

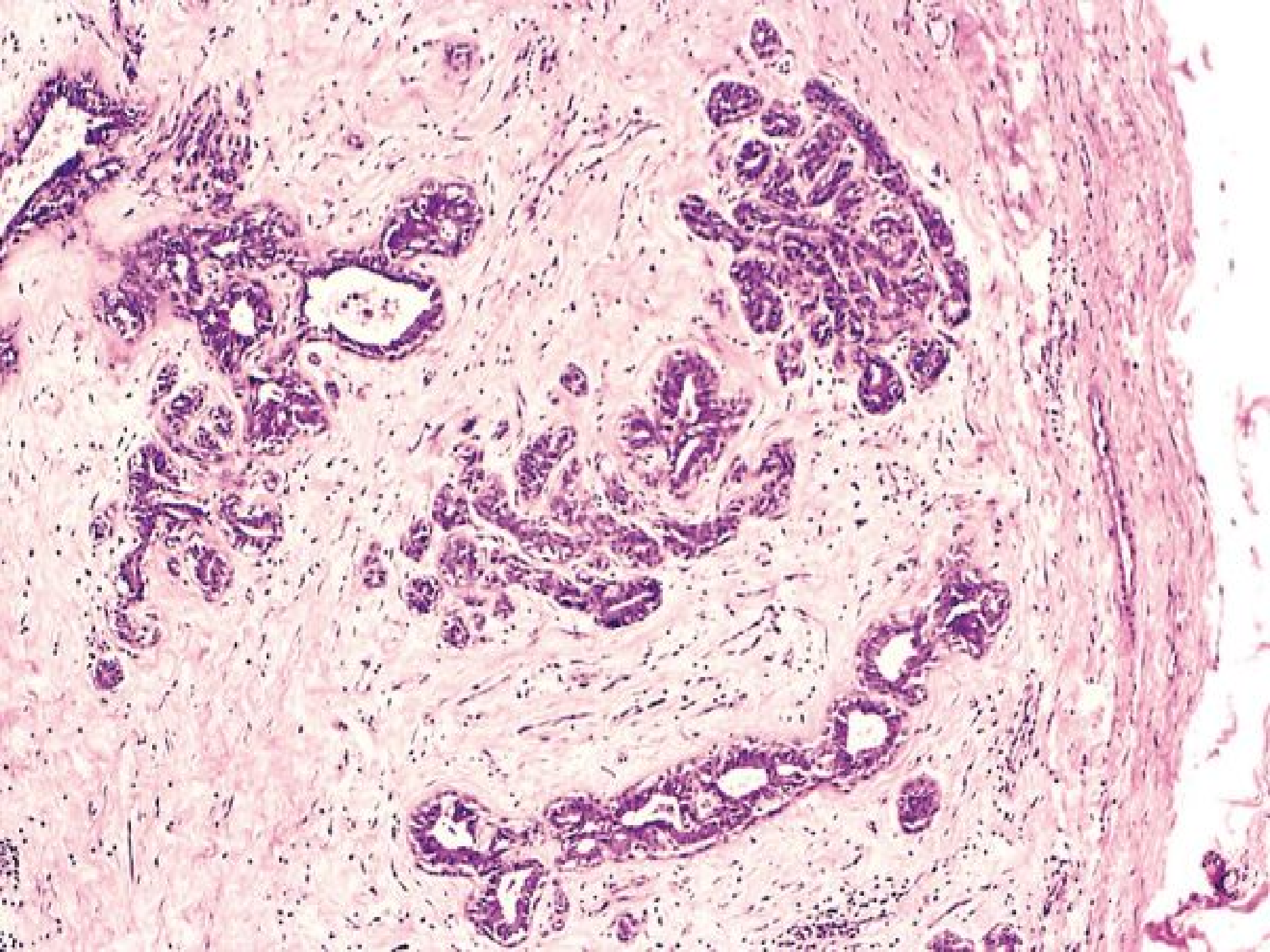
# LOCAL INVASION

- ⦿ Benign Tumors grow as expansile masses that remain localized and do not invade or metastasize
- ⦿ A well defined cleavage plane exists around most benign tumors but Hemangioma is an exception
- ⦿ Malignant tumors grow by progressive infiltration, invasion & destruction of surrounding tissue, a well defined cleavage plane is lacking so are invasive



- Next to the development of **metastasis**, **invasiveness** is the most reliable feature that differentiates malignant from benign tumors





**Cut section of an invasive ductal carcinoma of the breast.**



# METASTASIS

- ① Development of secondary implant discontinuous with primary tumor
- ① Several mechanisms: Tumor cells first must become discohesive & detach from primary site then attach elsewhere

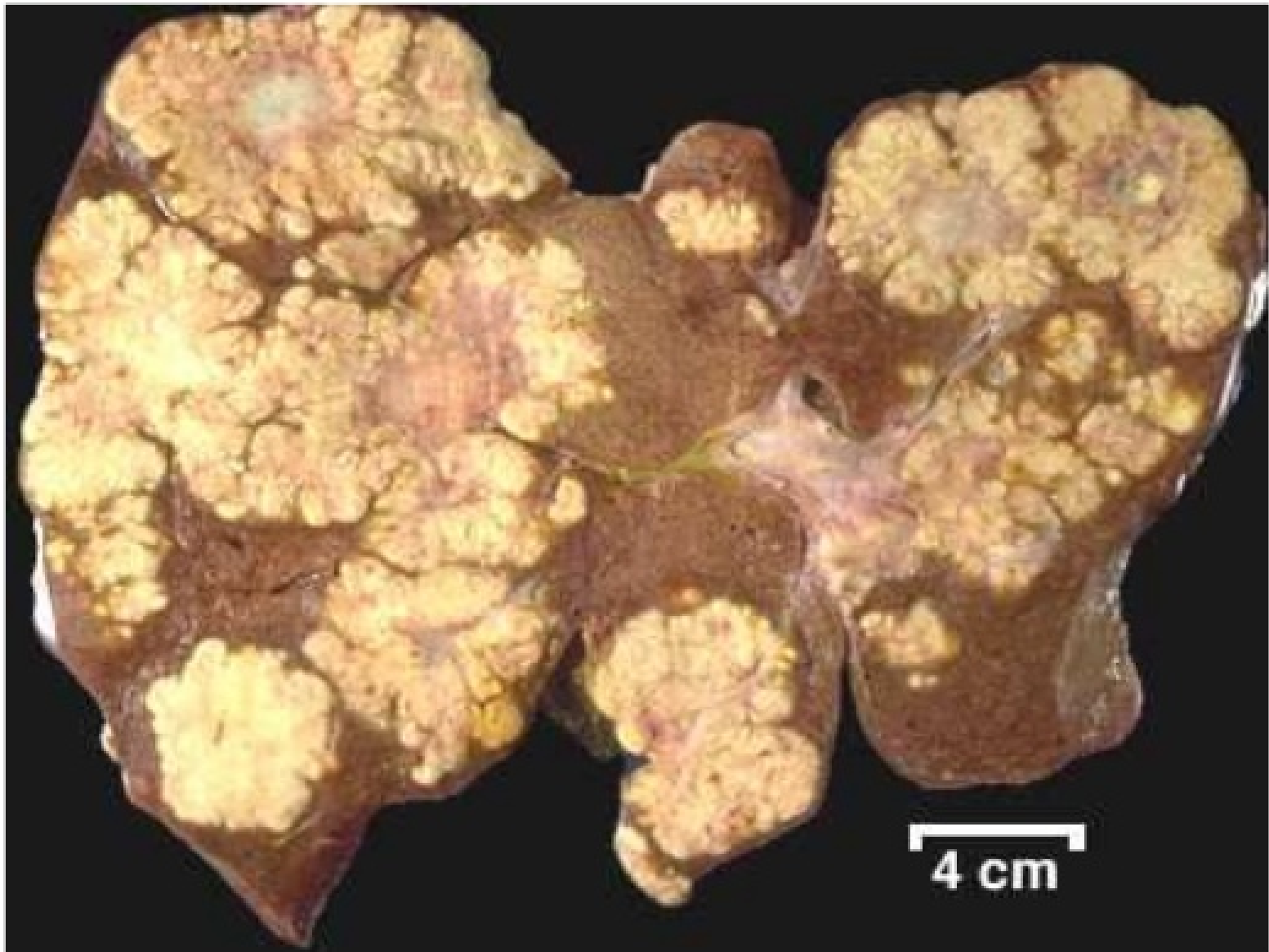
# Metastasis

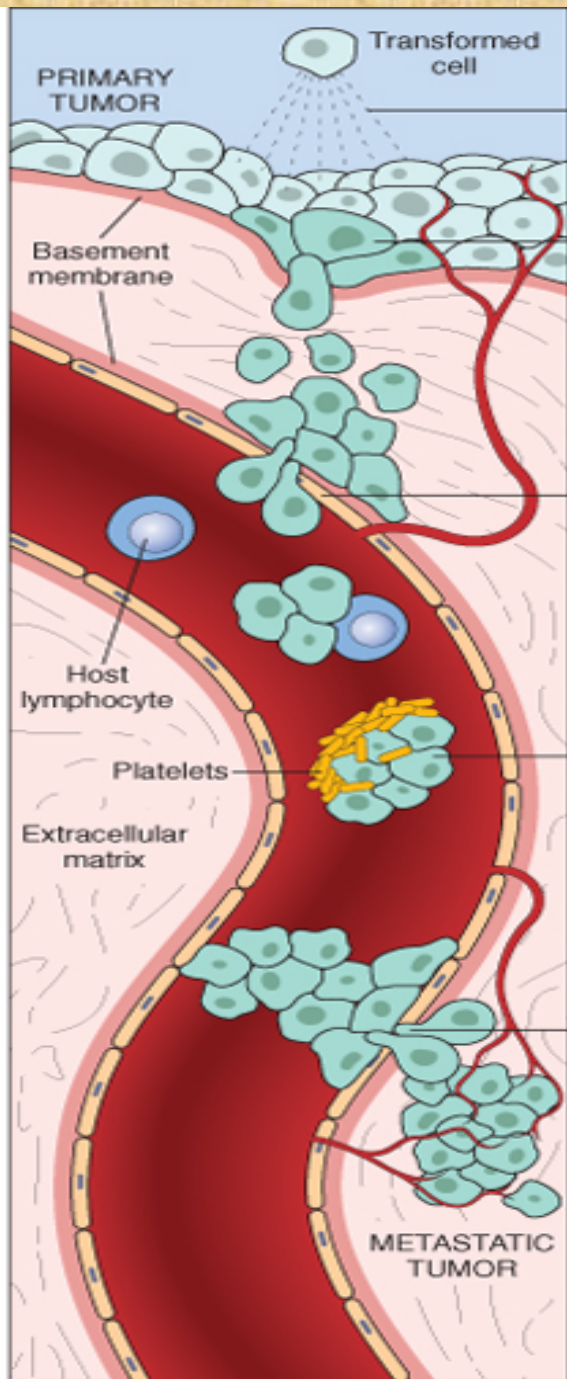
- ◎ Tumor cells tend to have many more **laminin** receptors than do normal cells, allowing them to attach more readily to basement membranes at distant sites **Exceptions:** BCC, Primary CNS tumors



# Metastasis: Lymphatic, Hematogenous, Direct.

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Clonal expansion,  
growth, diversification,  
angiogenesis

Metastatic subclone

Adhesion to and  
invasion of basement  
membrane

Passage through  
extracellular matrix

Intravasation

Interaction with host  
lymphoid cells

Tumor cell  
embolus

Adhesion to  
basement  
membrane

Extravasation

Metastatic  
deposit

Angiogenesis

Growth

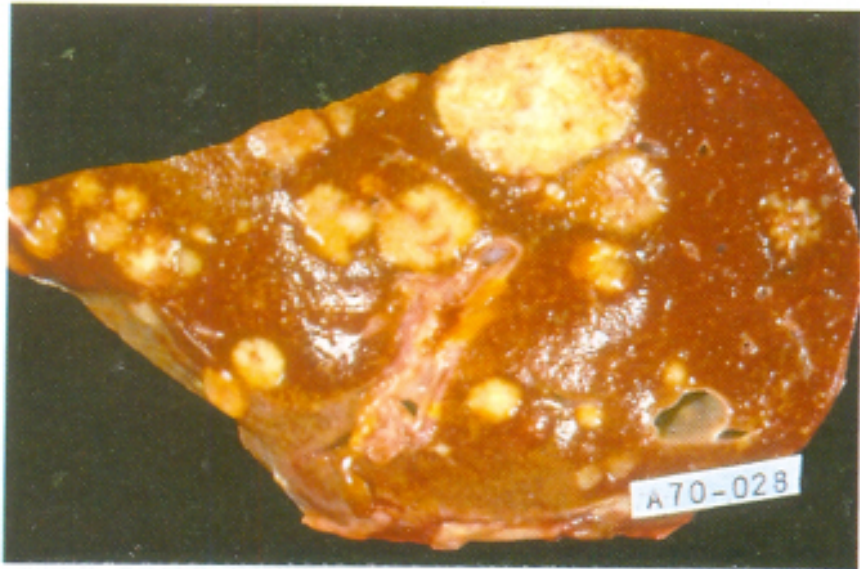
clonal growth

metastatic subclone

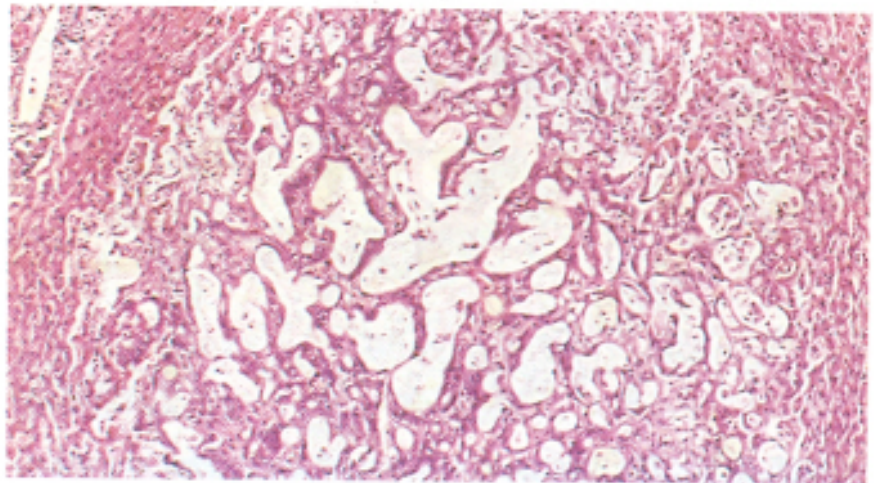
intravasation

tumor cell embolus

extravasation



**FIGURE 7-20** A liver studded with metastatic cancer.



**FIGURE 7-21** Microscopic view of liver metastasis. A pancreatic adenocarcinoma has formed a metastatic nodule in the liver. (Courtesy of Dr. Trace Worrell, University of Texas Southwestern Medical School, Dallas, TX)





*The mind is everything.  
What you think you become!*

-- Buddha

## PATHWAYS OF SPREAD

- ① Seeding of body cavities
- ① Lymphatic spread
- ① Hematogenous spread

## SEEDING OF BODY CAVITIES

- ⊙ Malignant neoplasm penetrate into natural cavity (pleural, pericardial, peritoneal, subarachnoid and joint space)
- ⊙ This mode of transmission is characteristic of cancers of ovary
- ⊙ Neoplasms of CNS e.g; medulloblastoma or ependymoma penetrate cerebral ventricles, carried by CSF to reimplant on meningeal surfaces within brain or in spinal cord.

## LYMPHATIC SPREAD

- ① Pattern of lymph node involvement follows the natural route of lymphatic drainage e.g. CA breast in upper outer quadrants involve the axillary lymph nodes while medial breast lesions involve the lymph nodes around IMA.
- ① A **sentinel** lymph node is defined as, first node in a regional lymphatic basin that receives lymph flow from primary tumor.