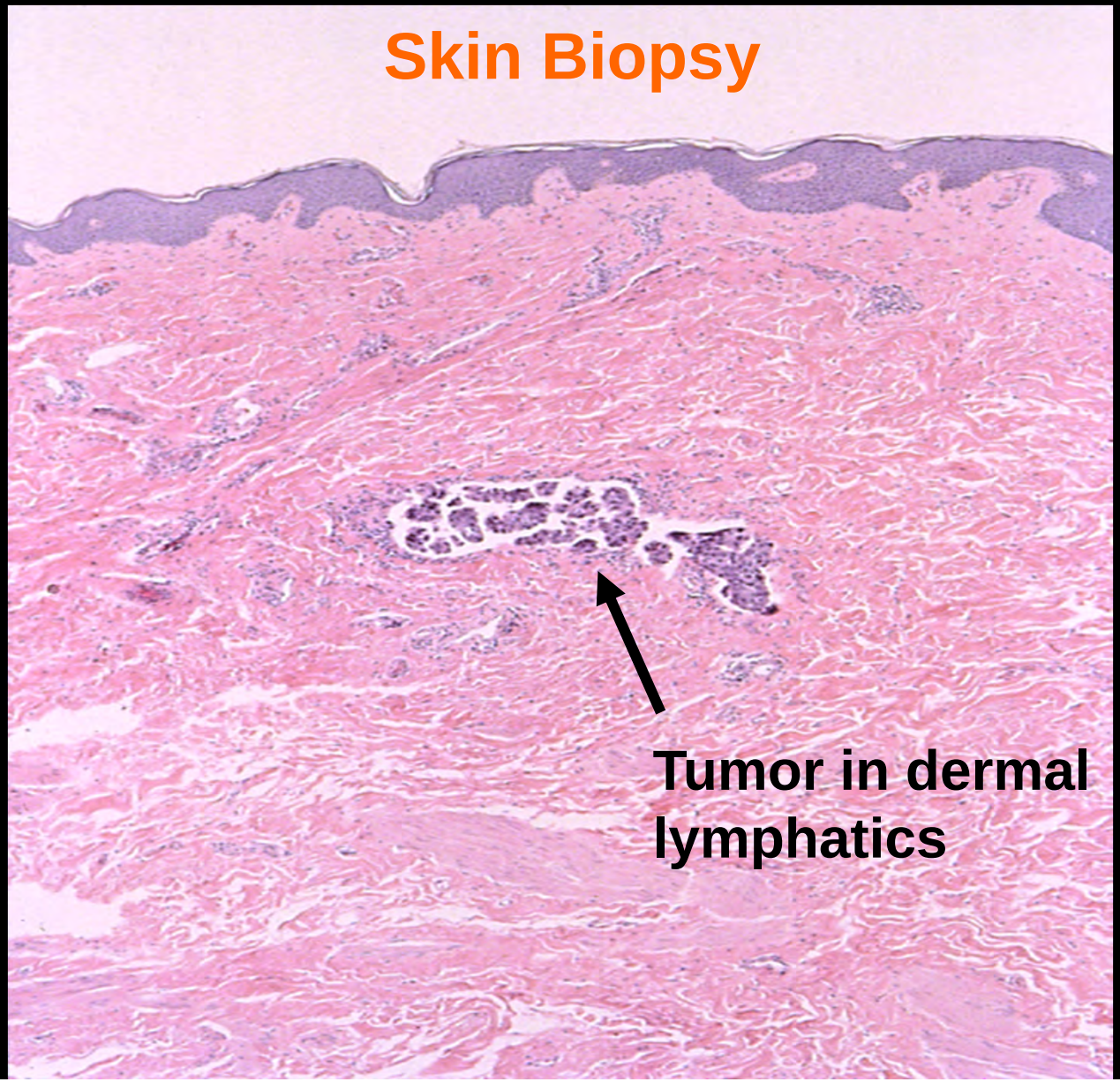
1. Rashes around the nipple can represent breast cancer.
2. When your patient discovers that you've been treating her breast cancer with topical steroids, she will not be pleased!

Inflammatory Carcinoma

- Diffusely red, swollen, hot breast
- Associated with very poor prognosis (considered T4 disease)
- Skin biopsies show plugging of dermal lymphatics by tumor cells
- Closely mimics infection (cellulitis) but does not respond to antibiotics; often not recognized clinically—diagnosis delayed

Inflammatory Carcinoma

Inflammatory Carcinoma



Remember…

1. “Cellulitis” in the breast can represent breast cancer
2. Six weeks of antibiotics will not cure breast cancer!

Male Breast

- Gynecomastia
  - Enlargement of male breast
  - Relative estrogen excess: puberty, old age, cirrhosis, estrogen secreting tumors.
- Carcinoma -- rare
  - <1% of breast cancer occurs in men
  - Strong association with BRCA2
- Other pathology rare

Gynecomastia


The End (Really!)