

Pancreatic tumors: A simple diagnostic path

Prof. Dr. Bence Sipos

Dept. of Pathology
University of Tübingen

Solid tumors

Cystic lesions

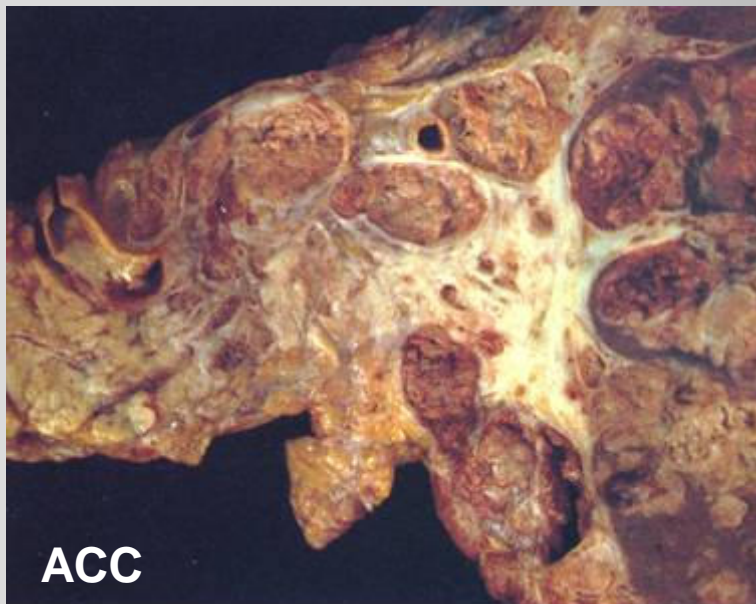
Solid Tumors

	<u>Age</u>	<u>Gender</u>	<u>Size</u>
• Endocrine Neoplasms	Any	Both	0.5-10 cm
• Solid Pseudopapillary Neoplasms	10-40	Female (>95%)	4-12 cm
• Acinar Cell Carcinomas	60-80	Both	5-20 cm

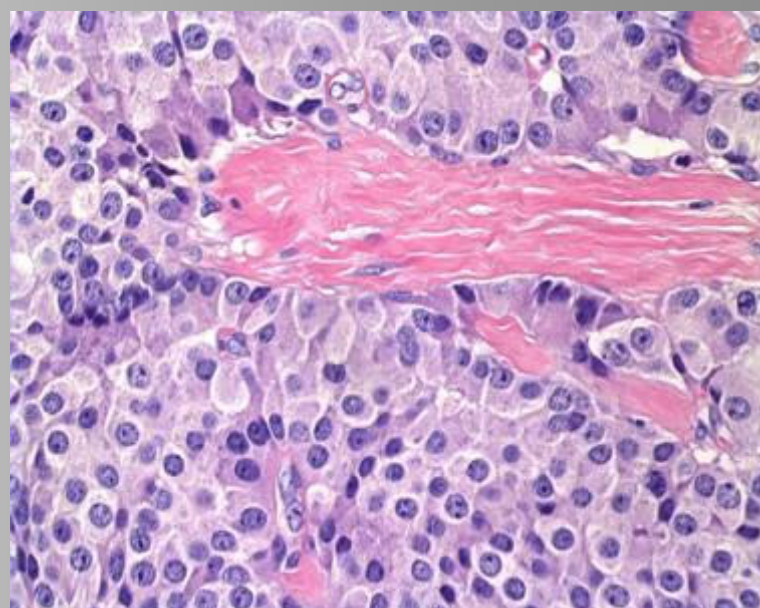
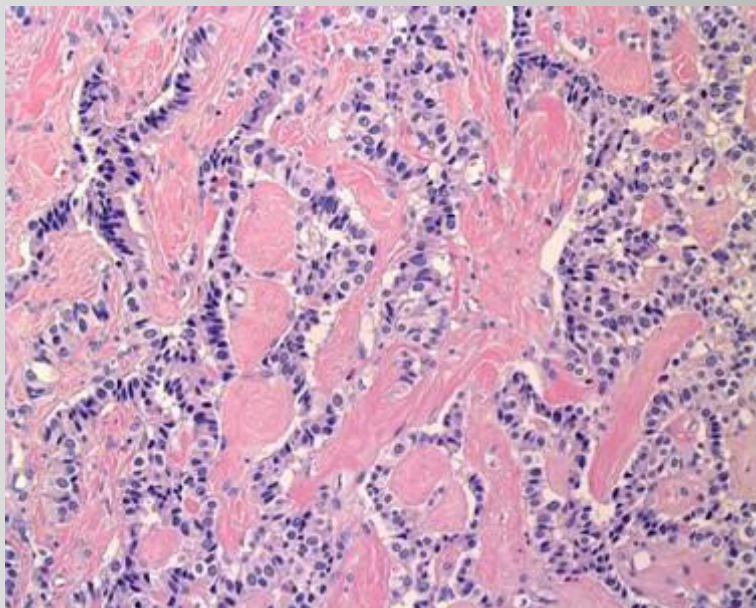
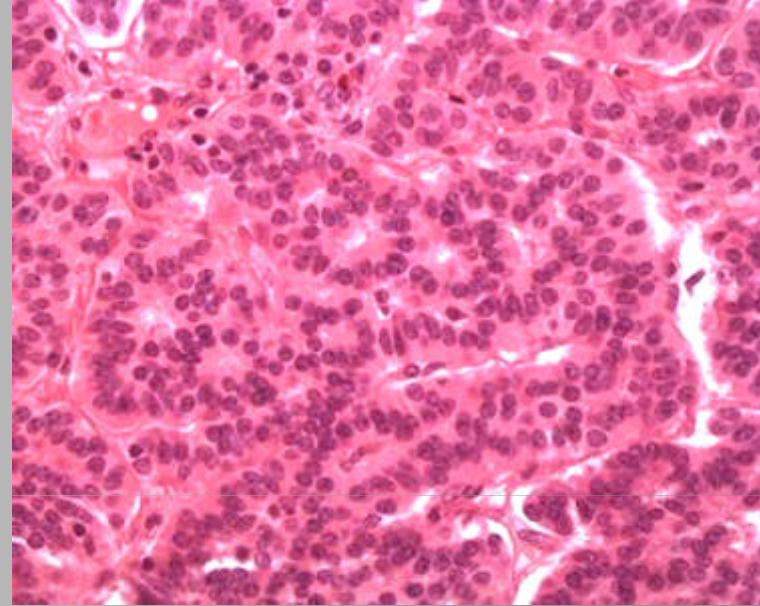
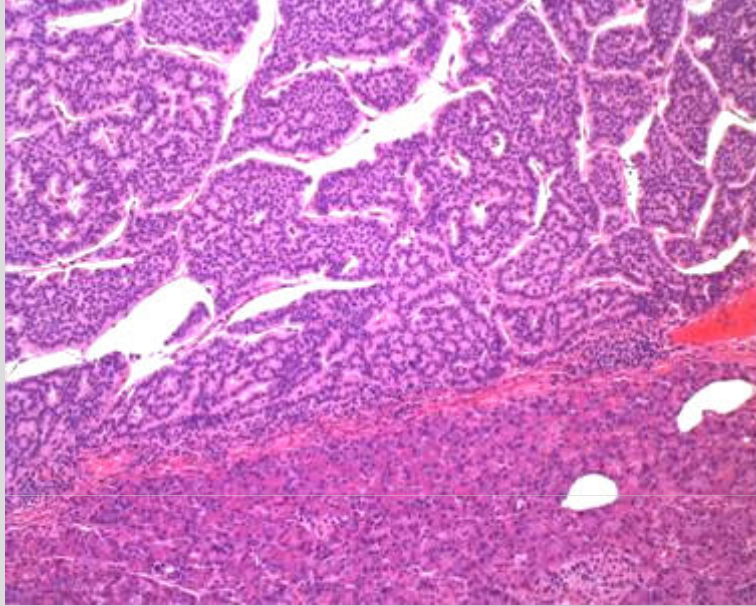
Solid Tumors

	<u>Macroscopy</u>	<u>Localization</u>
• Endocrine Neoplasms	Solid white-yellowish no necrosis	any
• Solid Pseudopapillary Neoplasms	solid-cystic solid: grey-brown cystic: necrotic-haemorrhagic well-defined	any
• Acinar Cell Carcinomas	coarsly nodular with necrotic areas gross infiltration	any

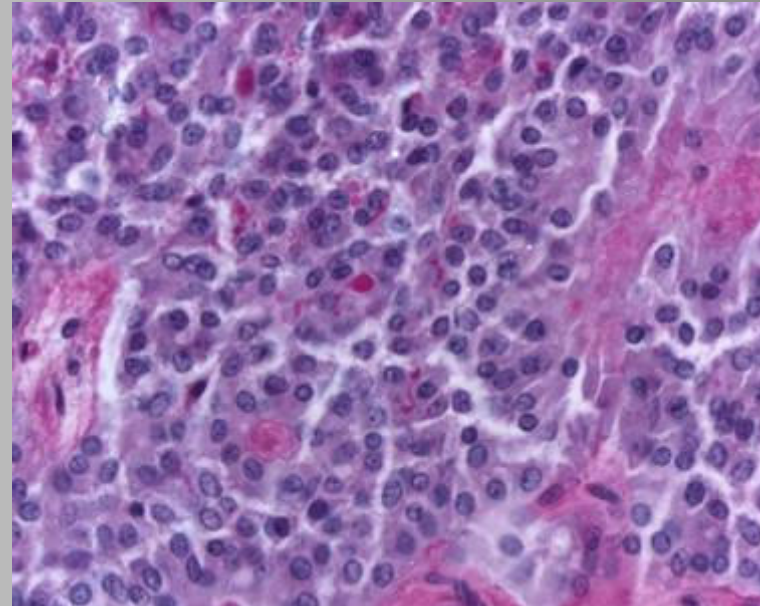
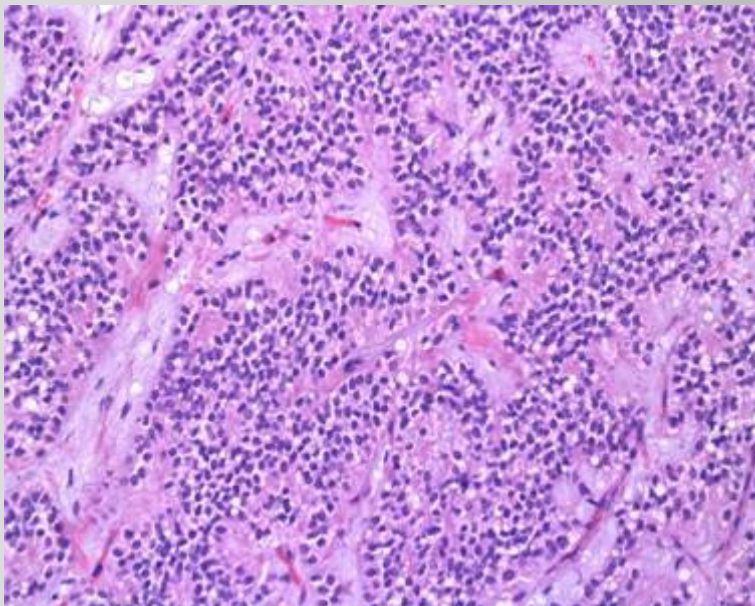
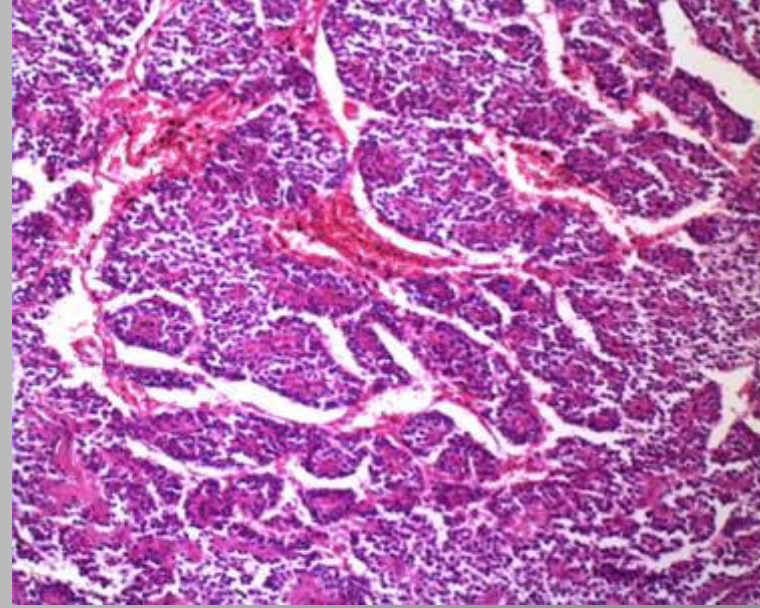
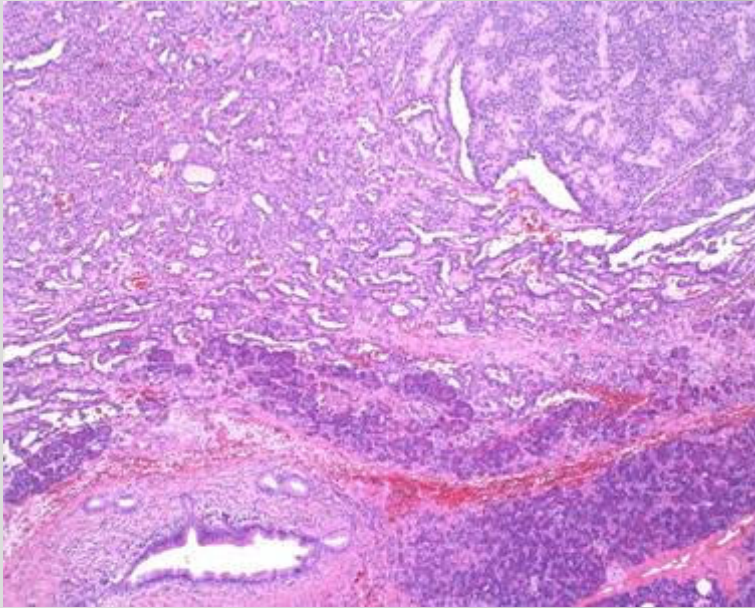
Solid Tumors



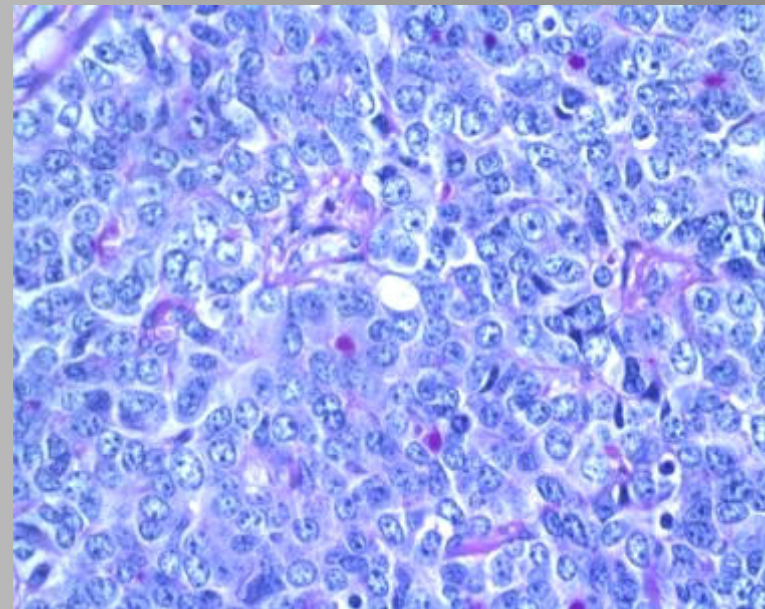
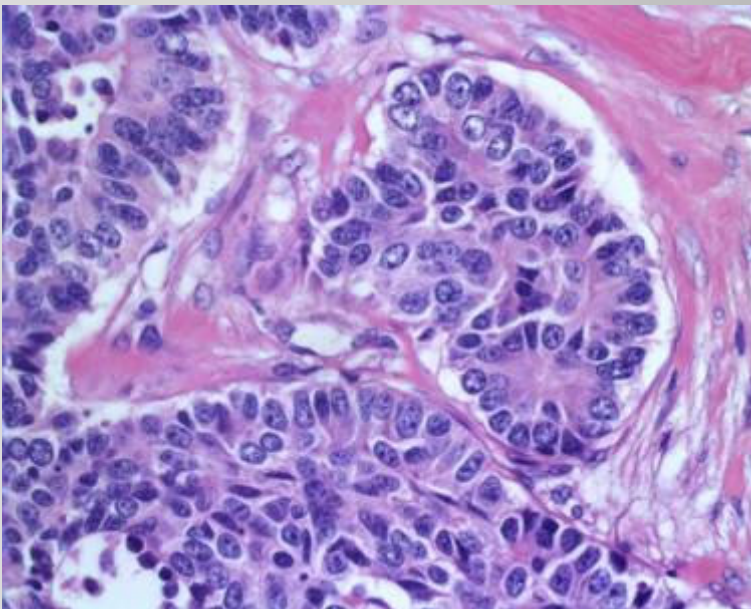
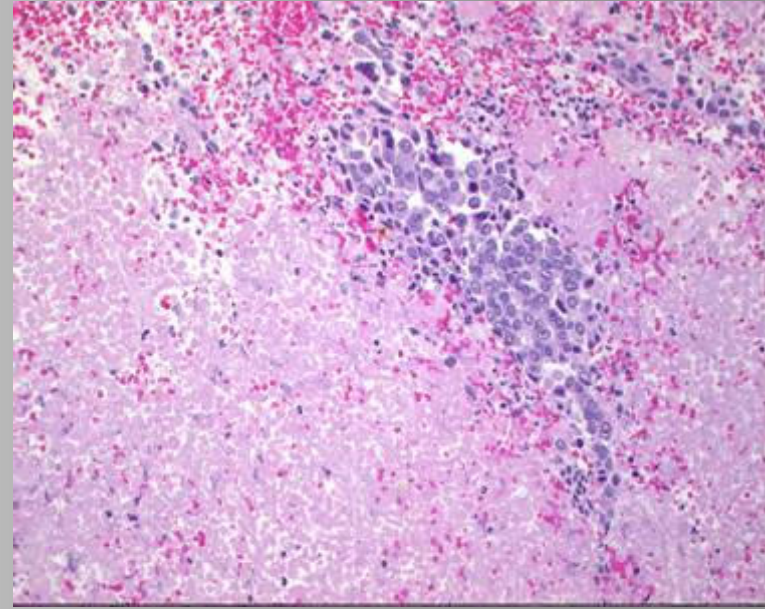
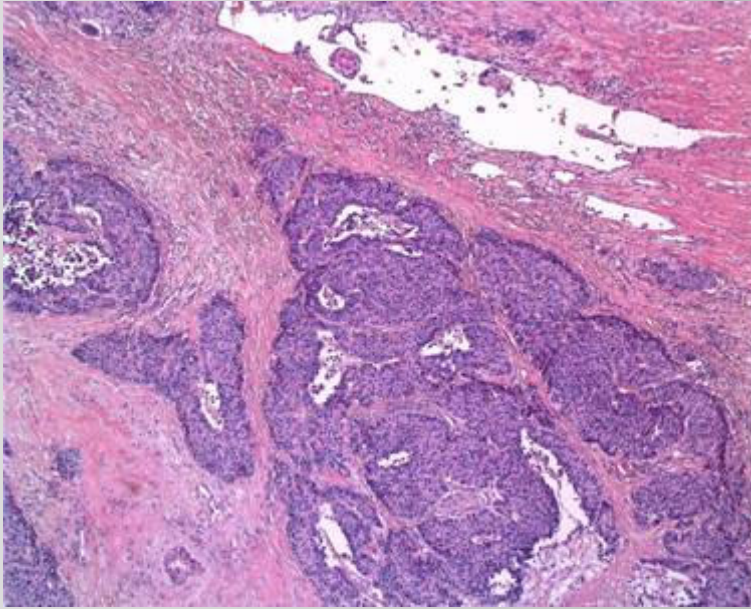
Endocrine Neoplasms



Solid Pseudopapillary Neoplasm

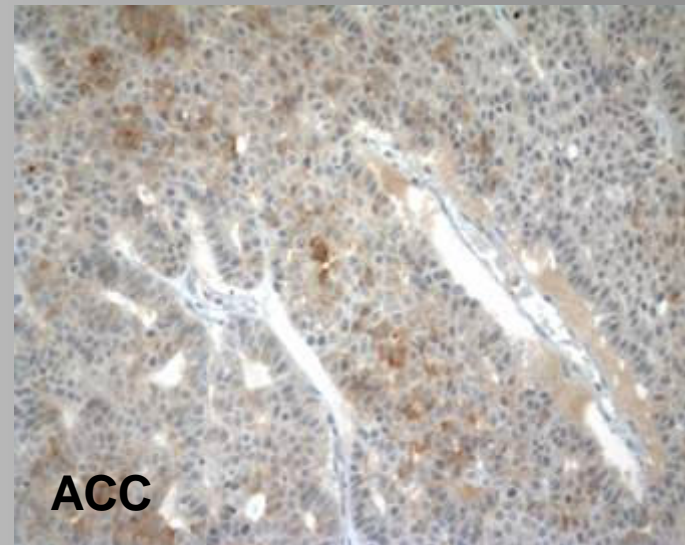
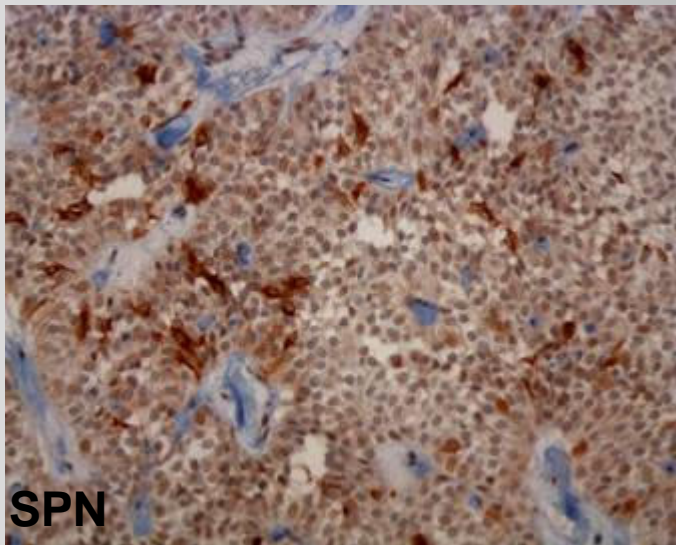
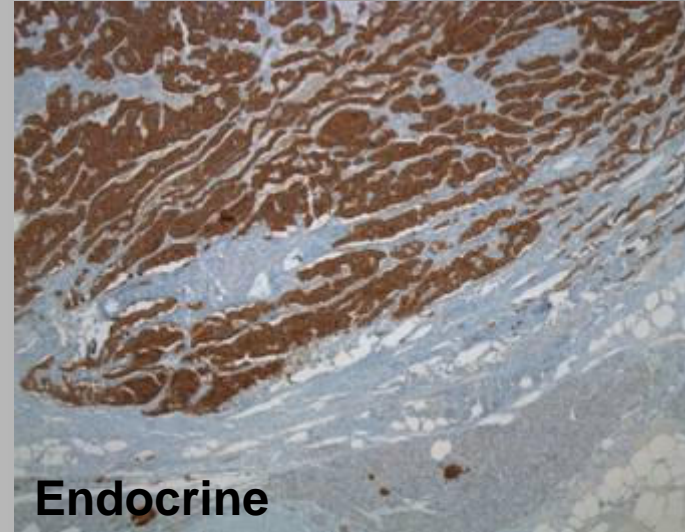


Acinar Cell Carcinoma



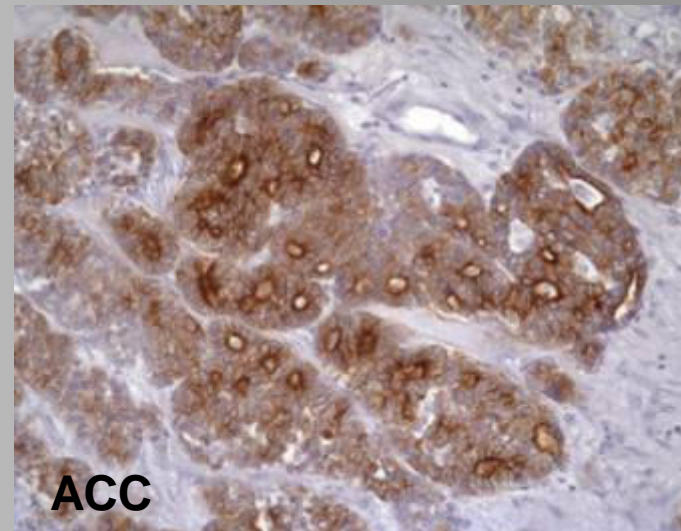
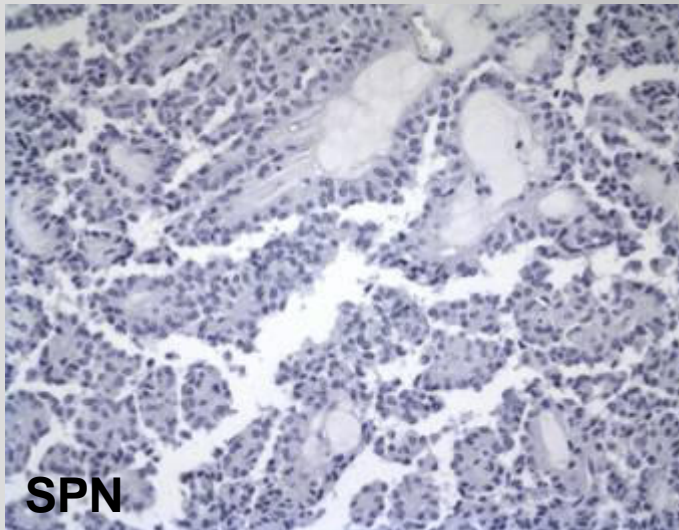
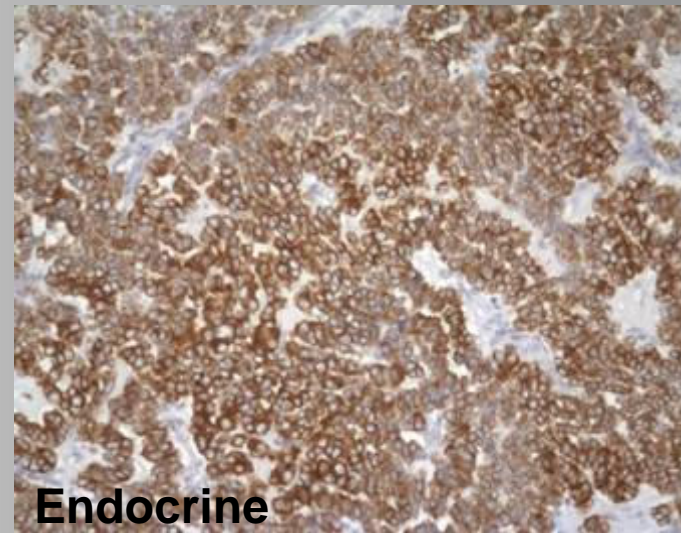
IHC of Solid Tumors

- Endocrine markers
 - Synaptophysin,
 - Chromogranin-A,
 - (CD56,NSE)



IHC of Solid Tumors

- Cytokeratins
 - (Pan-CK)
 - CK8,18 (CAM5.2)



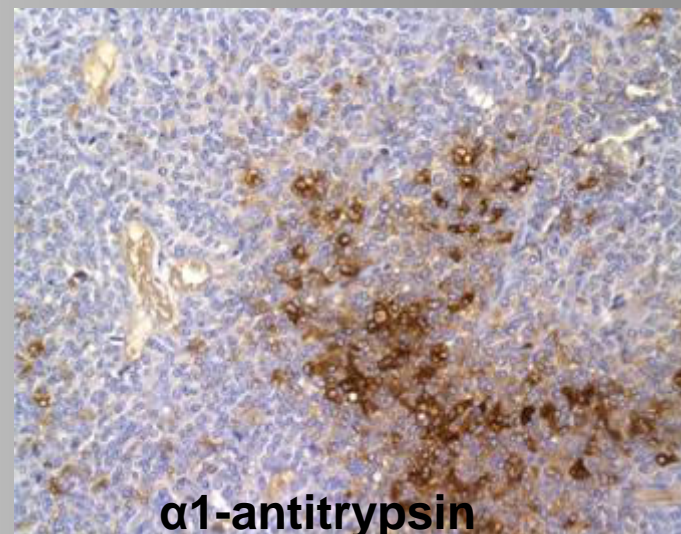
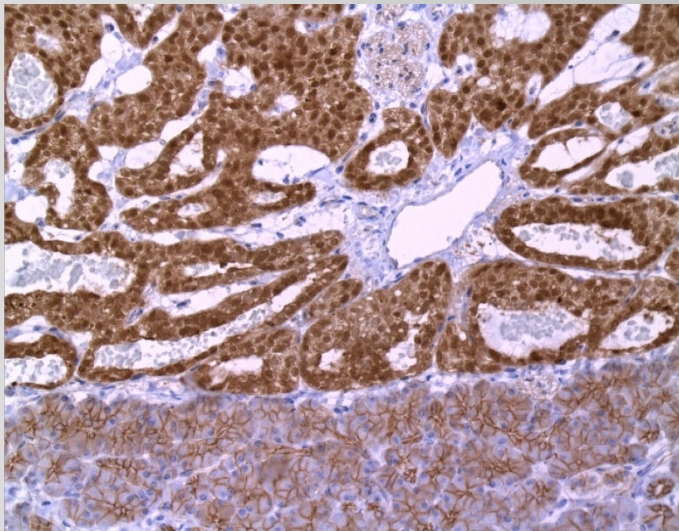
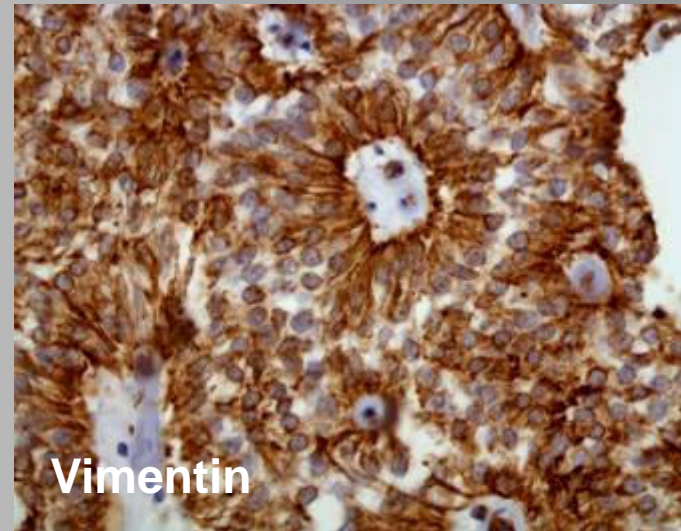
Endocrine Tumors: distinctive markers

Vasoactive peptides:

- Pancreatic : Ins, Gluc, PP, Somatostatin,
- Ectopic: Gastrin, VIP

Solid Pseudopapillary Neoplasms: essential markers

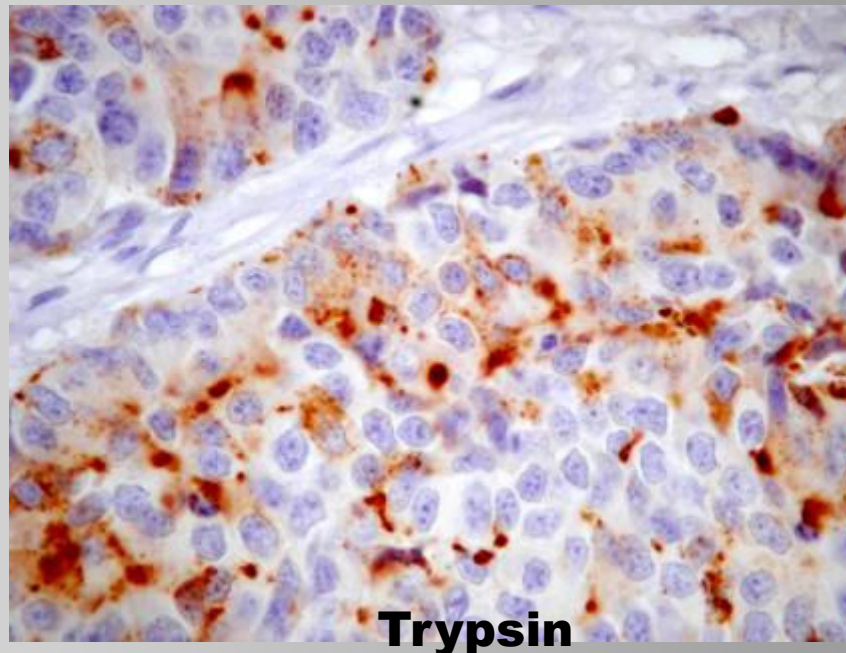
- Vimentin,
- nuclear β -catenin,
- (CD10, PR, α 1-antitrypsin, NSE)



Acinar Cell Carcinomas: essential markers

– Pancreatic Enzymes:

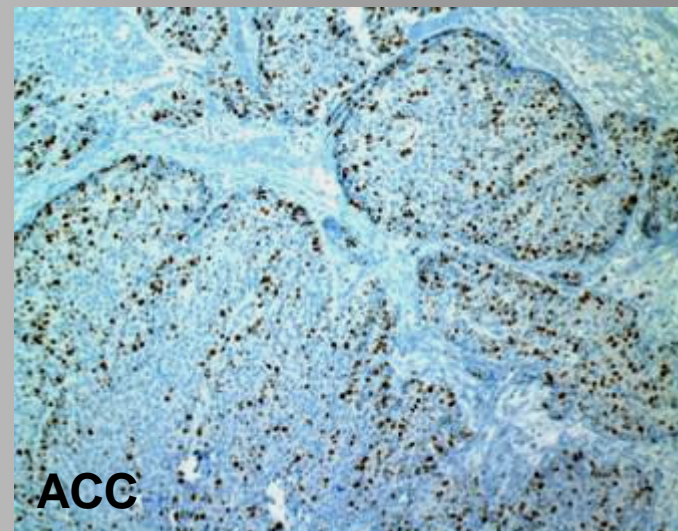
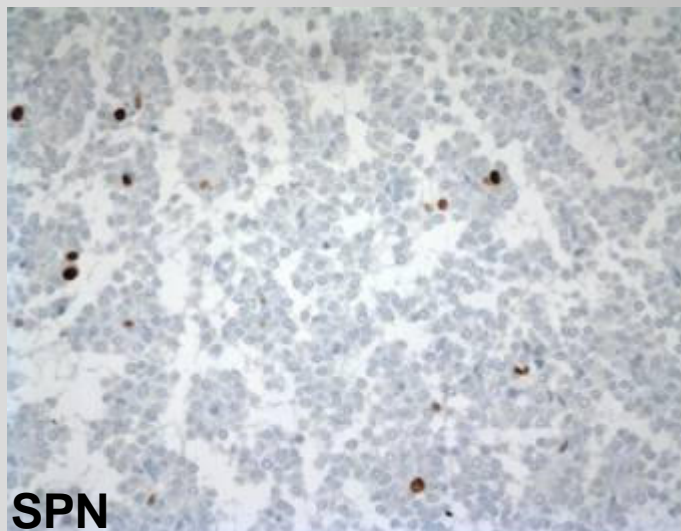
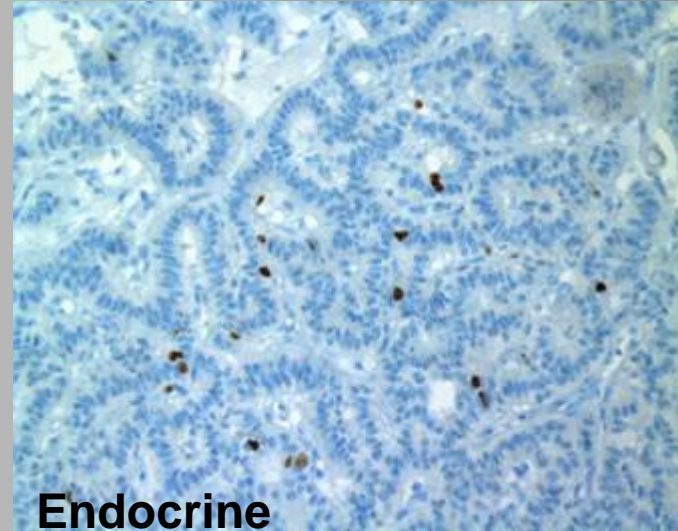
Trypsin (> 95%), Lipase (70%) , Amylase (30%),
bcl-10



Trypsin

Solid tumors : Proliferation Rate

- Ki67



Solid tumors

Firm, ill-defined, invasive

Glandular differentiation,
Desmoplasia, mucin production



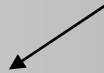
Ductal adenocarcinoma

Solid, minimal stroma



Young female
Cystic, necrotic,
Well-defined

Vimentin, no β -Catenin,
CD10, no/minimal Ck



Solid pseudopapillary neoplasm

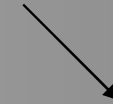


Solid without
necrosis
Well-defined

Synaptophysin,
Chromogranin



Endocrine neoplasm



Elderly patient
Large tumor with
Necrosis
Gross invasion

Trypsin,
Chymotrypsin



Acinar cell carcinoma

Cystic tumors

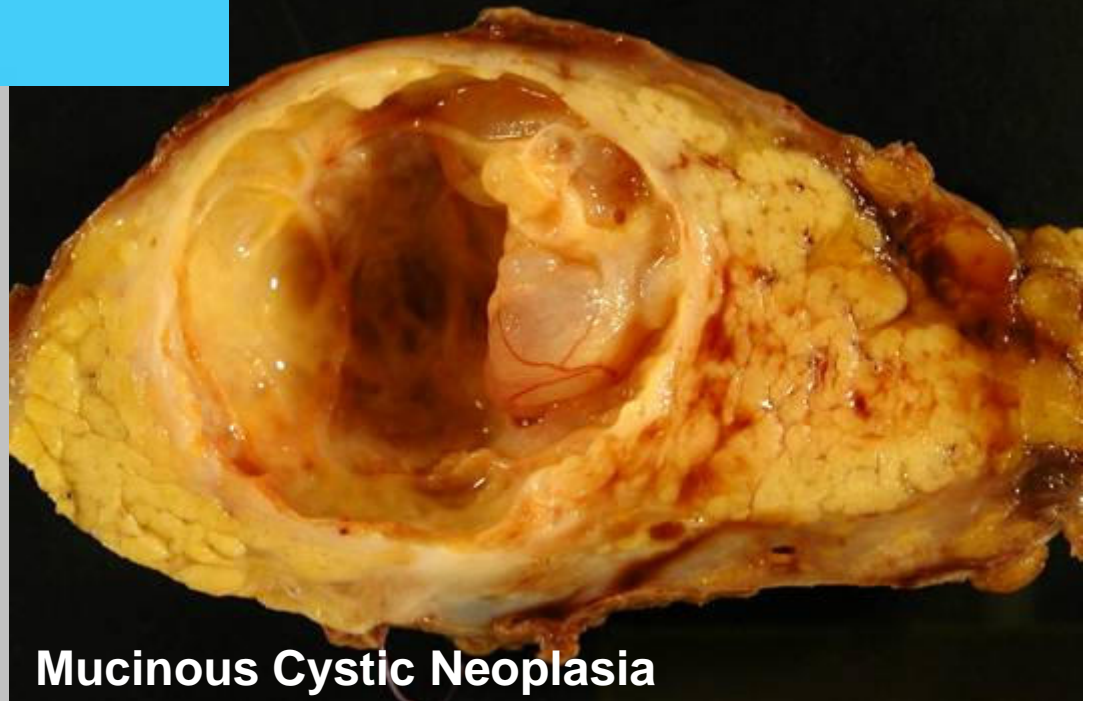
	Age	Gender	Size
Serous Cystadenomas	>50	Female	5-15 cm
Mucinous Cystic Neoplasms	>50	Female	>5 cm
Intraductal Papillary Mucinous Neoplasms	>50	Both	Variable

Cystic tumors

	<u>Macroscopy</u>	<u>Localization</u>
Serous Cystadenomas	microcystic sponge-like oligocystic no connection with ducts	tail-body
Mucinous Cystic Neoplasms	unicystic or multicystic well circumscribed no connection with ducts	tail
Intraductal Papillary Mucinous Neoplasms	dilated ducts papillary formations fibrotic pancreas	mostly head

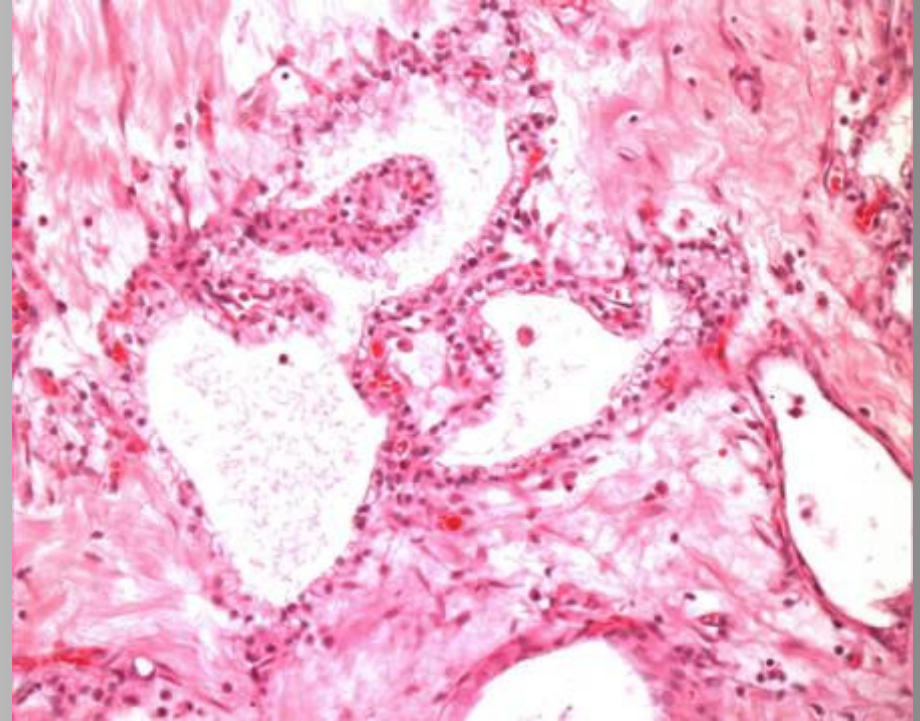
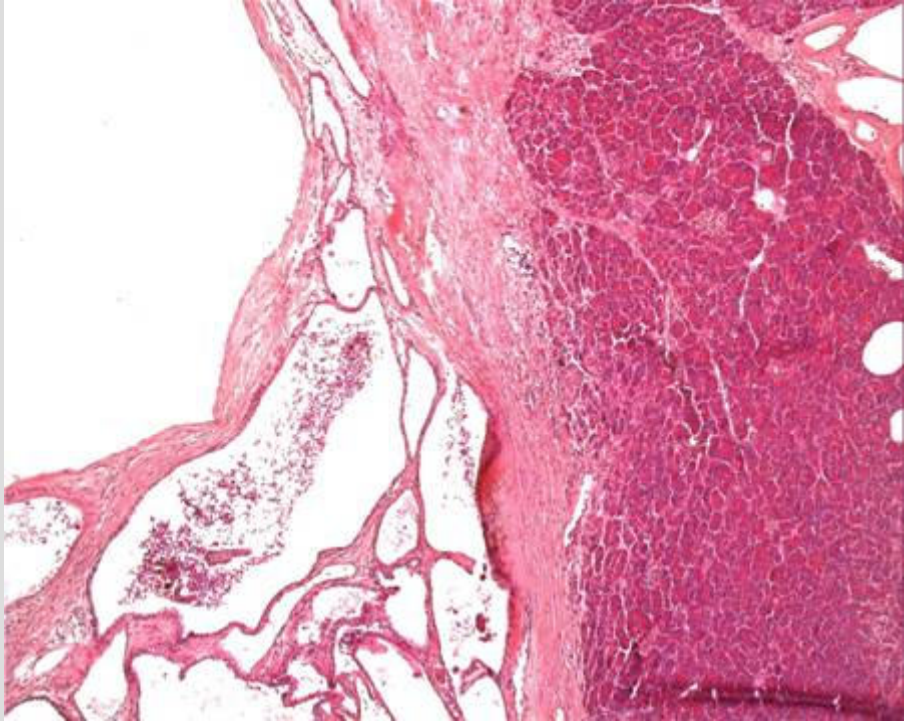


Serous cystic adenoma

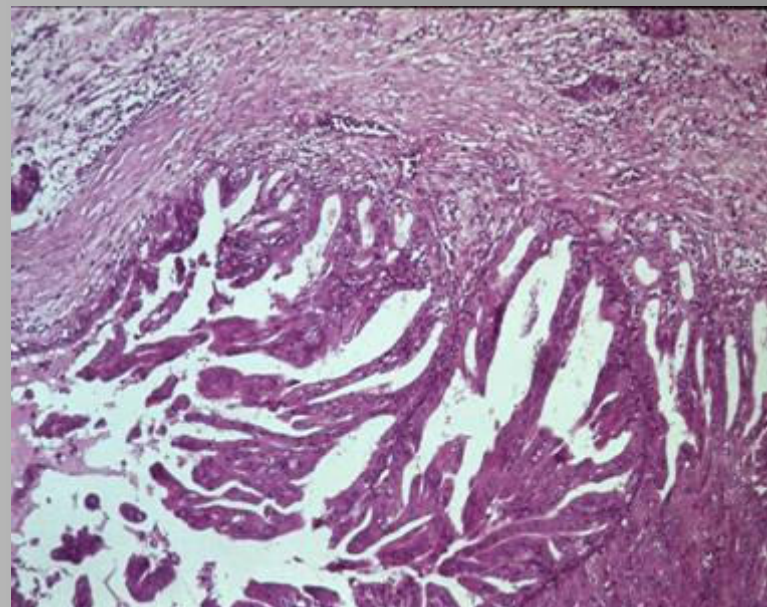
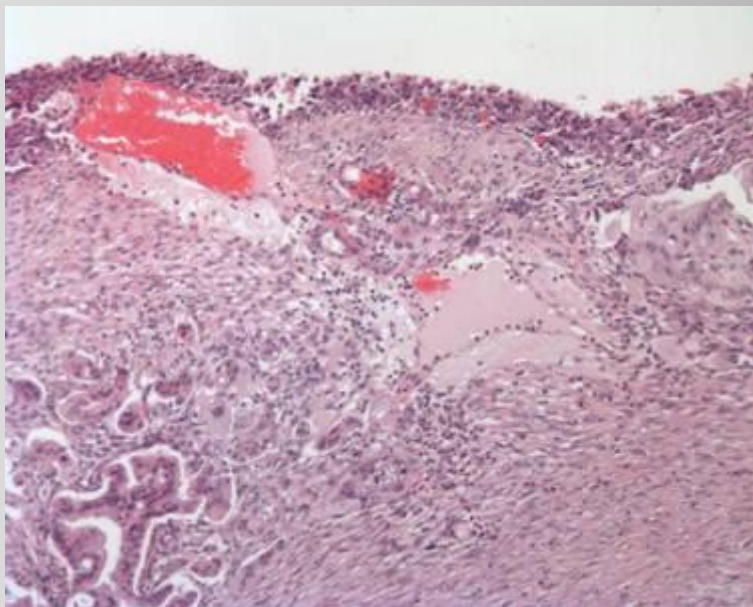
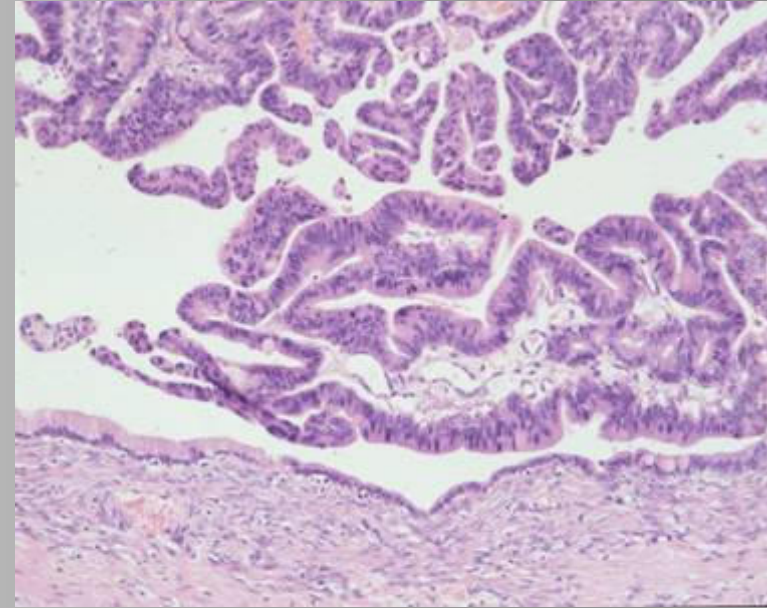
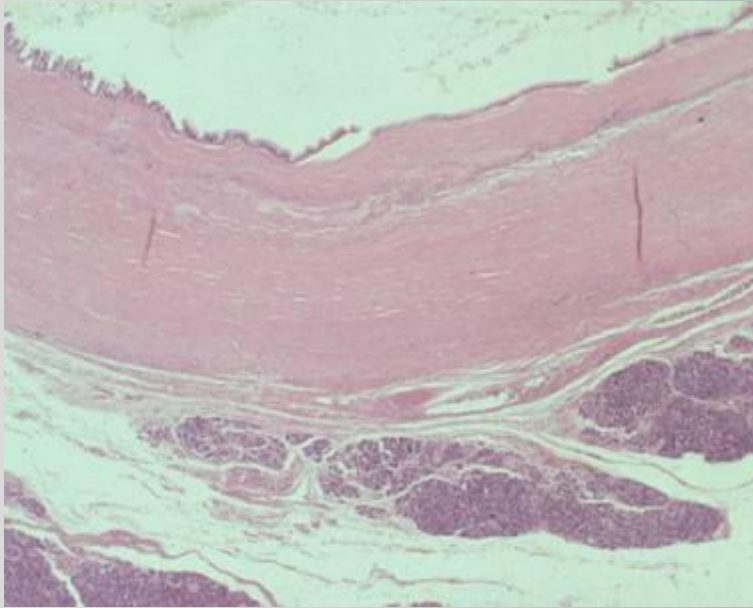


Mucinous Cystic Neoplasia

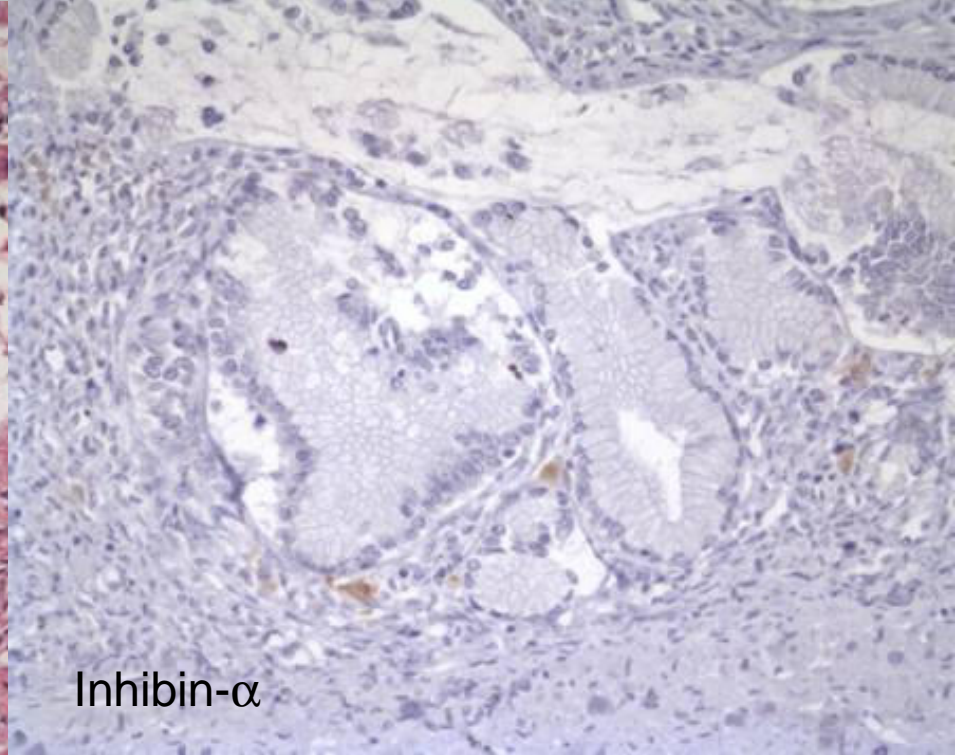
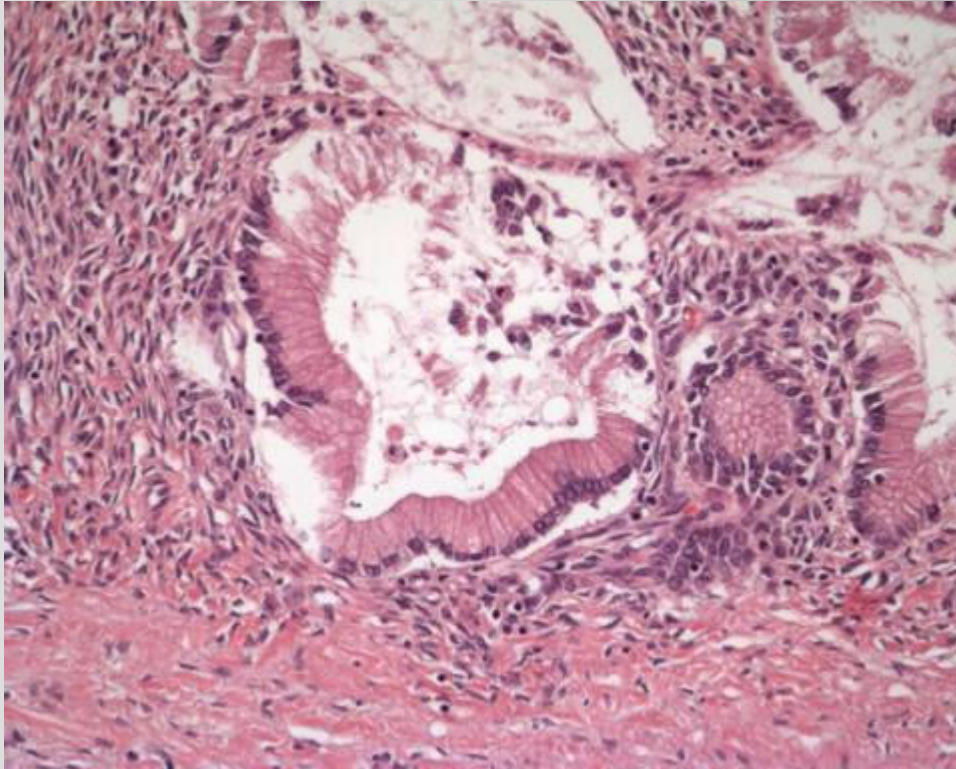
Serous Microcystic Adenoma



Mucinous Cystic Neoplasm

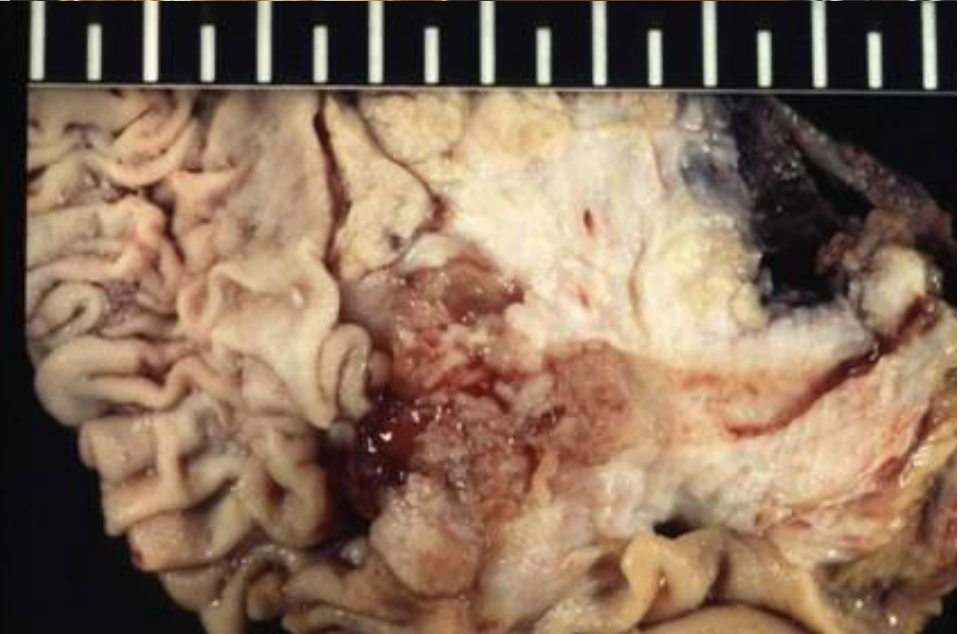
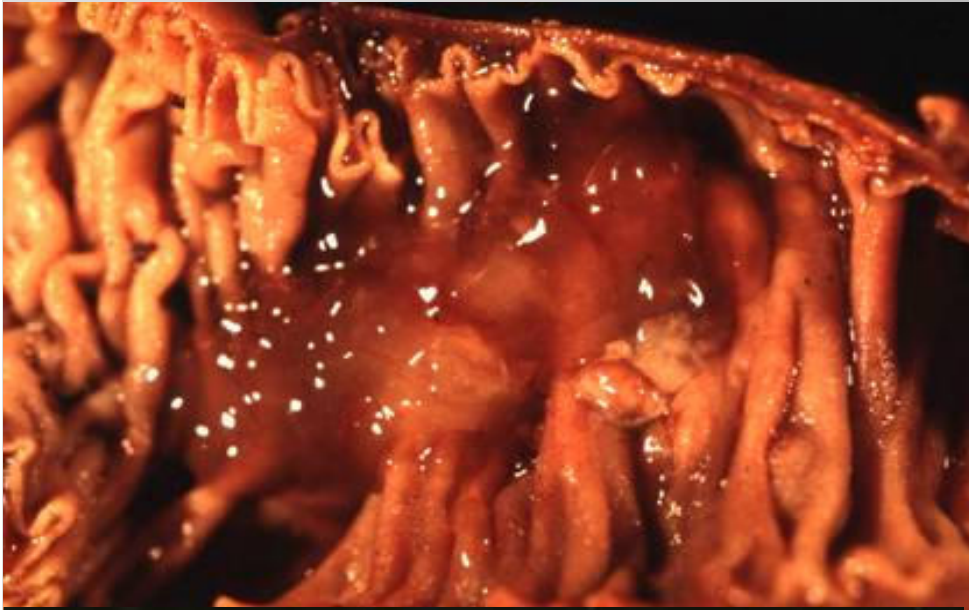


Mucinous Cystic Neoplasm

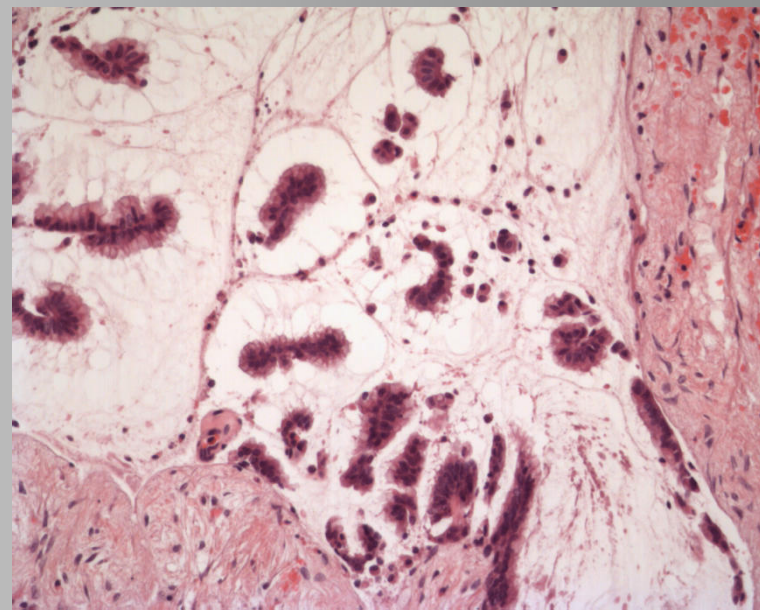
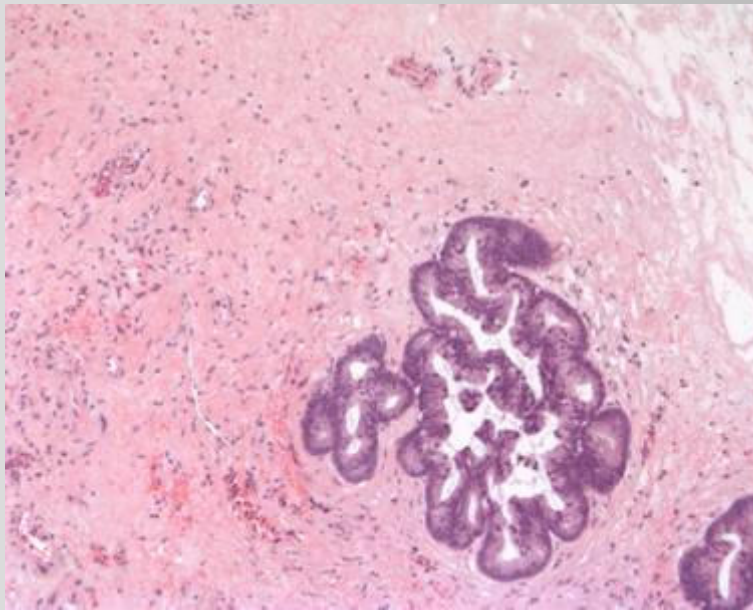
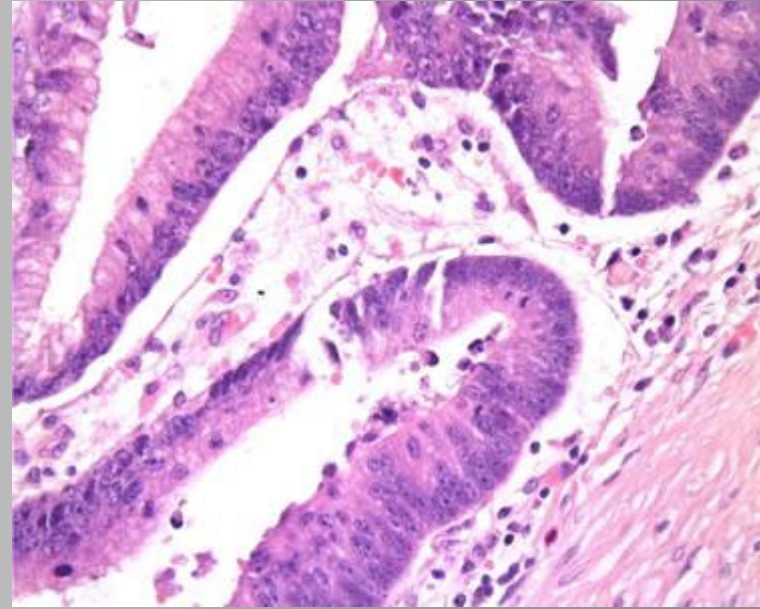
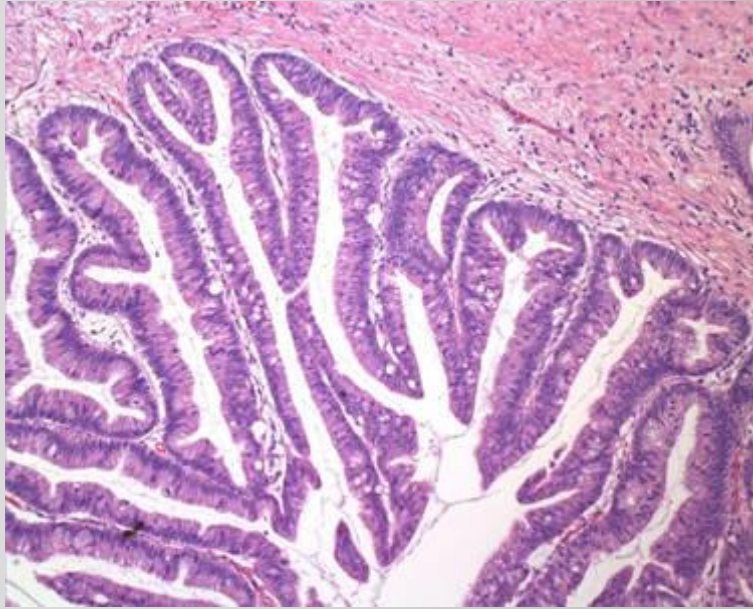


Inhibin- α

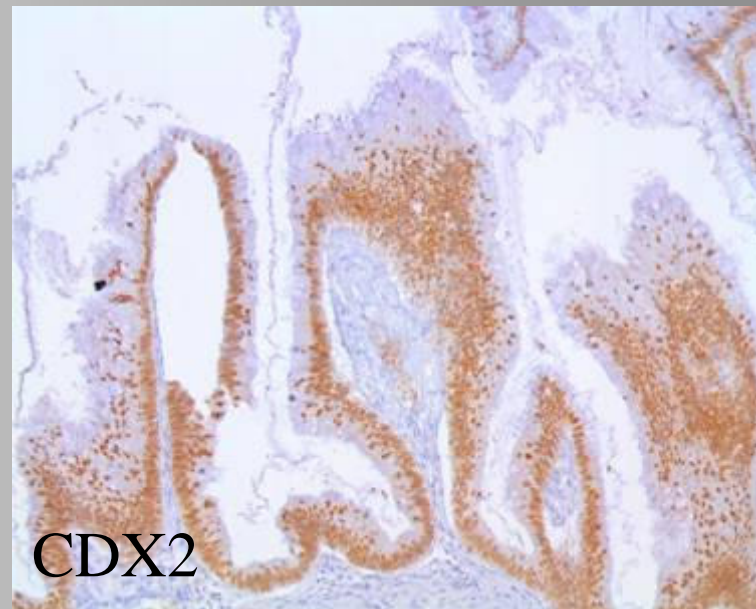
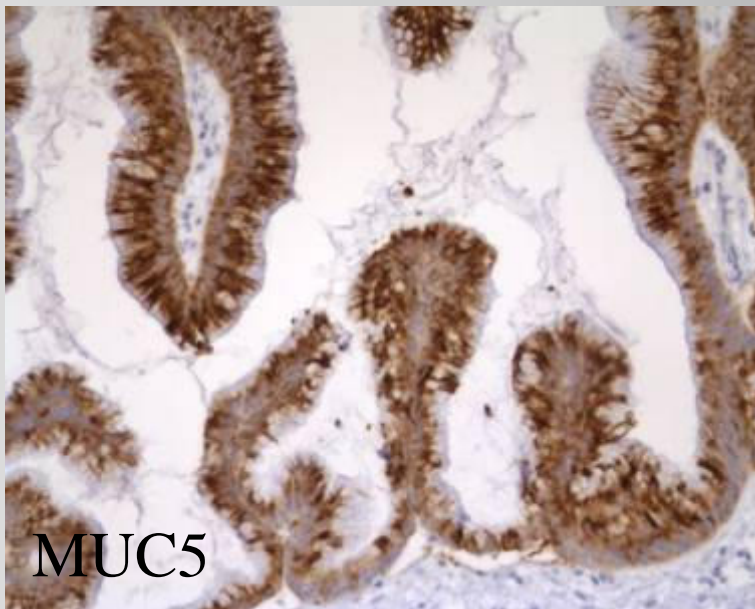
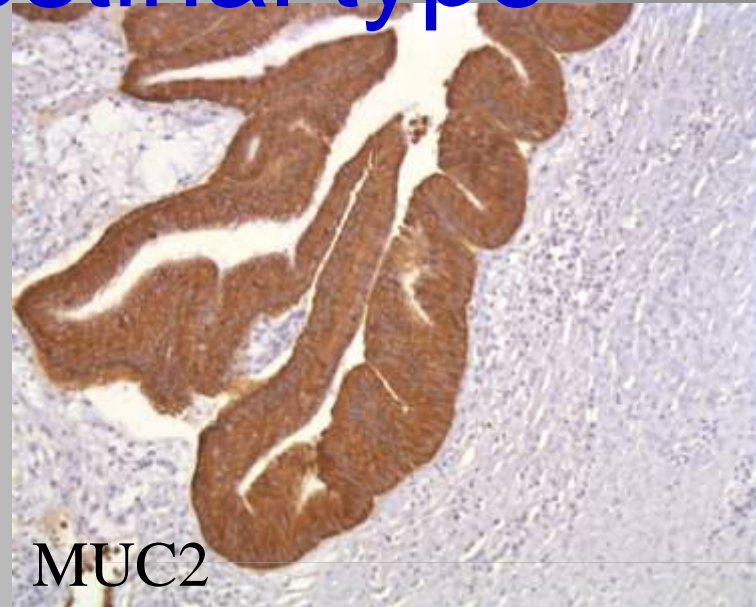
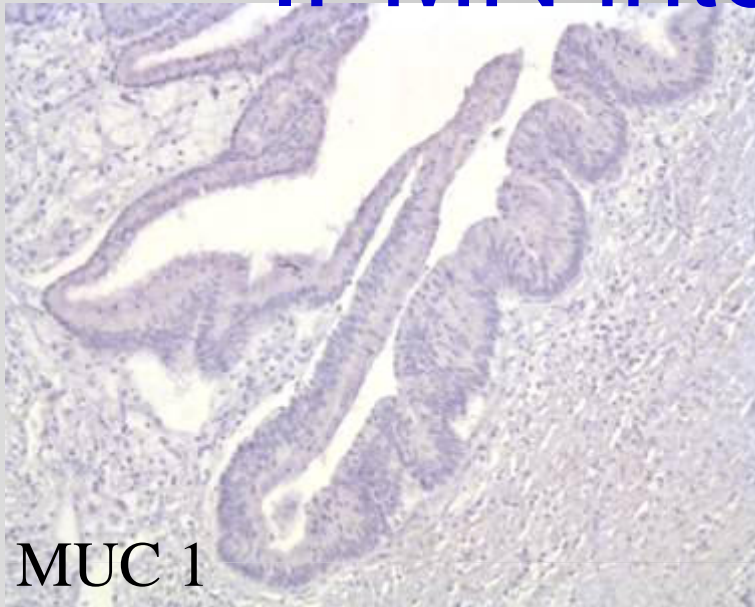
Intraductal papillary mucinous neoplasm



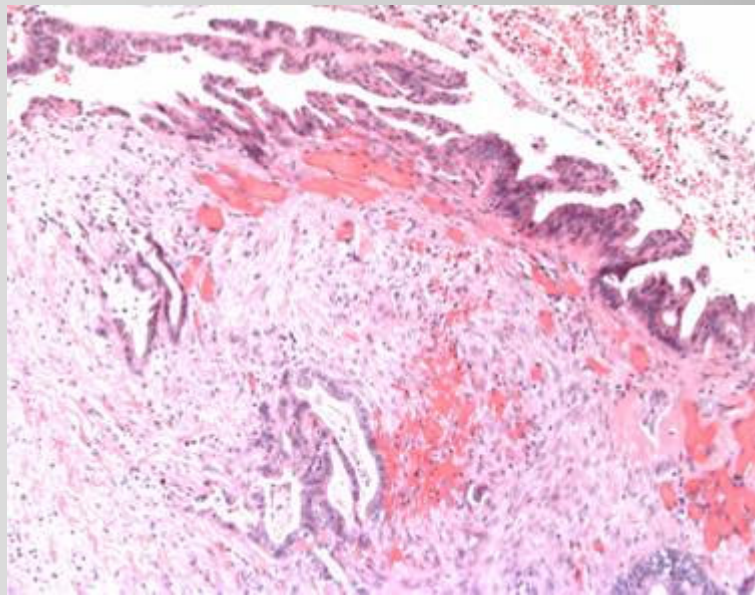
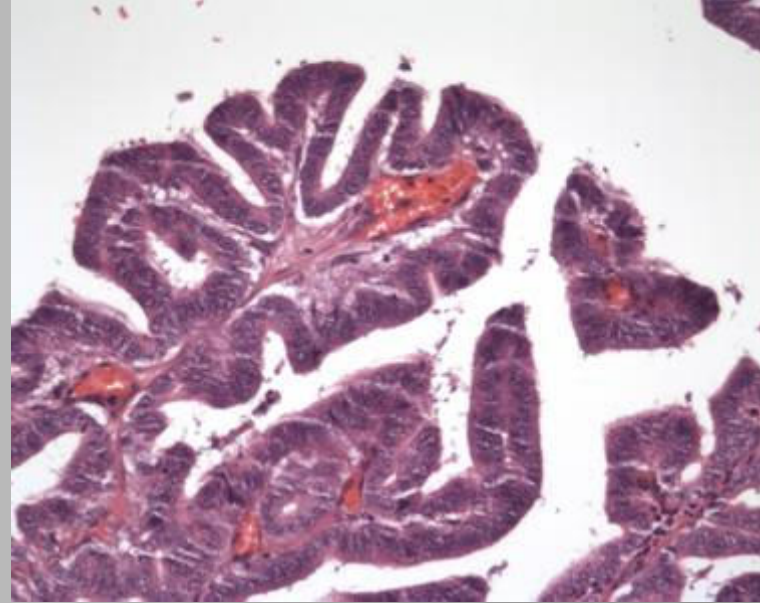
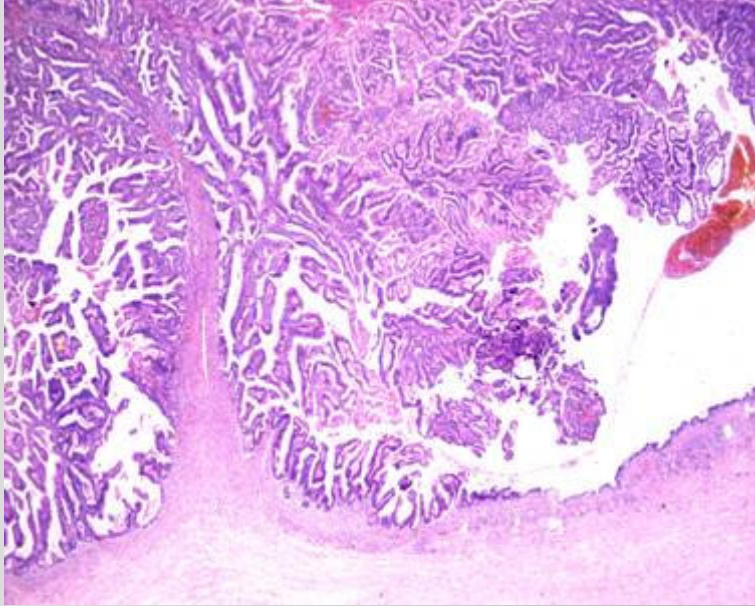
IPMN intestinal type



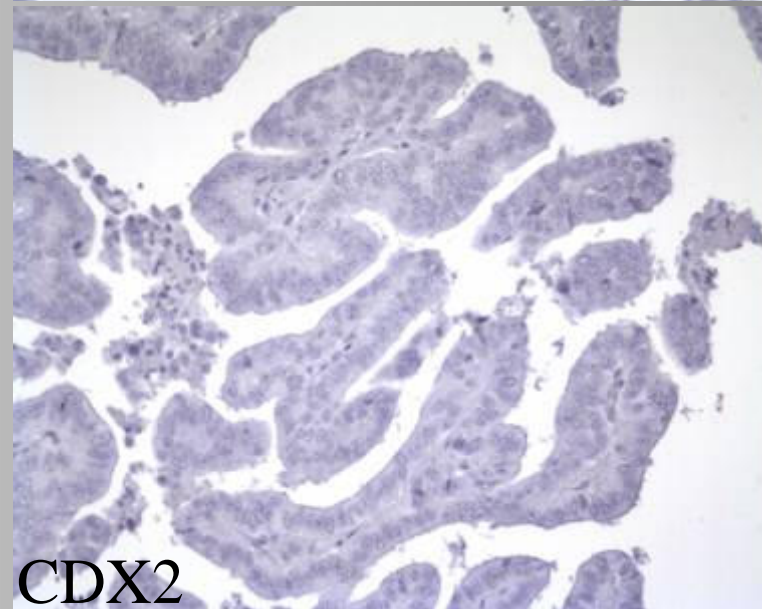
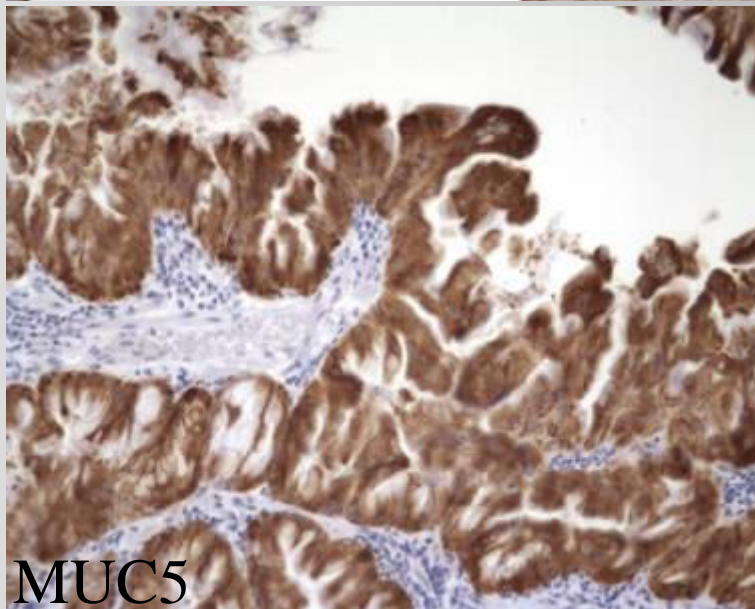
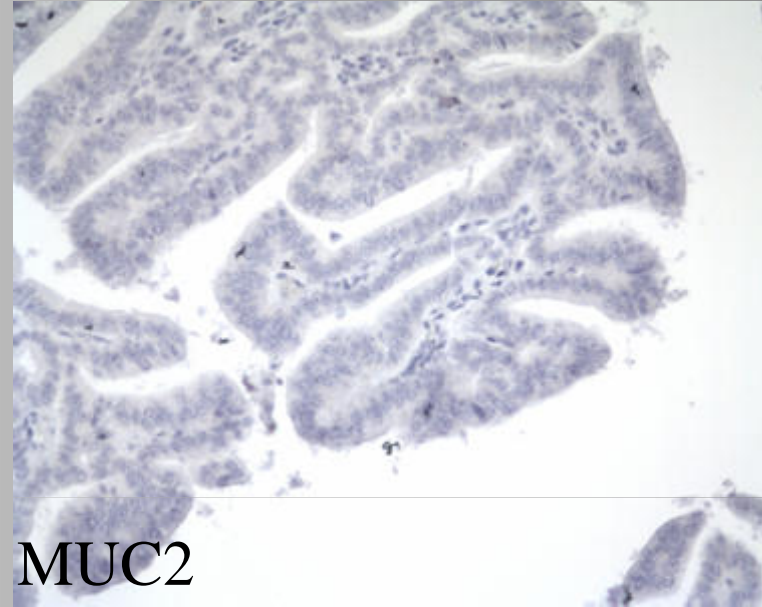
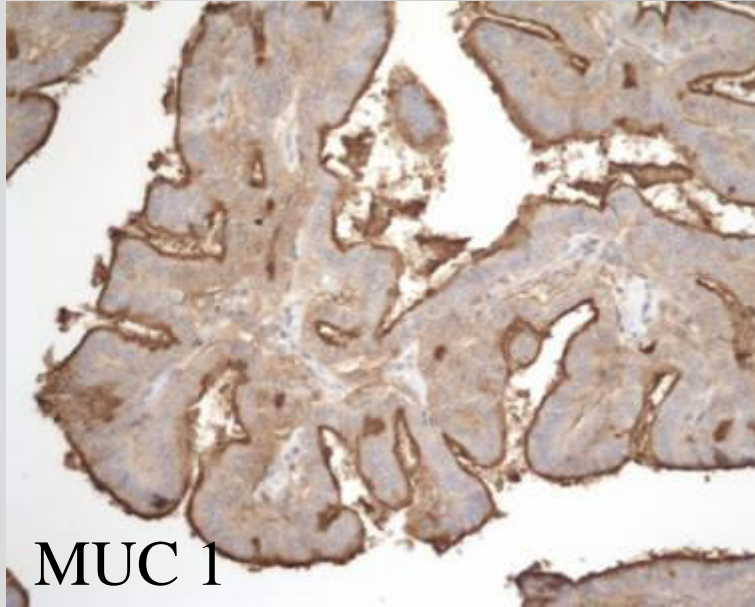
IPMN intestinal type



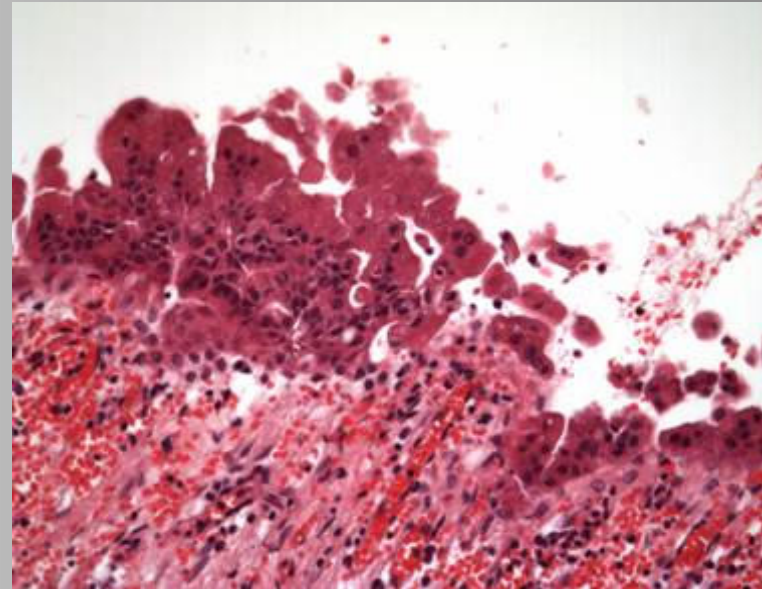
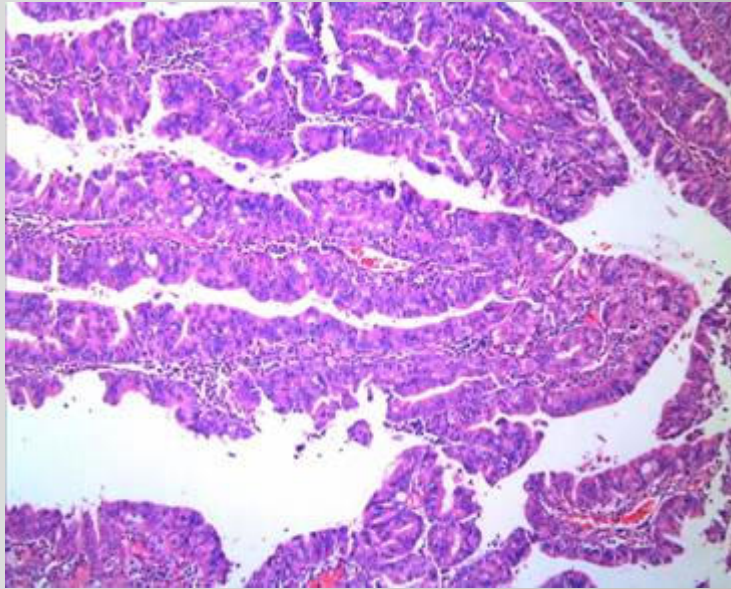
IPMN pancreatobiliary type



IPMN pancreatobiliary type



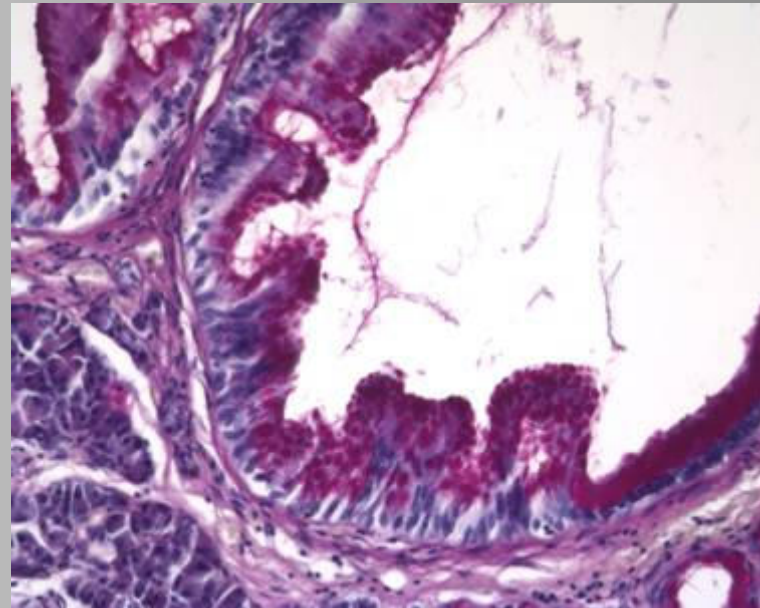
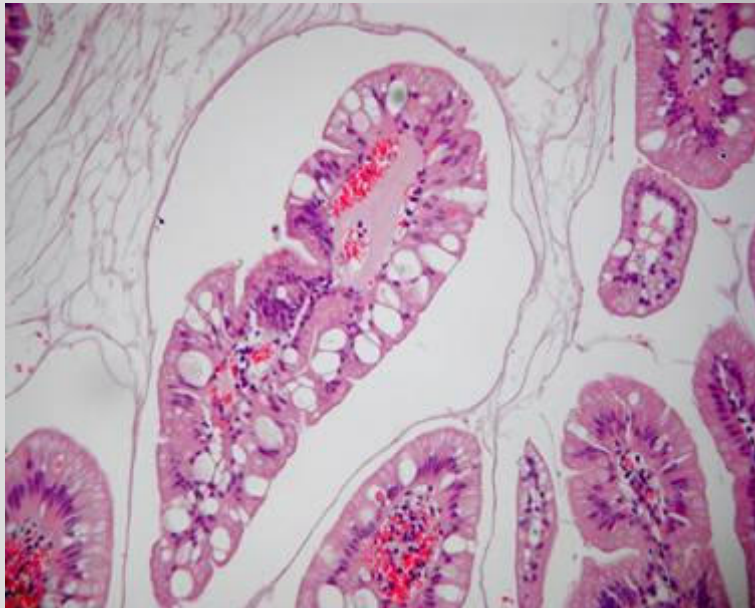
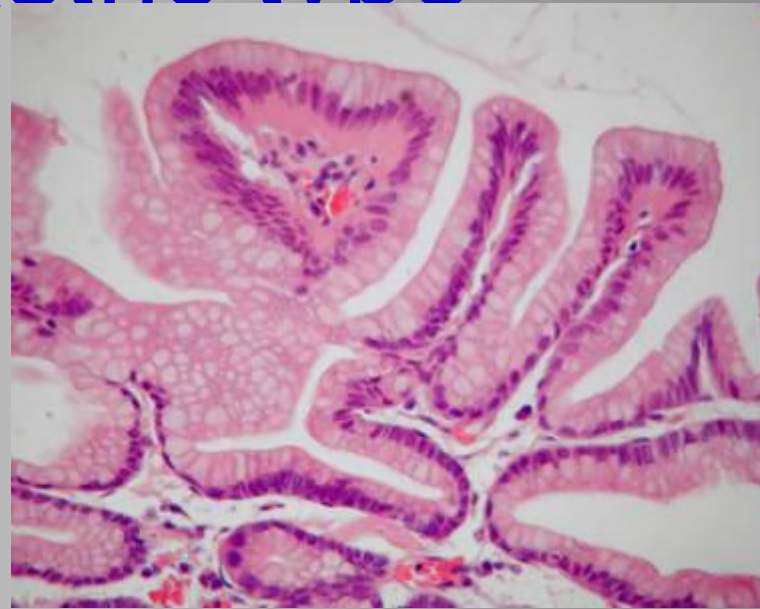
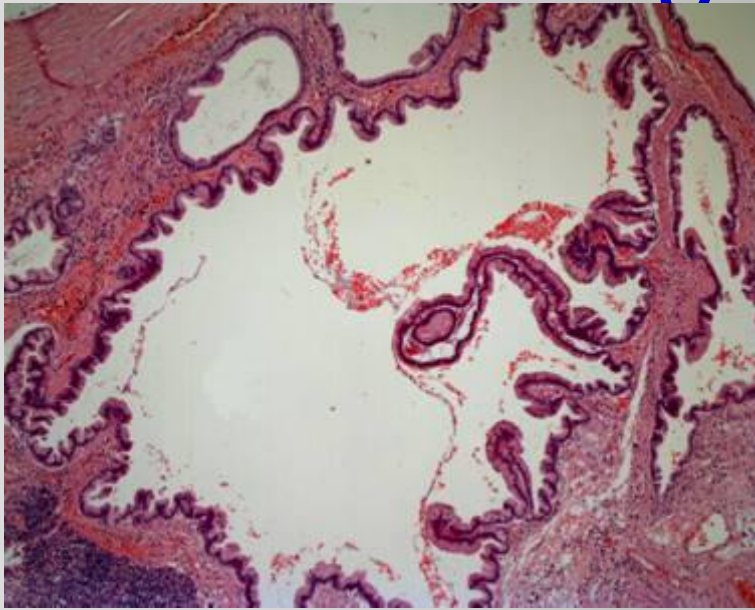
IPMN oncocytic type



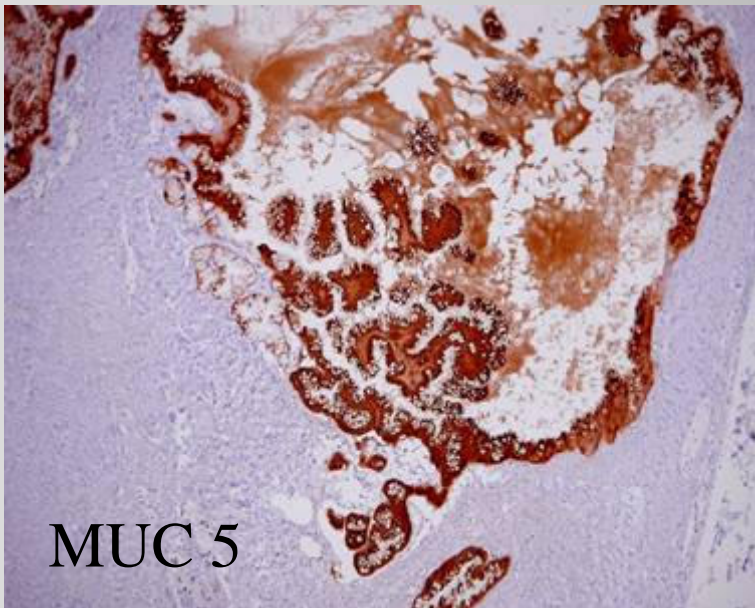
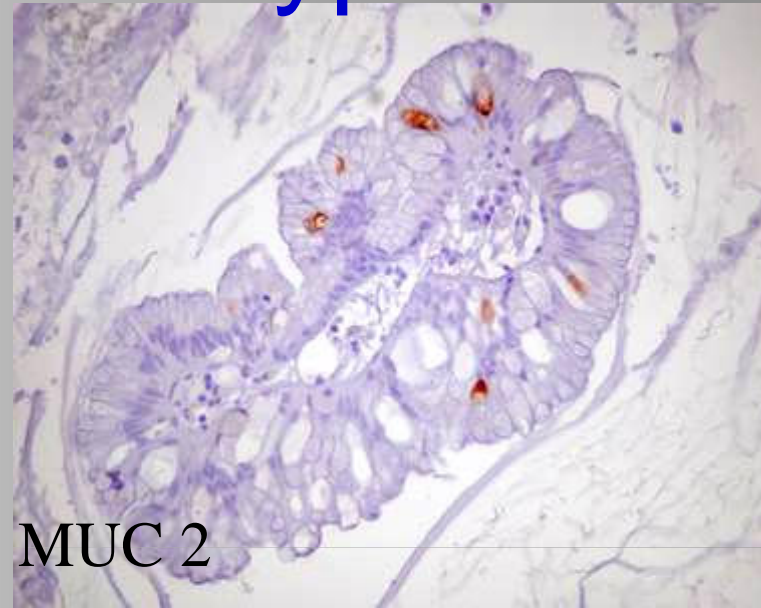
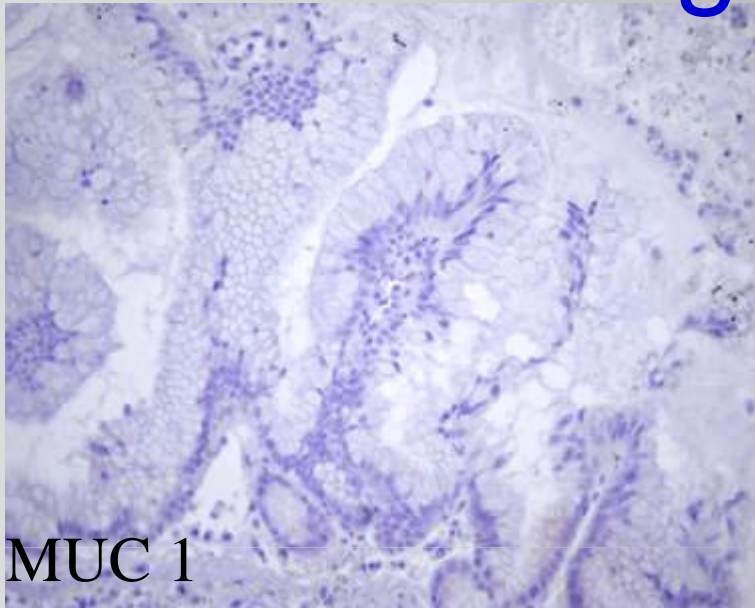
IPMN gastric type



IPMN gastric type



IPMN gastric type



Cystic tumors

Microcystic, ill-defined, invasive

Glandular differentiation,
Desmoplasia, mucin production

↓
Microcystic well-differentiated
ductal adenocarcinoma

Connection to ducts

yes

no

IPMN

at the periphery

central

In tail, woman
Uni/multicystic
Ovarian-like stroma

Well-defined
Sponge-like
Central scar

↓
Mucinous cystic
neoplasm

Branch duct (gastric) type

Intestinal diff (CDX2, CK20)

yes

no

Intestinal type

Pancreatobiliary
type

Clear cells
Inhibin

↓
Serous cystadenoma

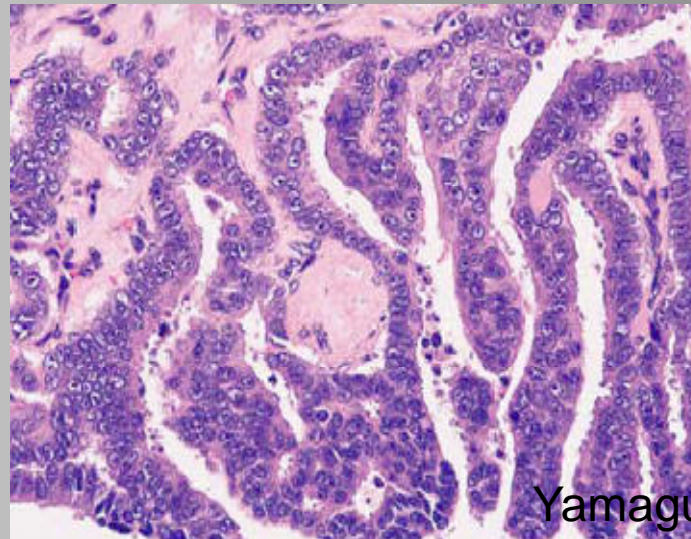
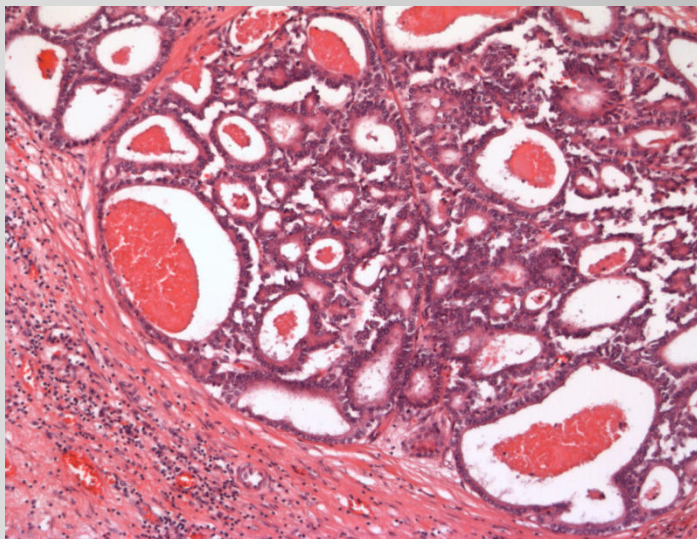
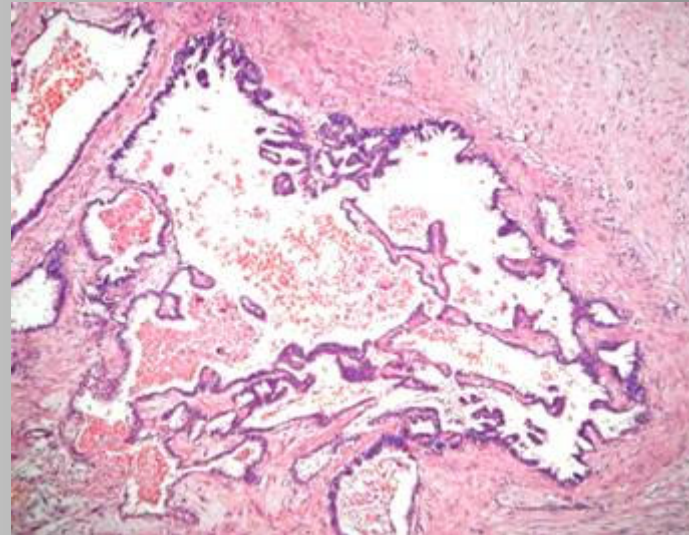
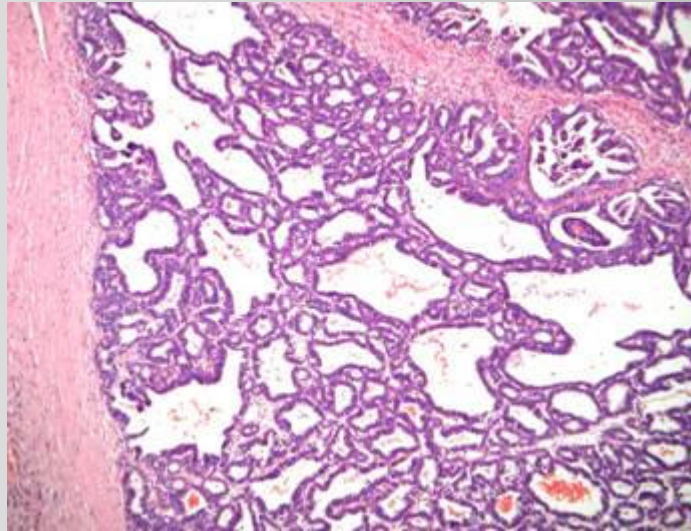
Classification of IPMN

Type	Histology	Atypia	Similar to	MUC1	MUC2	MUC5	Invasive carcinoma
Intestinal	Villous papillae, columnar cells, oval nuclei with pseudostratification	Mild to severe	Colonic villous adenoma	-	+	+	Colloid (mucinous) carcinoma
Pancreato-biliary	Branching complex papillae, single layer or pseudostratification moderate amphophilic cytoplasm, enlarged nuclei	Severe	Intraductal papillary lesions of the extrahepatic bile duct	+	-	+	Ductal adenocarcinoma
Oncocytic	Thick branching complex papillae with intraepithelial lumina, large cells with abundant eosinophilic cytoplasm, large round nuclei	Severe	Oncocytic neoplasms of salivary glands	+	-	+	Oncocytic carcinoma
Gastric	Finger-like papillae or flat areas, eosinophilic or clear cytoplasm, basally located nuclei	Mild	Pyloric glands	-	-	+	Rarely ductal adenocarcinoma

Differential diagnosis of IPMN



Differential diagnosis of IPMN



Intraductal tubular carcinoma (ITC)

- M/F 1:1. mean age ~60
- Solid/nodular tumors obstructing ducts
- No mucin production
- High grade nuclear atypia
- + CK7, CK19, Muc1, Muc6
- - Muc2, Muc5AC,
- Rarely p53, Smad4; no β -Catenin, K-ras, braf alterations
- Prognosis : 8/10 no recurrence (7-66 m)

