Practical Pearls in Diagnosing HCC

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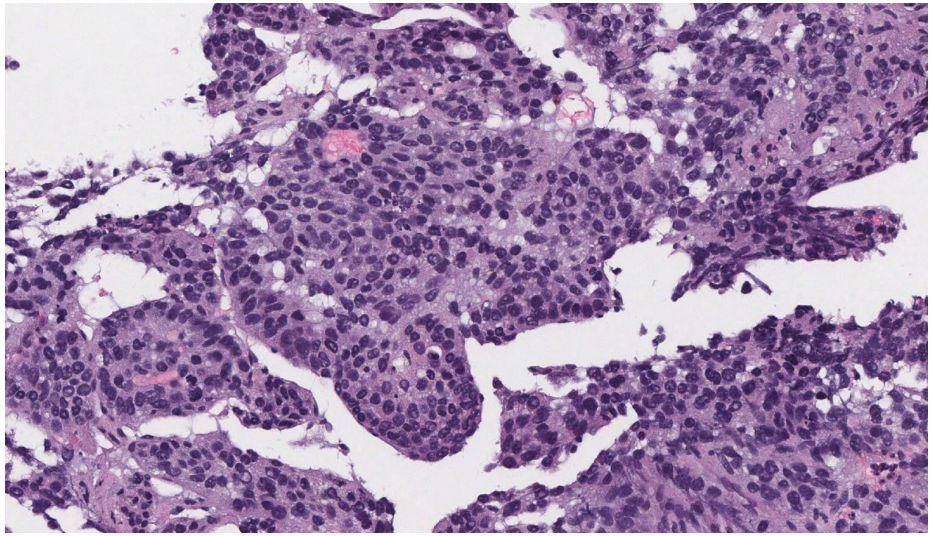
Why this is Relevant

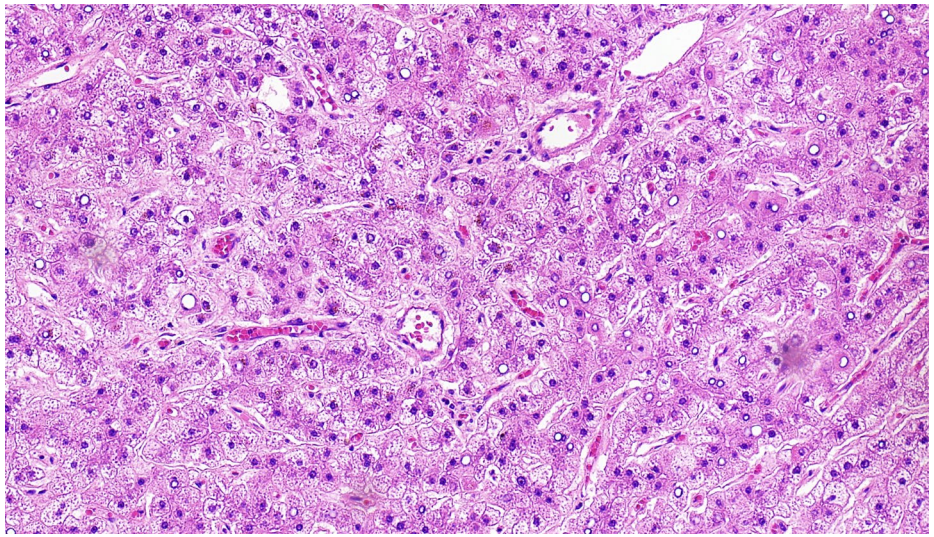
- Liver biopsy for masses are common surgical pathology specimens
- Metastatic tumors can express hepatocellular markers and mimic HCC histology
- Well differentiated HCC can be extremely difficult to distinguish from benign lesions

Common Issues when Diagnosing an HCC

- **Met or intrahepatic cholangioCA vs. HCC: You know it's malignant, but not sure it is hepatocytic**



- **Benign vs. HCC: You know it's hepatocytic but can't tell if it is malignant**



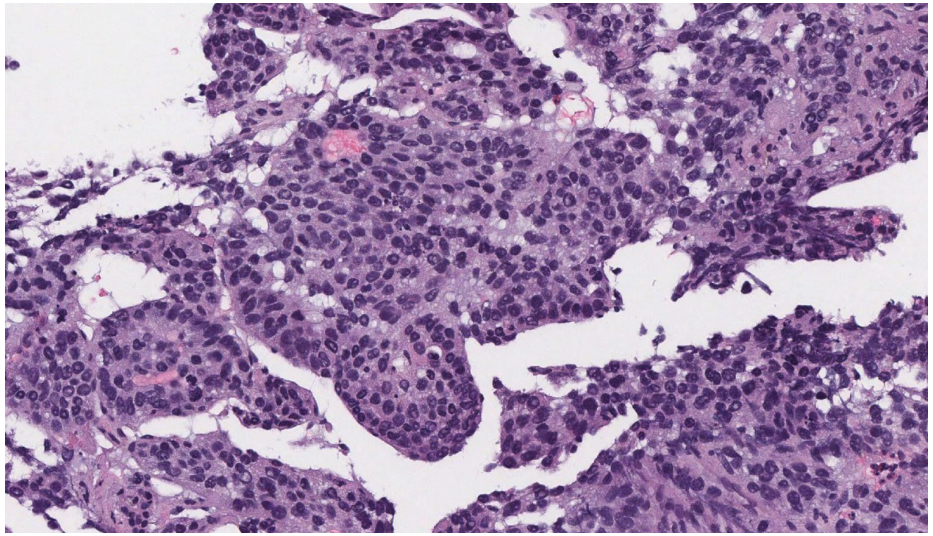
Outline of this Talk

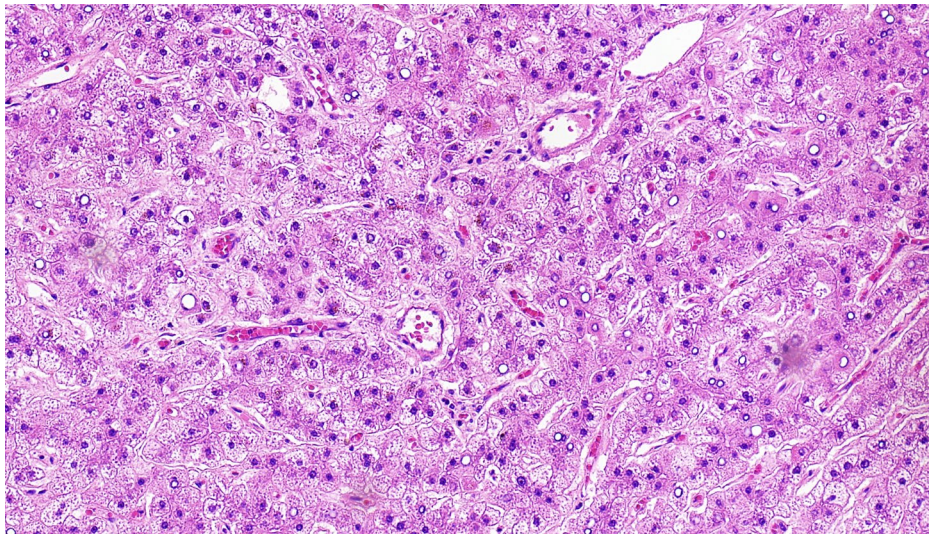
- I. Distinguishing HCC from metastases or iCCA
- II. Distinguishing HCC from benign hepatocellular conditions

Common Issues when Diagnosing an HCC

- **Met or intrahepatic cholangioCA vs. HCC: You know it's malignant, but not sure it is hepatocytic**
  1. Which histologic & IHC features help confirm HCC?
  2. Which tumors mimic HCC histology and which HCC stains can be spuriously positive in mets?
  3. Which stains usually used for mets can be positive in HCC?

- **Benign vs. HCC: You know it's hepatocytic but can't tell if it is malignant**



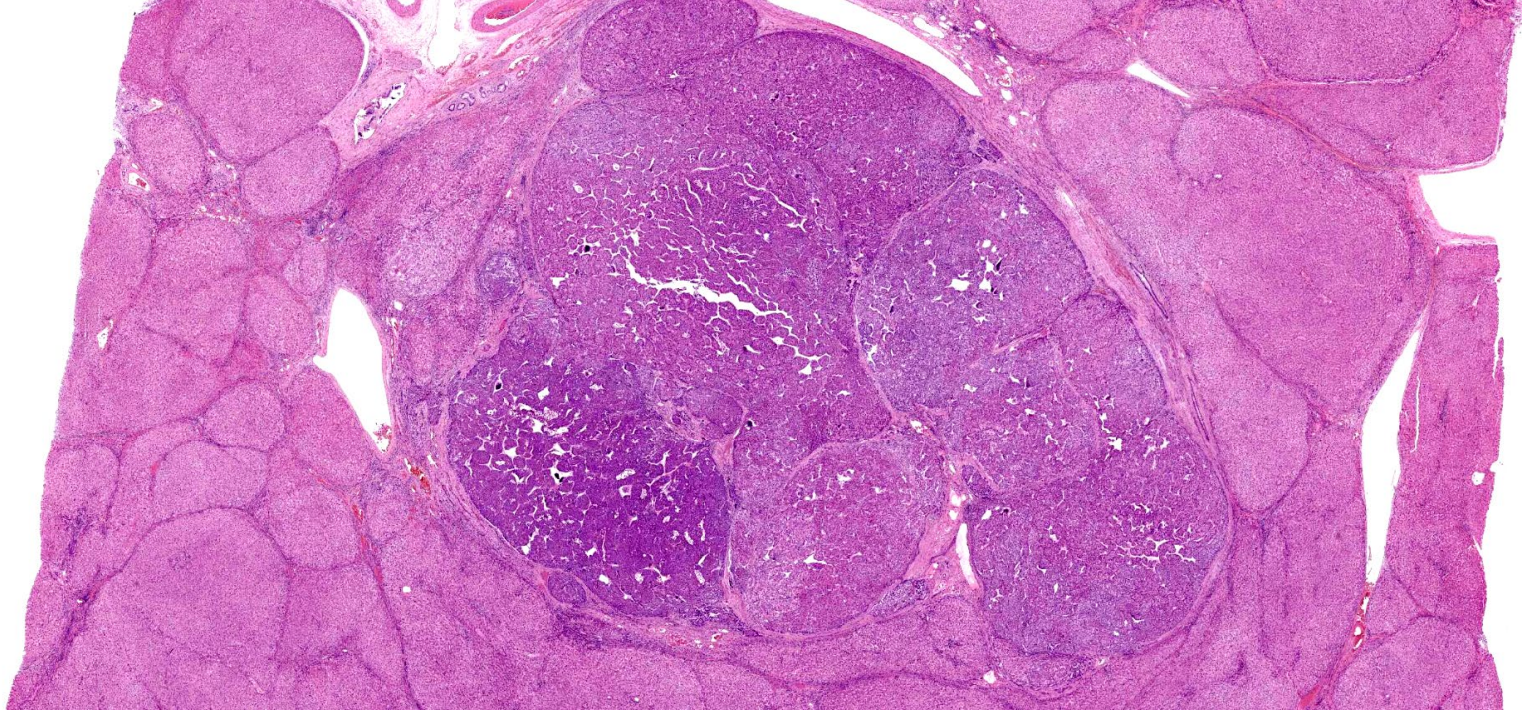


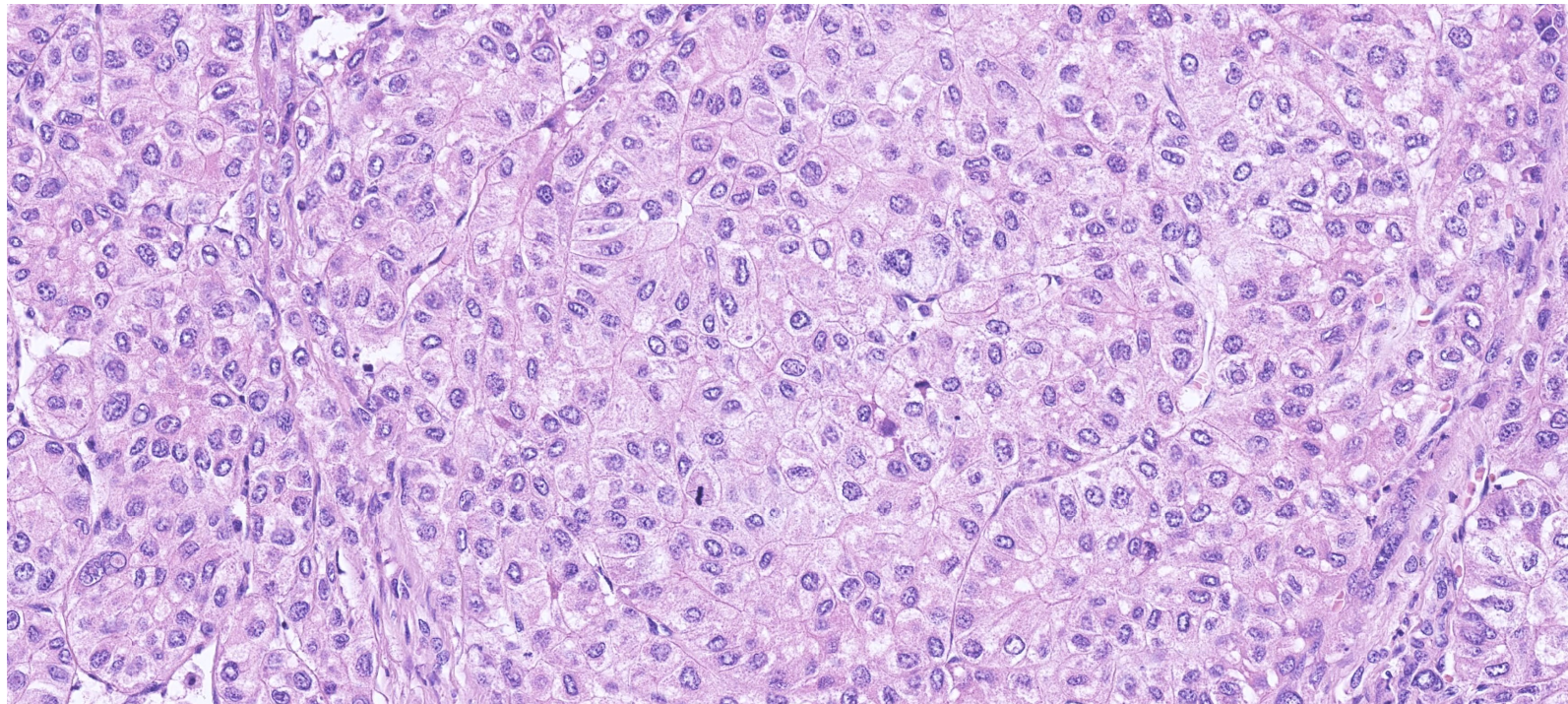
Basics of HCC Histology & Immunohistochemistry

Example of Classic HCC

55 Male with Hepatitis C and Liver Mass

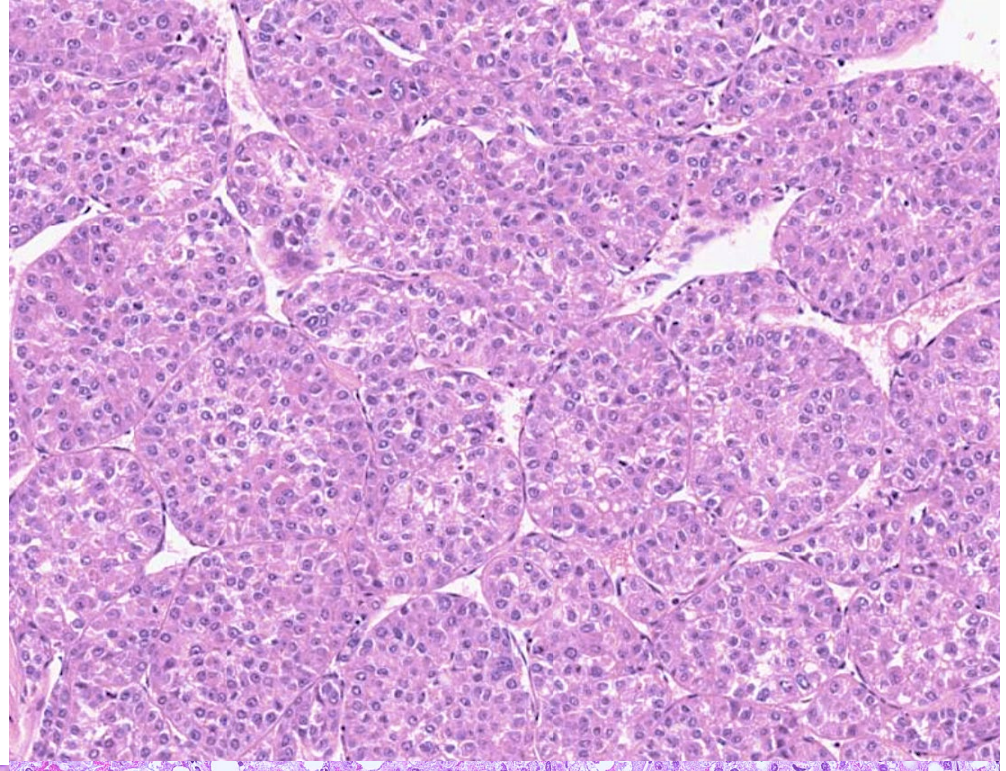
- Classic HCC arises in chronic liver disease
- Polygonal cells with abundant eosinophilic cytoplasm
- Has trabecular or pseudoacinar architecture with thickened hepatic plates (>3 cells), reticulin stain highlights expanded trabeculae or reticulin loss
- Lack of portal tracts in nodule

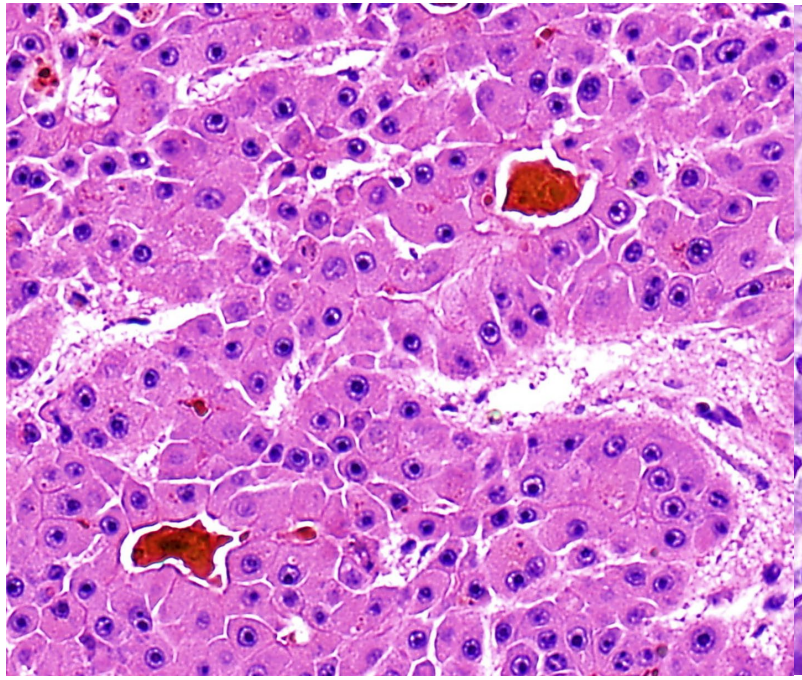


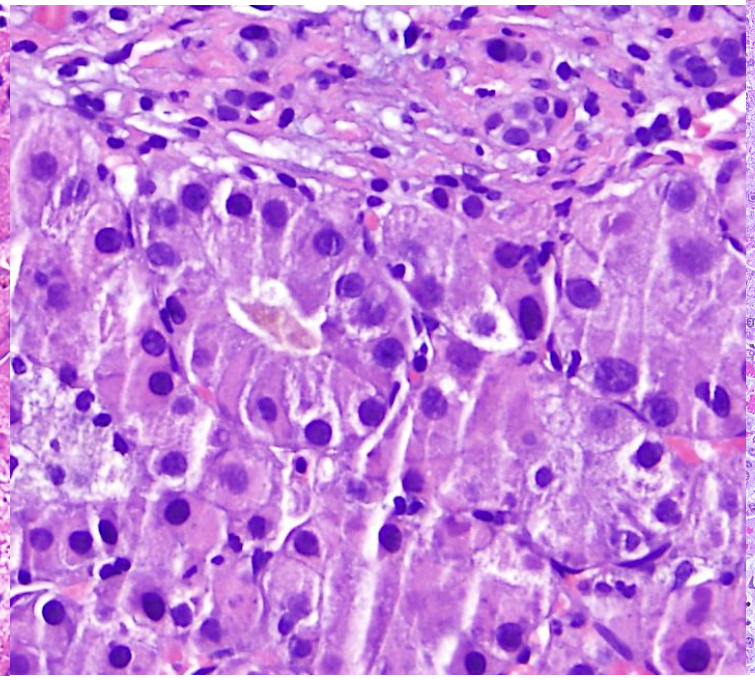


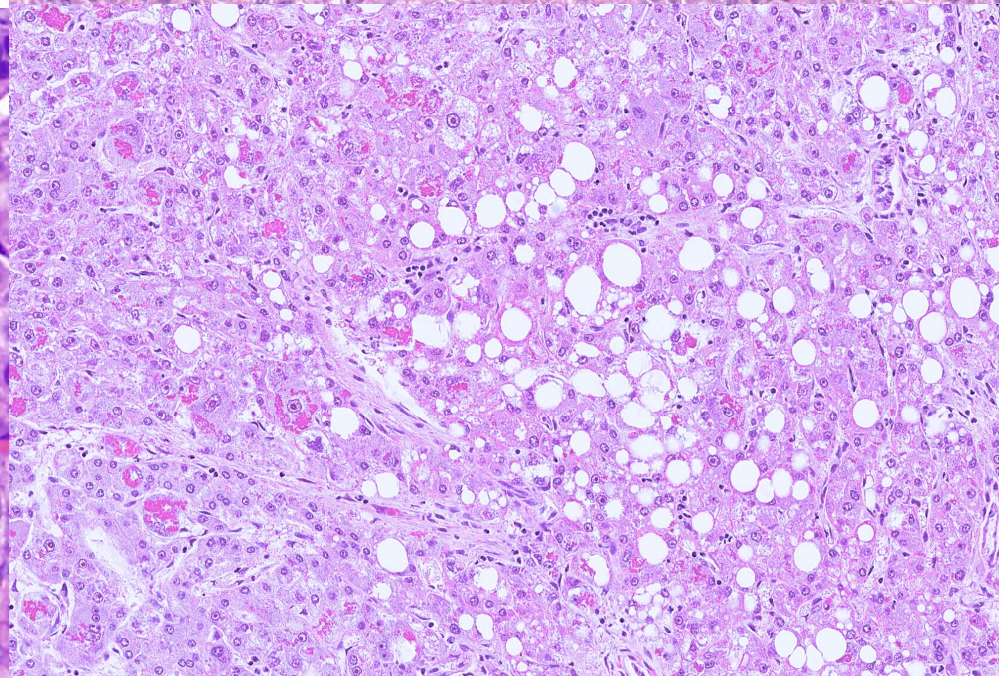
Histologic Features of HCC

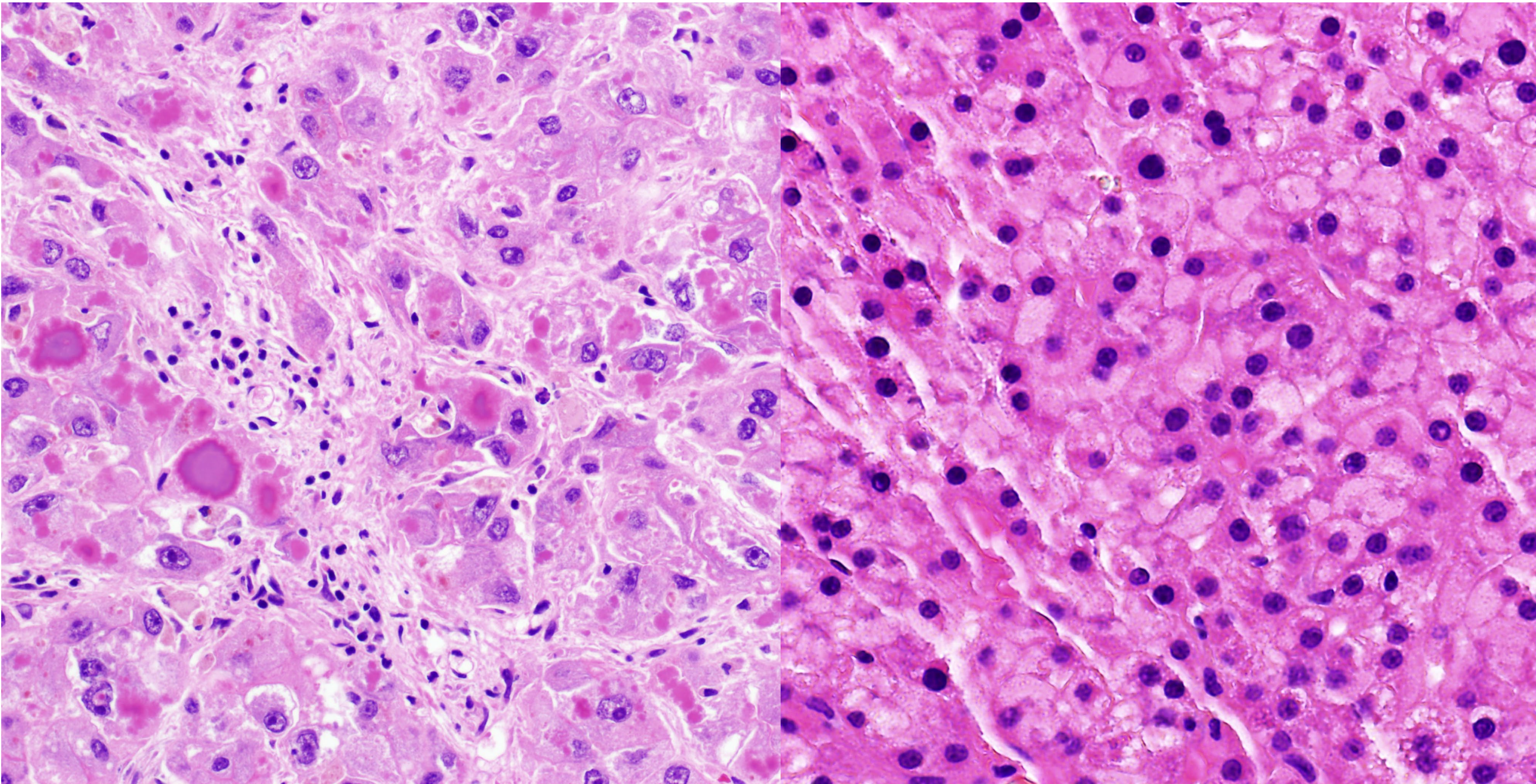
- Polygonal cells, eosinophilic cytoplasm
- Trabecular arrangement
- **Bile formation**, pseudoacinar structures; mucin rules out HCC
- Steatosis, Mallory-Denk bodies











Features that Support Diagnosis of HCC

	HCC
Cirrhosis	Yes
Alpha fetoprotein levels	Increased in 60%
Bile formation	Yes
Steatosis	Yes
Eosinophilic cytoplasm, polygonal cells	Yes
Trabecular architecture	Yes
Mallory-Denk bodies	Yes
Combo of + IHC: Arg-1, HepPar-1, glypican 3	Yes

Features that Support Diagnosis of HCC

	HCC	Other tumors
Cirrhosis	Yes	Unlikely (<2%); iCCA may arise in cirrhosis
Alpha fetoprotein levels	Increased in 60%	Germ cell tumors
Bile formation	Yes	Hepatoid adenoCA
Steatosis	Yes	Angiomyolipoma (fat outside the cells)
Eosinophilic cytoplasm, polygonal cells	Yes	Neuroendocrine tumors, iCCA, acinar, AML
Trabecular architecture	Yes	NET, adrenal, renal, acinar cell CA
Mallory-Denk bodies	Yes	iCCA – eosinophilic globules
Combo of + IHC: Arg-1, HepPar-1, glypican 3	Yes	Hepatoid adenoCA

USEFUL MARKERS FOR DIAGNOSING HCC

Marker	Staining Pattern	Positive Staining	Reported Sensitivity in HCC (%)
HepPar-1	Cytoplasmic	Liver: normal and neoplastic	WD: 91–100 PD: 22–81[6,12,13,24,30,56]
ARG-1	Cytoplasmic/nuclear	Liver: normal and neoplastic	WD: 94–100 PD: 44–100[6,12,13,24,30,56]
BSEP	Any (predominantly canalicular)	Liver: normal and neoplastic	WD: 92–100 PD: 45–78[13,24,30]
pCEA	Canalicular	Liver: canalicular pattern is specific Nonliver: noncanalicular patterns	WD: 82–92 PD: 54–78[24,30]
CD10	Canalicular	Liver: canalicular pattern is specific Nonliver: noncanalicular patterns	WD: 72 PD: 67[30]
GPC-3	Cytoplasmic/ membranous	Benign liver: negative HCC: positive • Including scirrhous subtype • May be negative in fibrolamellar subtype	WD: 50–76 PD: 67–100[24,30,40,58,67]
Albumin ISH	Dotlike signal	Liver: normal and neoplastic • Often including cholangiocarcinoma	WD: 100 PD: 99[56]

GENERAL RULE OF THUMB:	HCC	Metastatic adenoCA
Albumin-ISH	+ (positive in primary hepatic CA)	-
Combination of positive ARG-1, Hep Par-1, Glyp-3	+	-
Combo of CK7, CK20, MOC31	-	+

Surg Pathol Clin. 2018 Jun;11(2):367-37

Using a Combination of Immunohistochemical Markers to Support HCC

Differentiation	Arginase-1, No. (%)	Glypican-3, No. (%)	Hep Par-1, No. (%)
Well, n = 13	13 (100)	2 (15)	13 (100)
Moderately, n = 41	40 (98)	24 (58)	34 (83)
Poorly, n = 35	34 (88)	29 (74)	12 (30)

Arch Pathol Lab Med. 2015 Aug;139(8):1028-34

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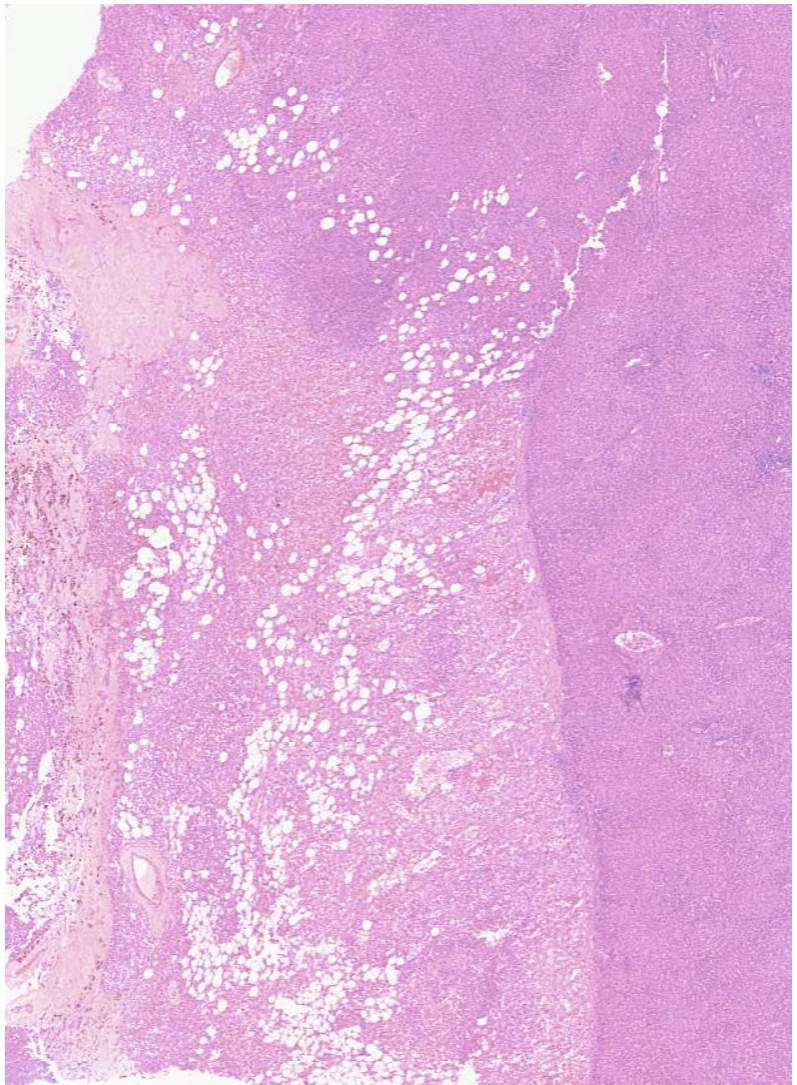
Differentiation	Hep Par-1$^+$ and/or Glypican-3$^+$, No. (%)		Hep Par-1$^+$ and/or Arginase-1$^+$, No. (%)		Glypican-3$^+$ and/or Arginase-1$^+$, No. (%)	
Tumor cells staining, %	**≥5**	**≥50**	**≥5**	**≥50**	**≥5**	**≥50**
Well, n = 13	13 (100)	13 (100)	13 (100)	13 (100)	13 (100)	13 (100)
Moderately, n = 41	41 (100)	40 (98)	41 (100)	40 (98)	41 (100)	41 (100)
Poorly, n = 39	36 (97)	34 (87)	37 (97)	34 (88)	39 (100)	37 (95)

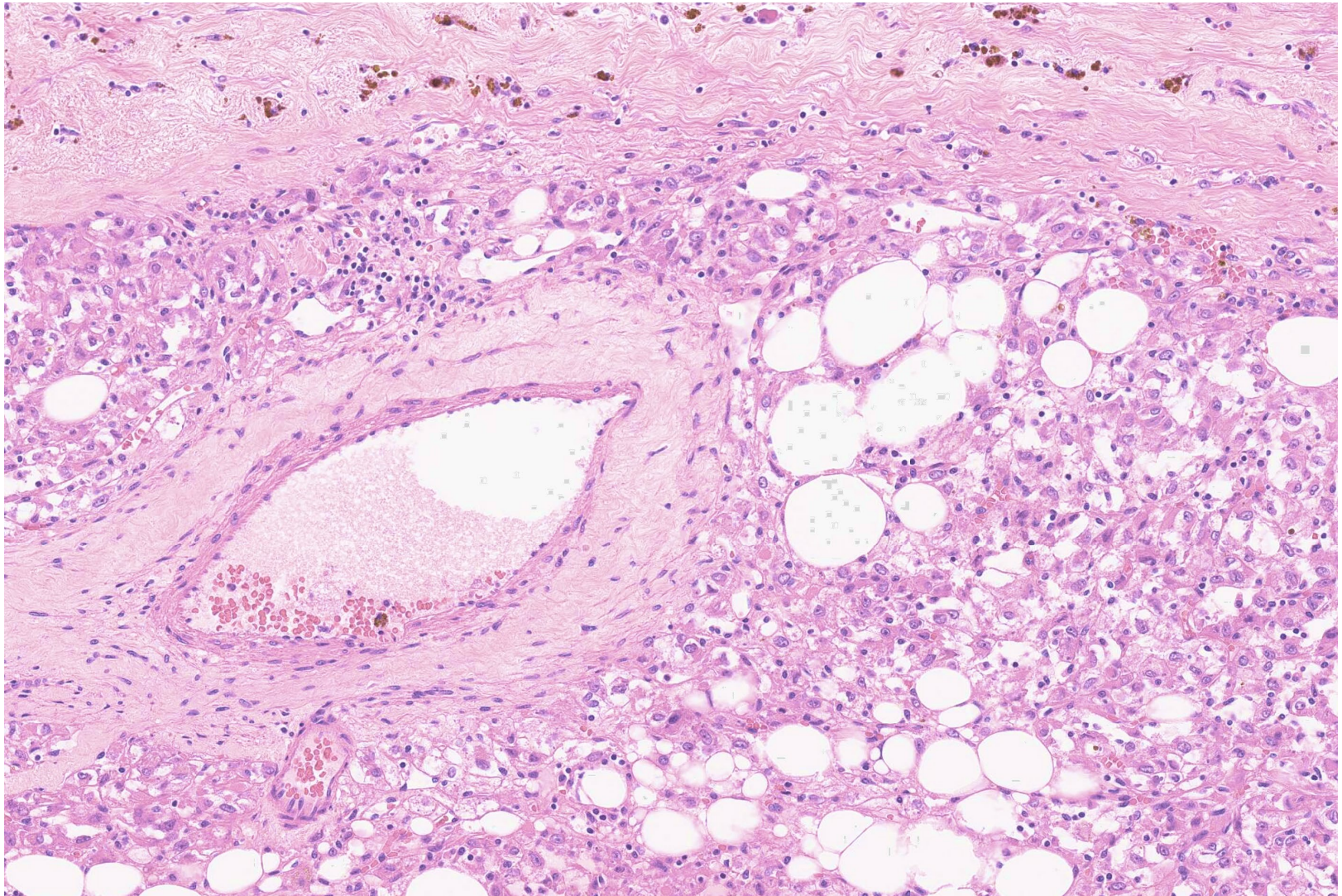
Abbreviation: Hep Par-1, hepatocyte paraffin antigen 1.

Arch Pathol Lab Med. 2015 Aug;139(8):1028-34

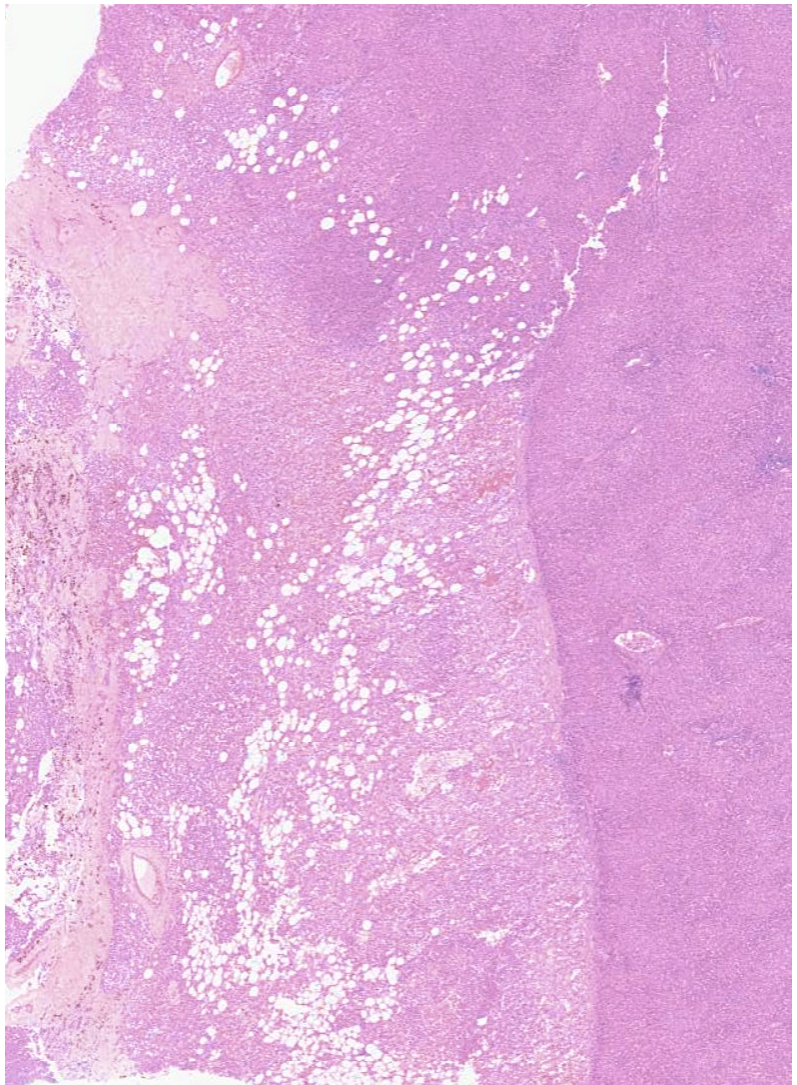
Tumors that Can Mimic HCC

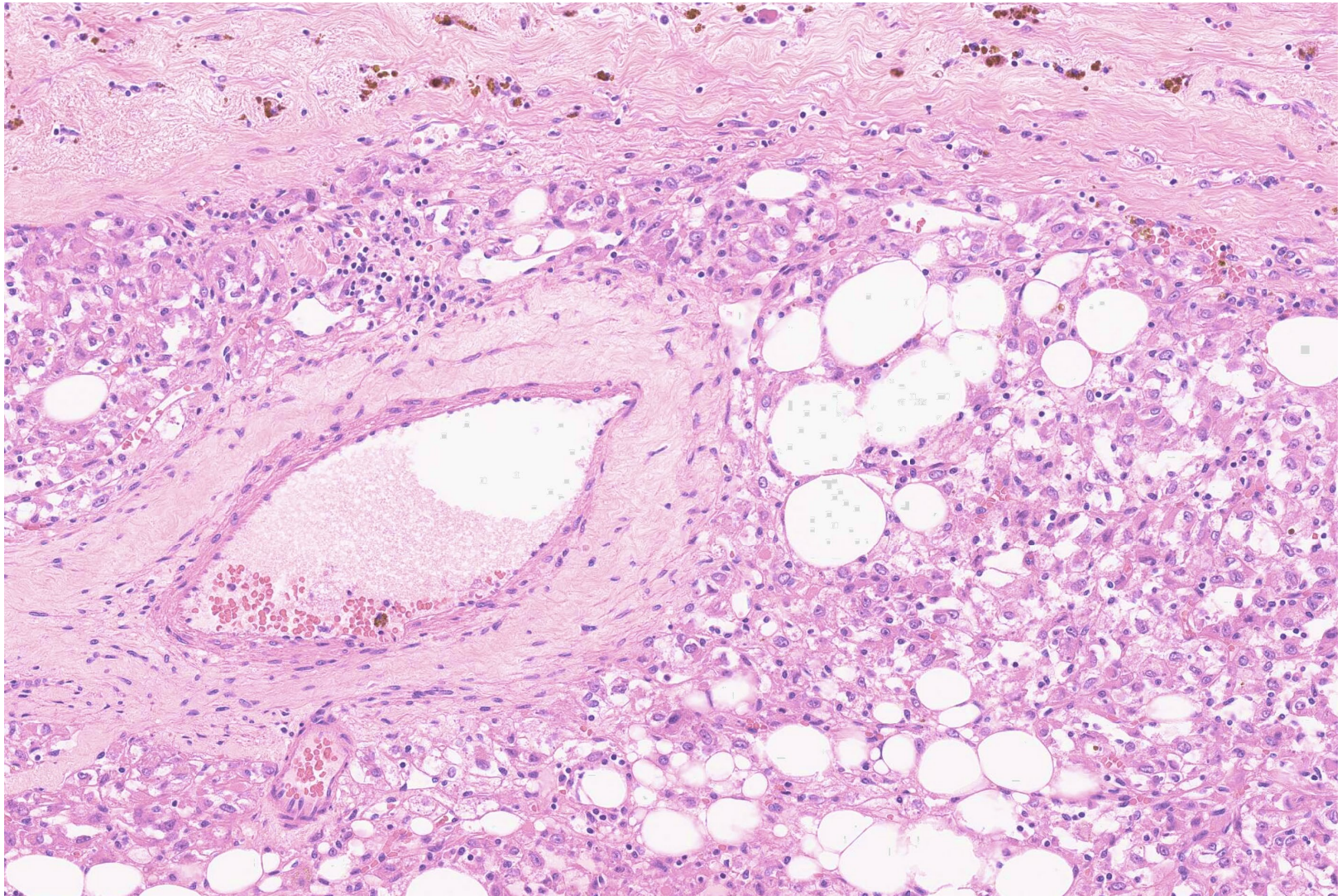
Tumors that Can Mimic HCC Histologically
34 F with liver mass



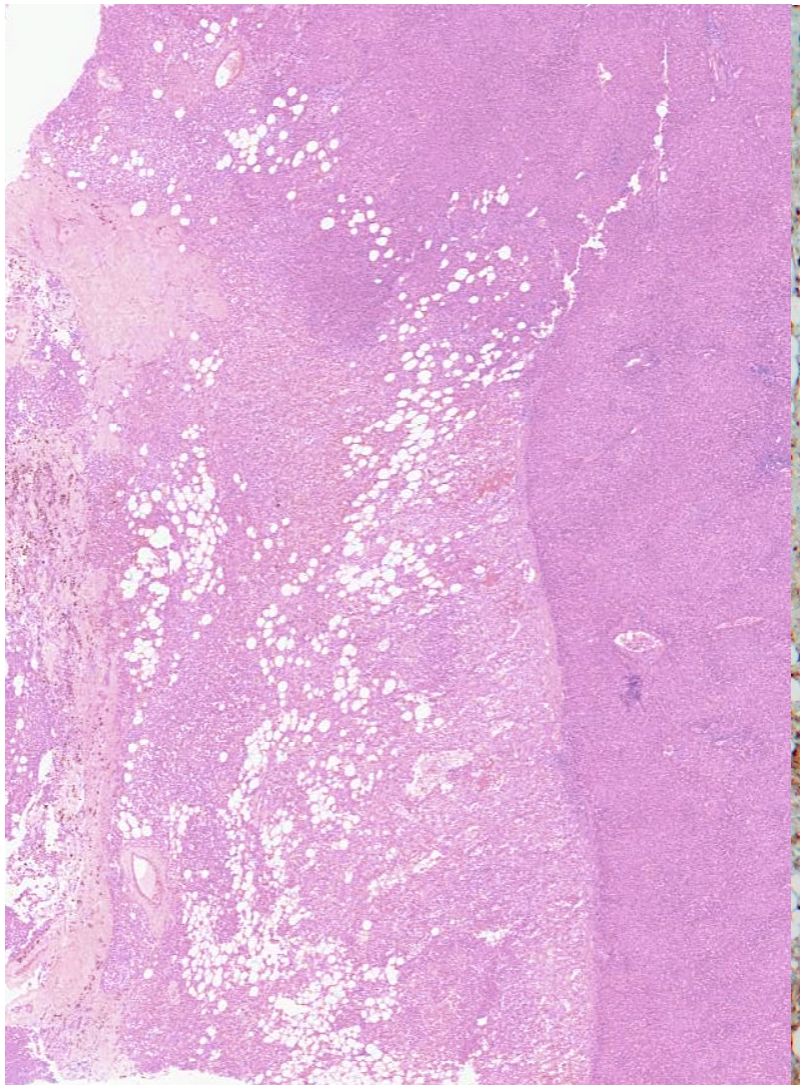


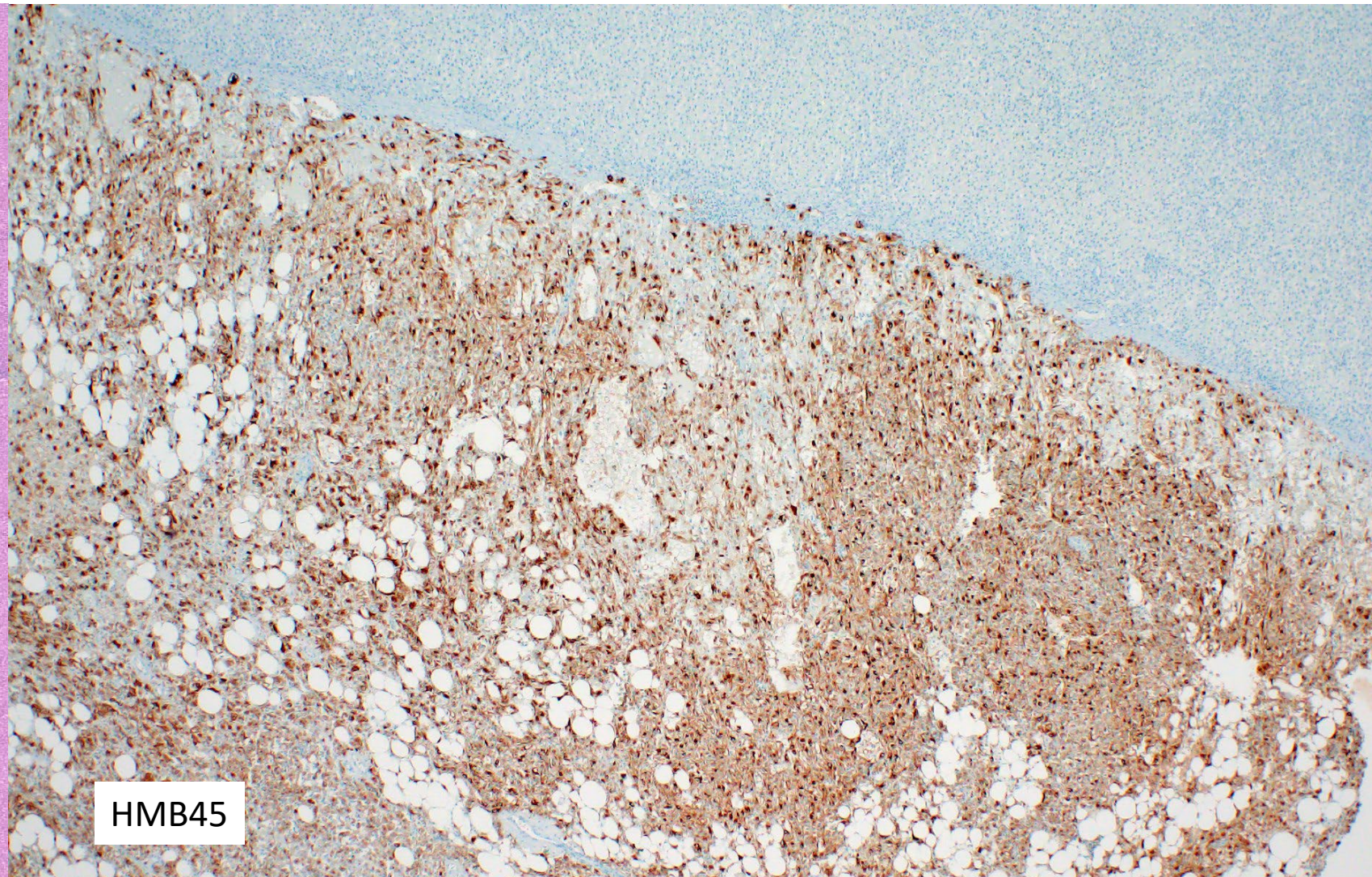
In HCC, the Fat Droplet is INSIDE the cell



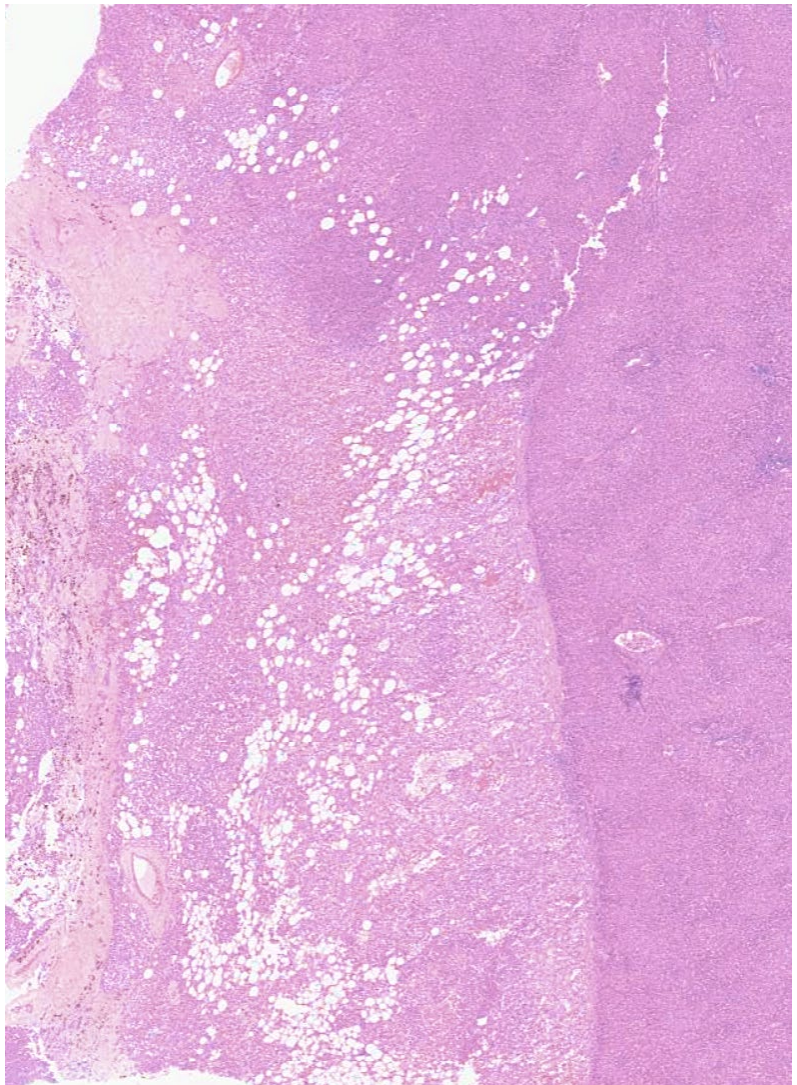


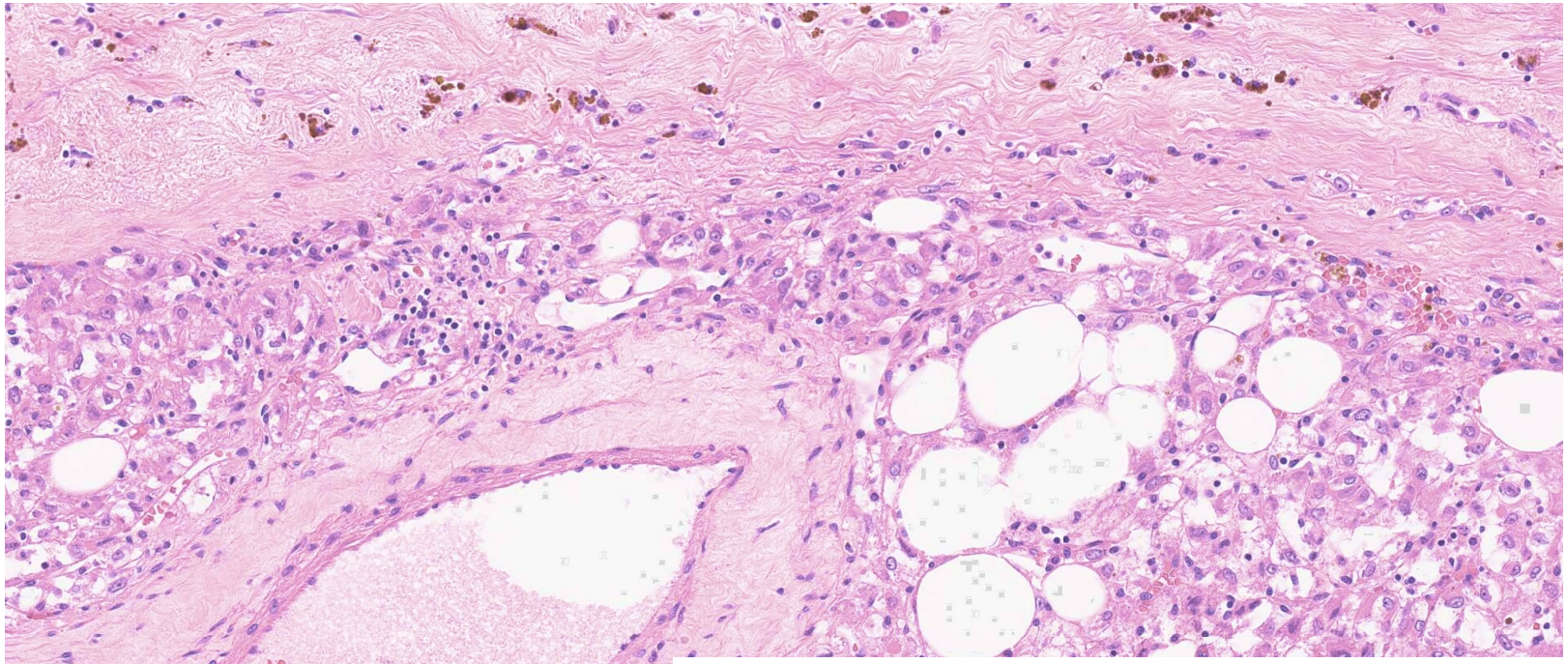
HMB45





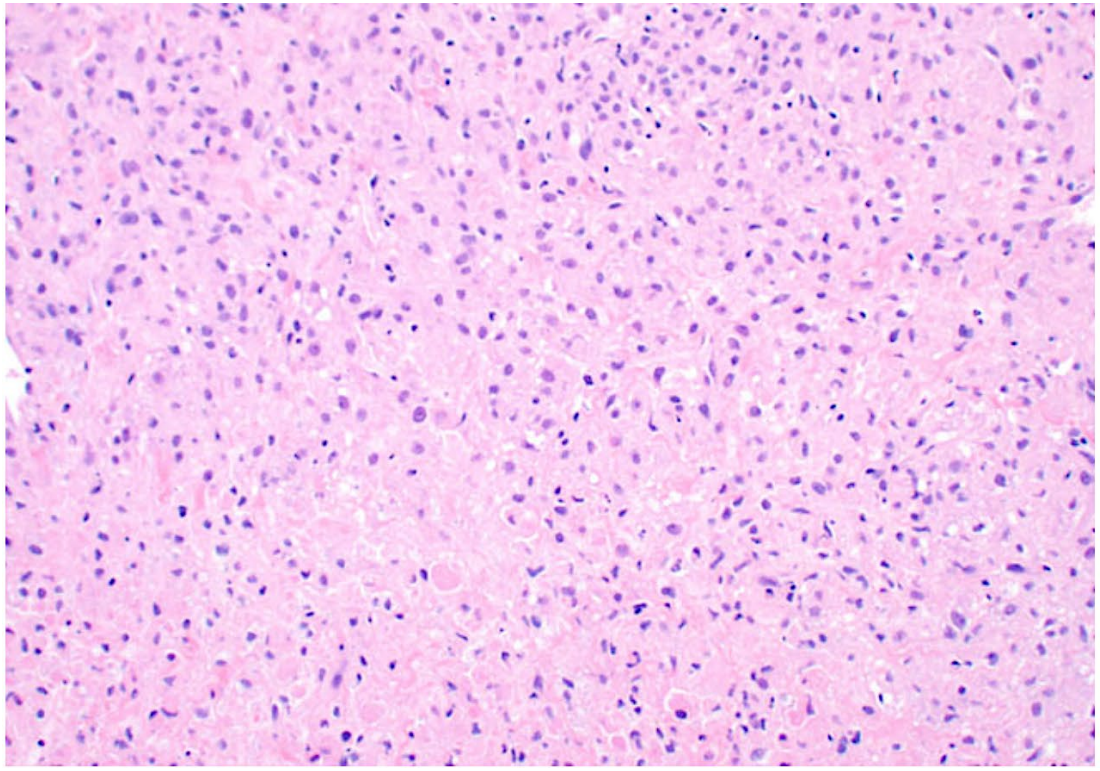
Angiomyolipoma



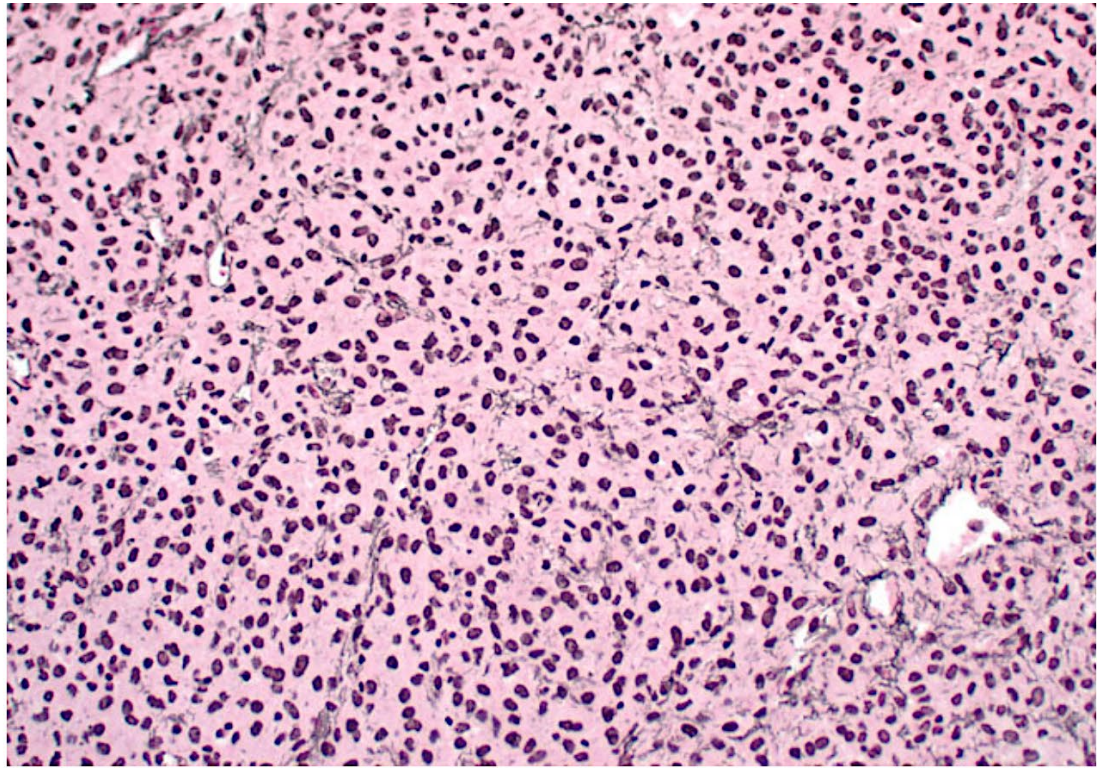


- Epithelioid myoid cells
- Mature adipocytes
- Thick arteries
- Brown melanin & Fe
- HMB45 +, Keratin -, SMA+, S100-

Fat-poor AML can Mimic HCC



Epithelioid smooth muscle cells have eosinophilic cytoplasm like HCC

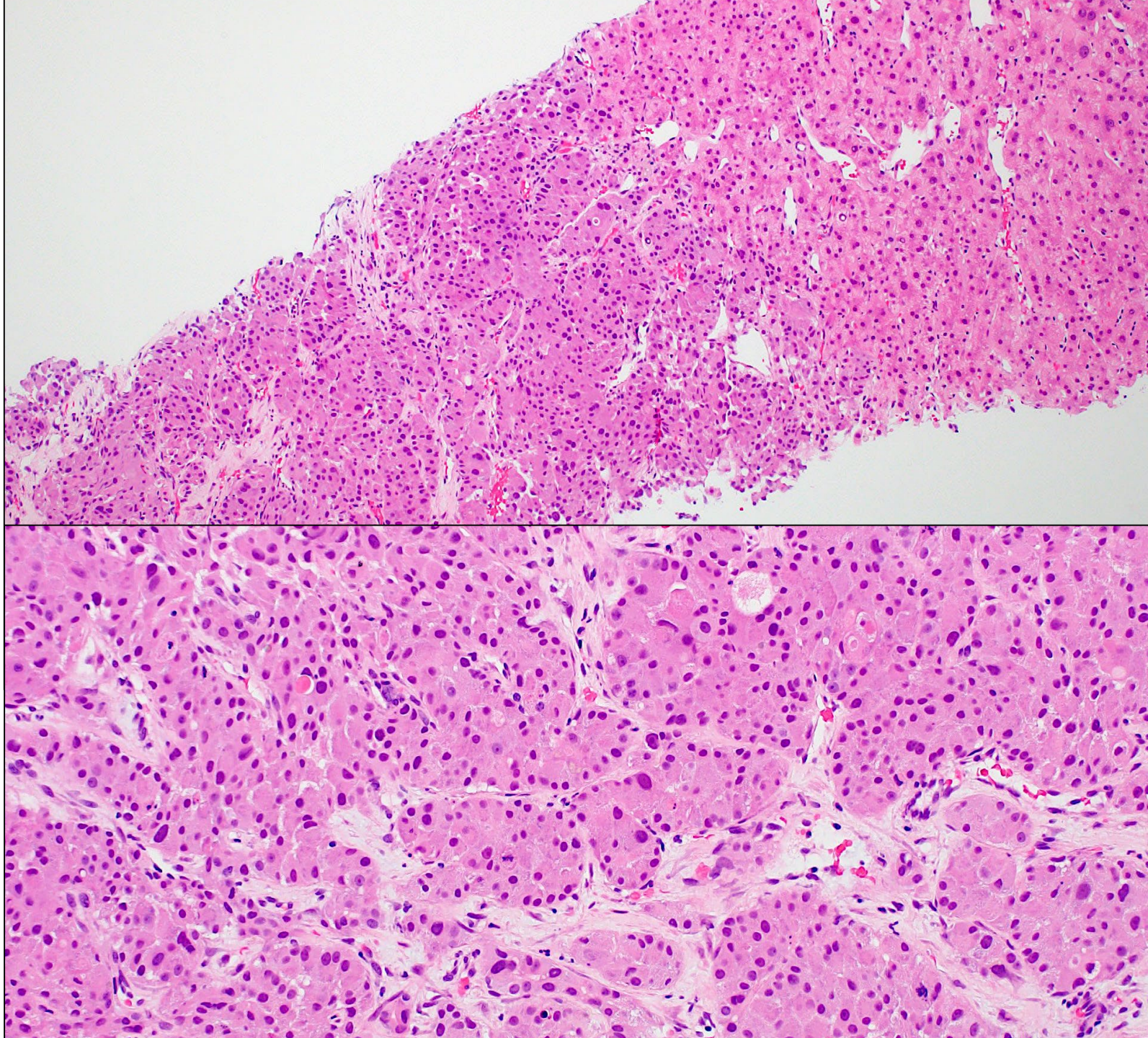


Reticulin ‘loss’ or appearance of Trabecular expansion

Histopathology. 2018 Jul;73(1):101-10

Tumors that Mimic HCC Histologically

- 61 year old male with pancreas mass, also with liver mass



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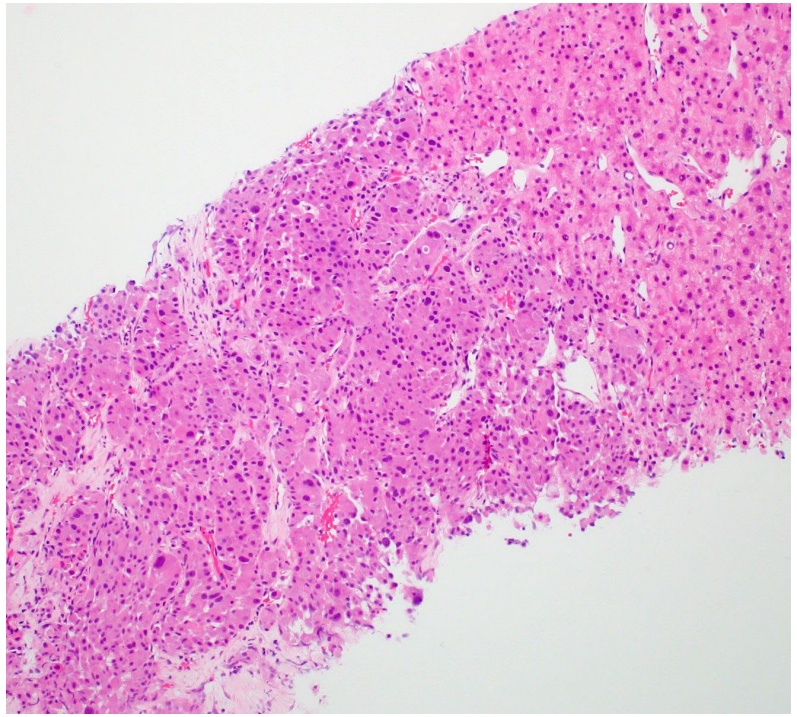
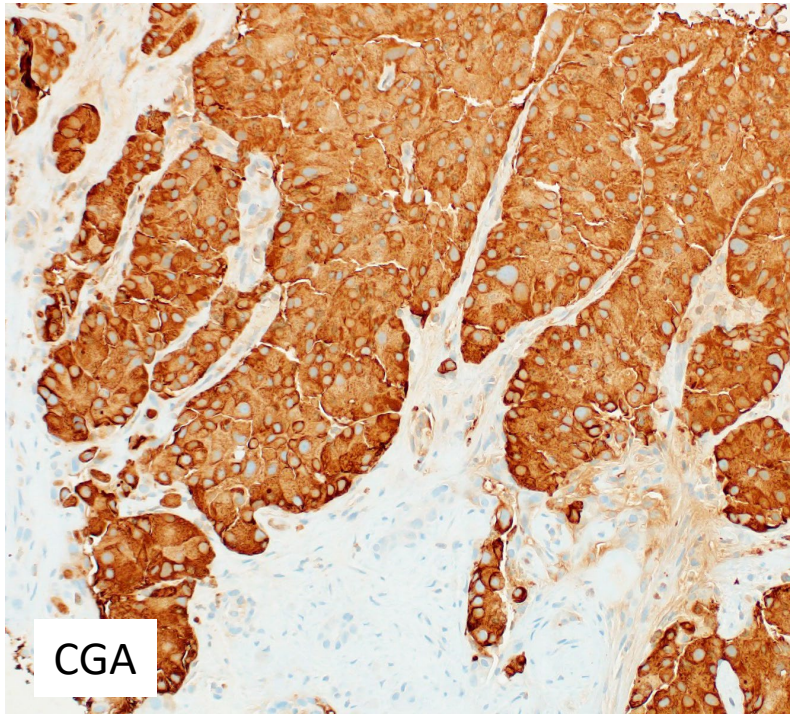
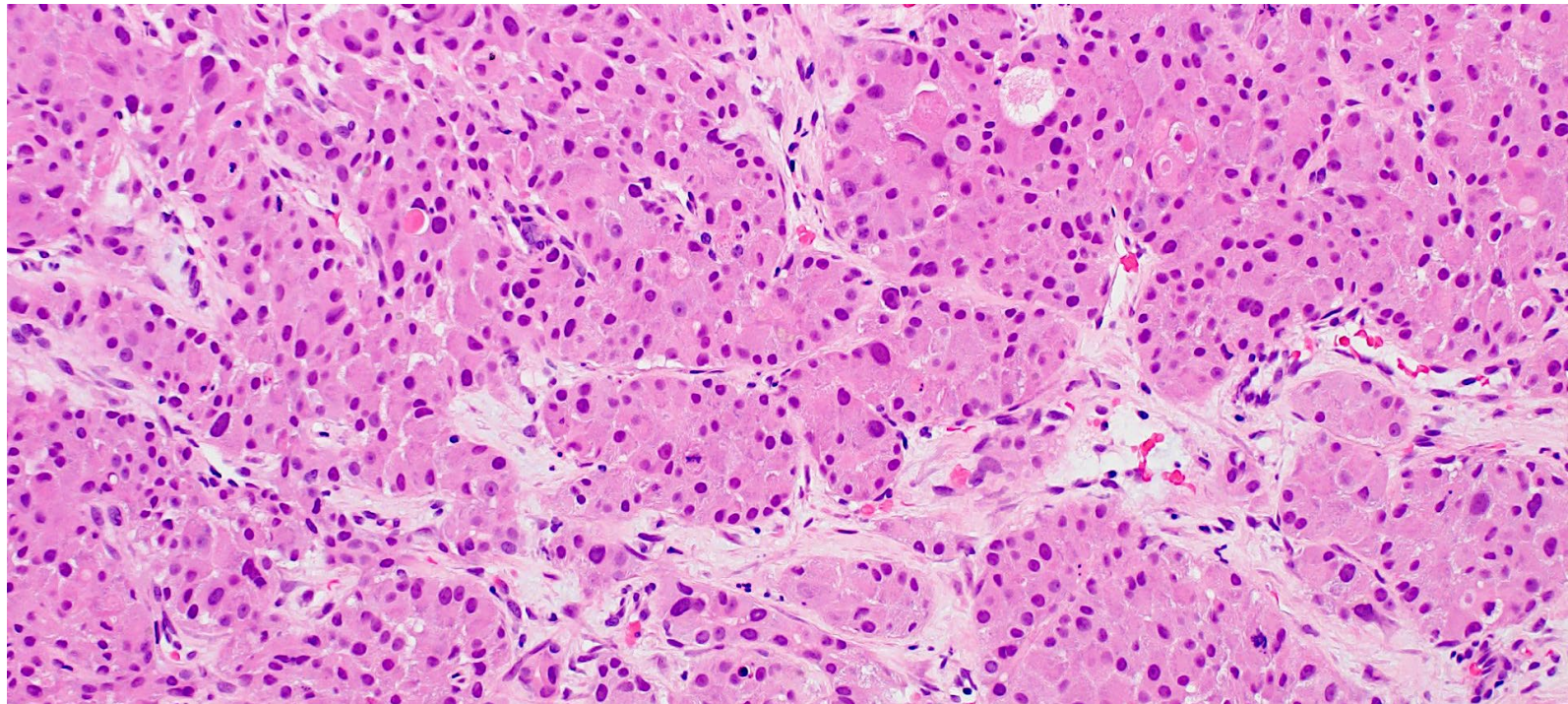
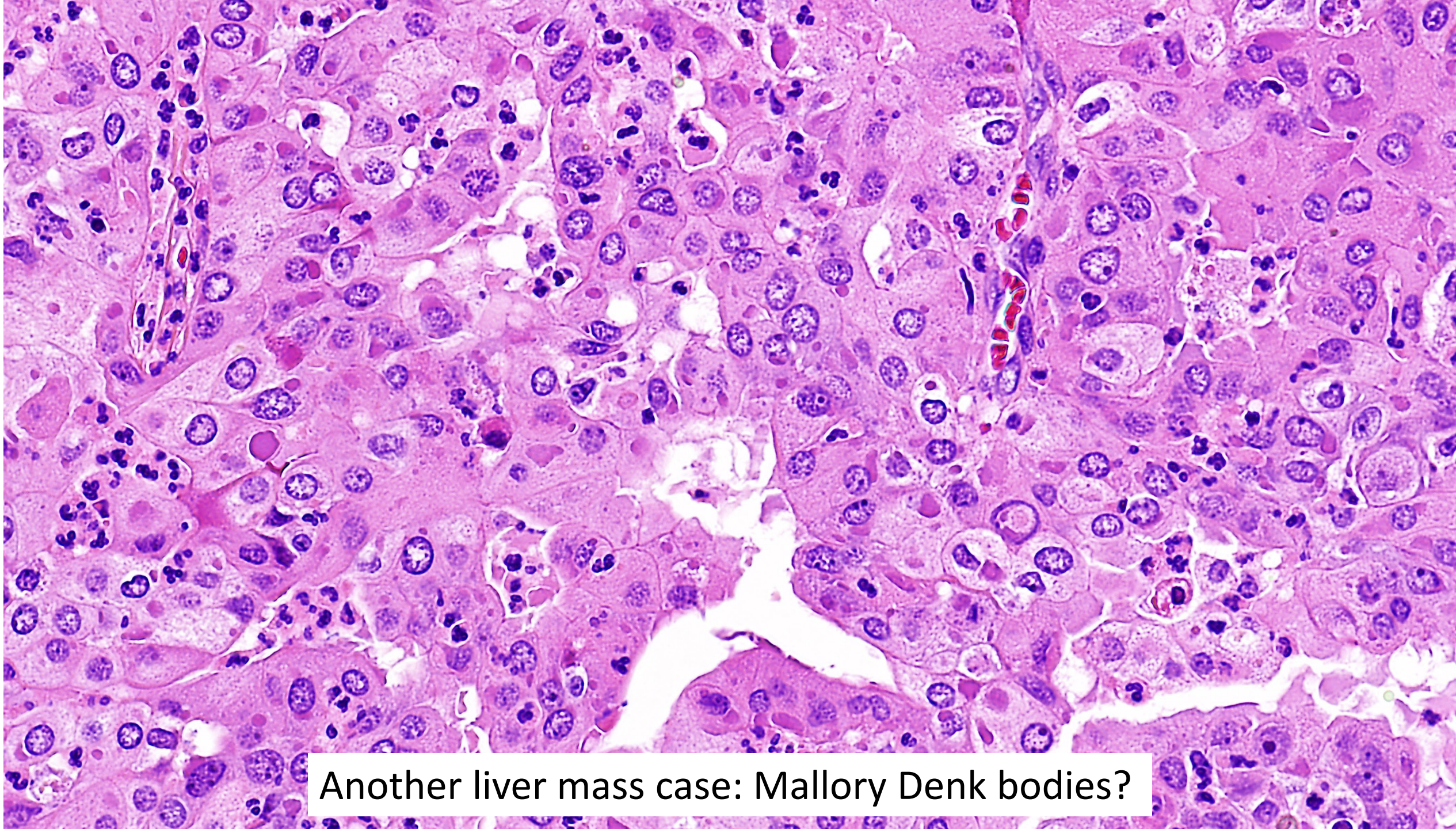
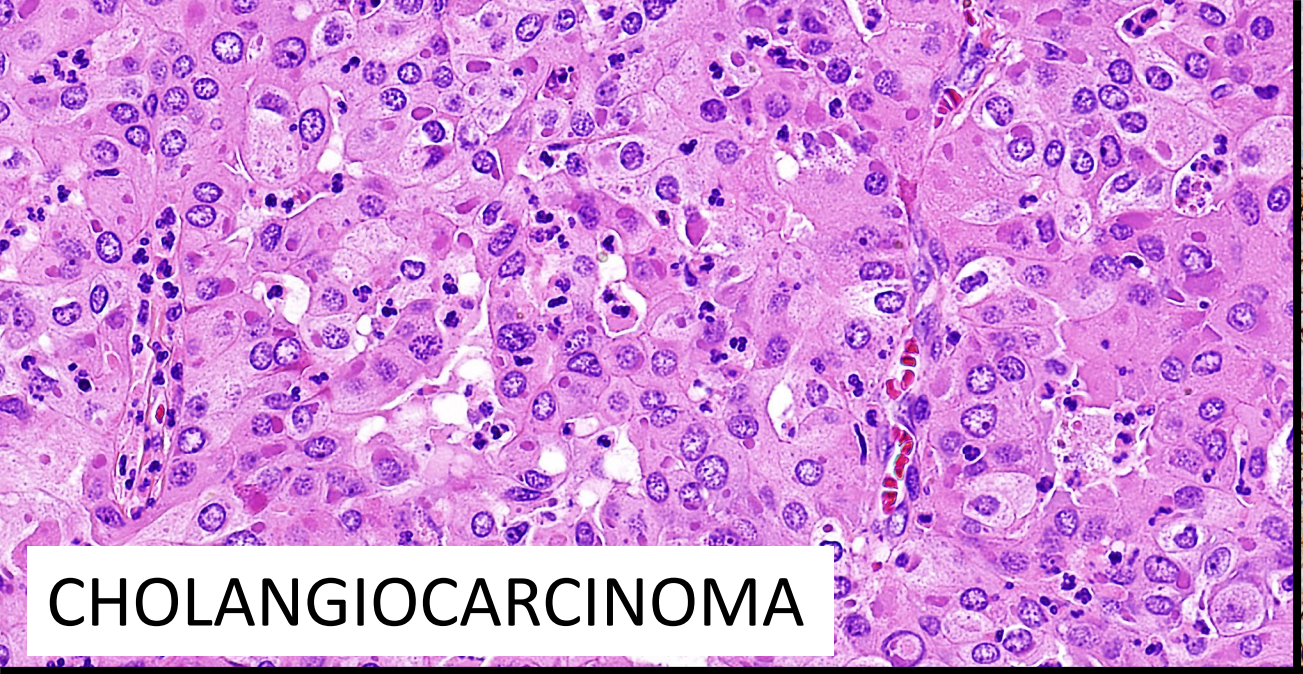


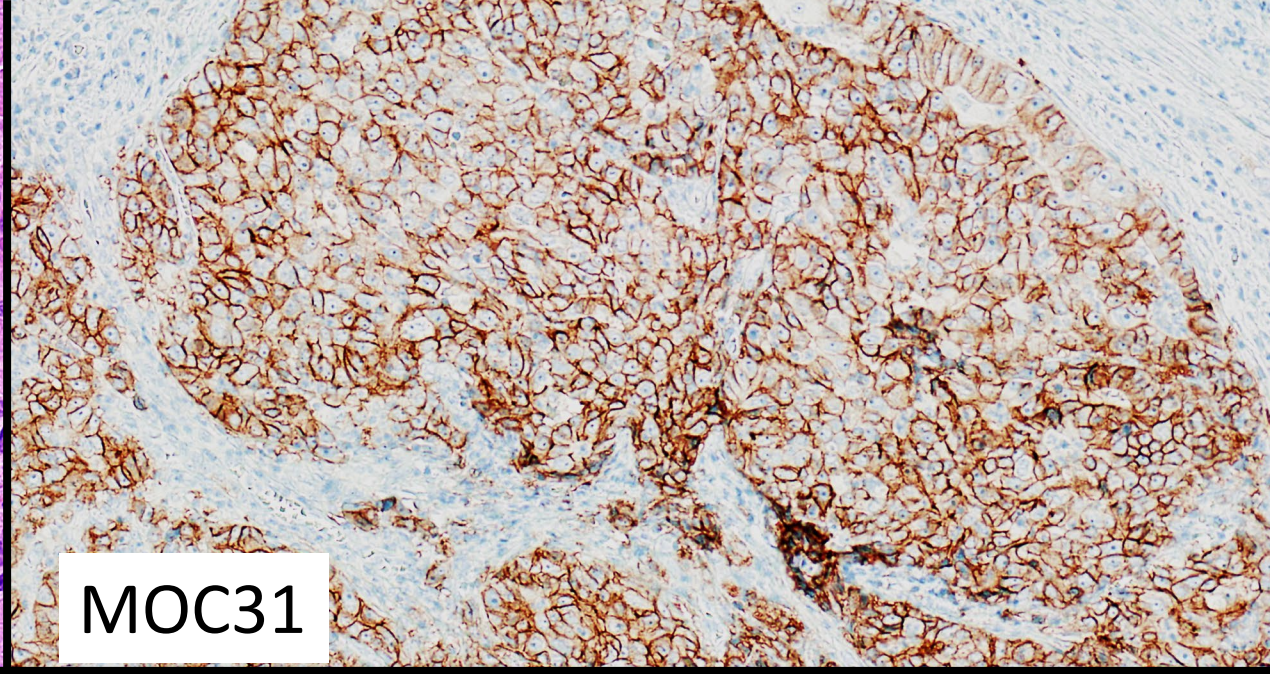


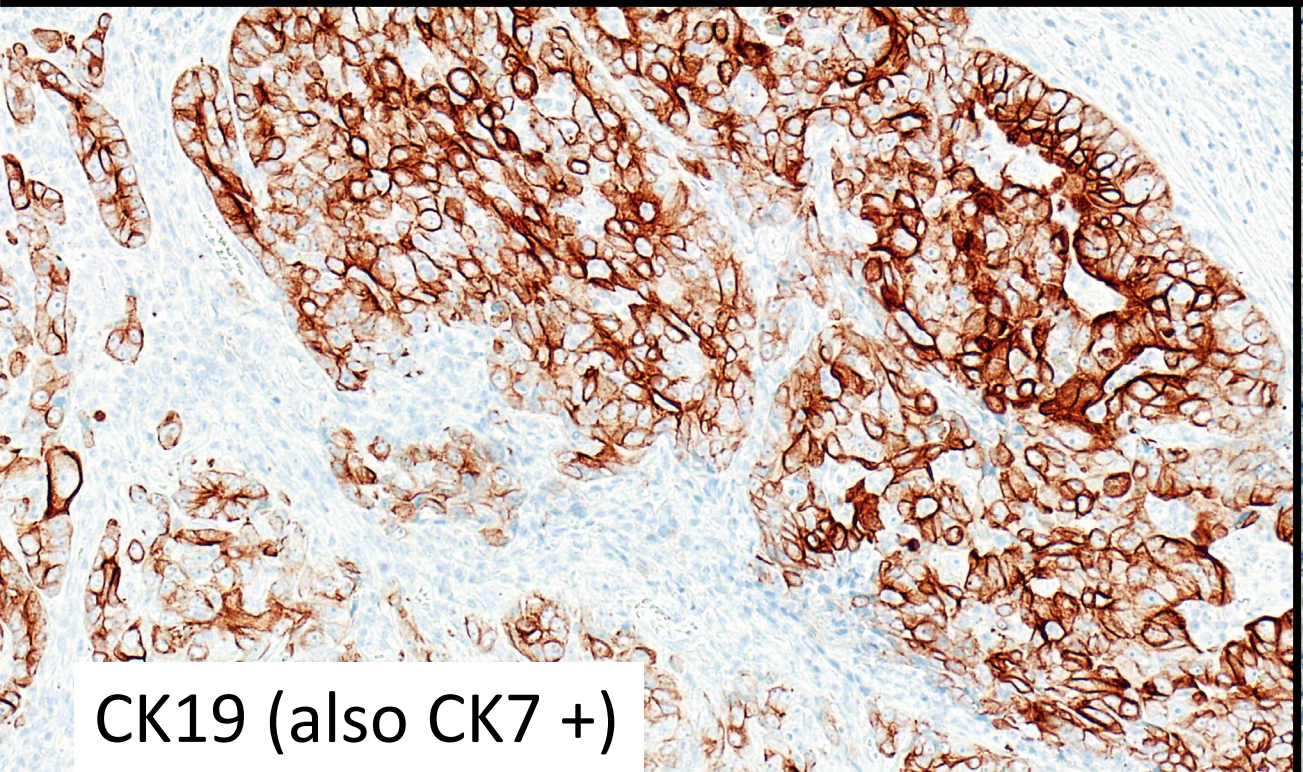


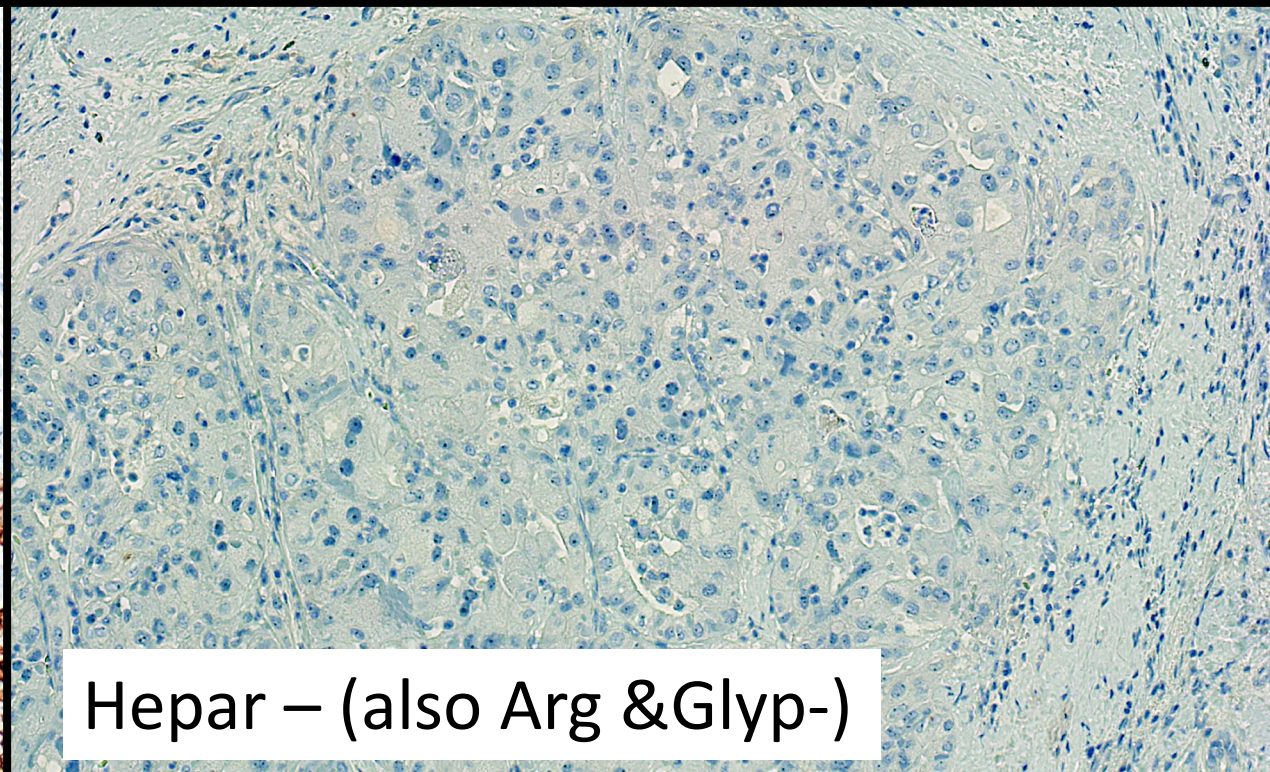
WELL DIFFERENTIATED NEUROENDOCRINE TUMOR

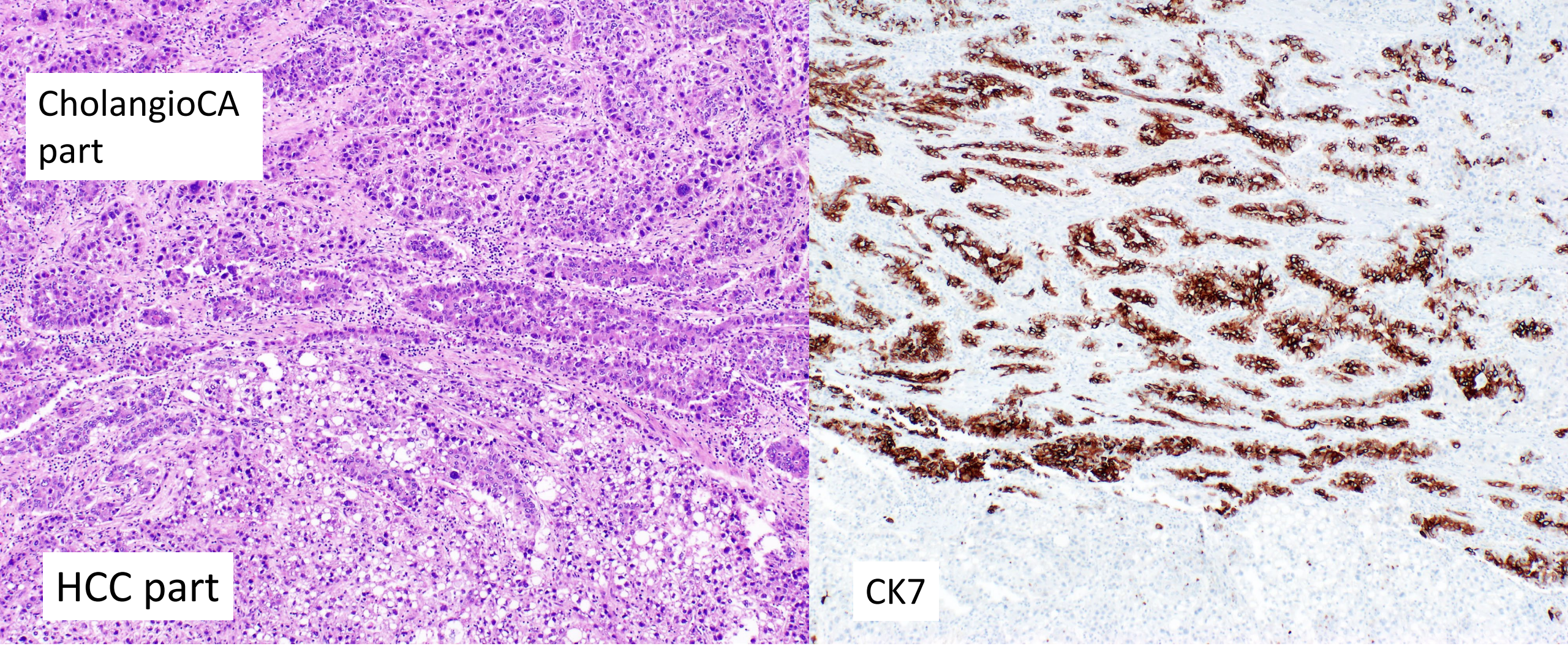

Another liver mass case: Mallory Denk bodies?


CHOLANGIOCARCINOMA

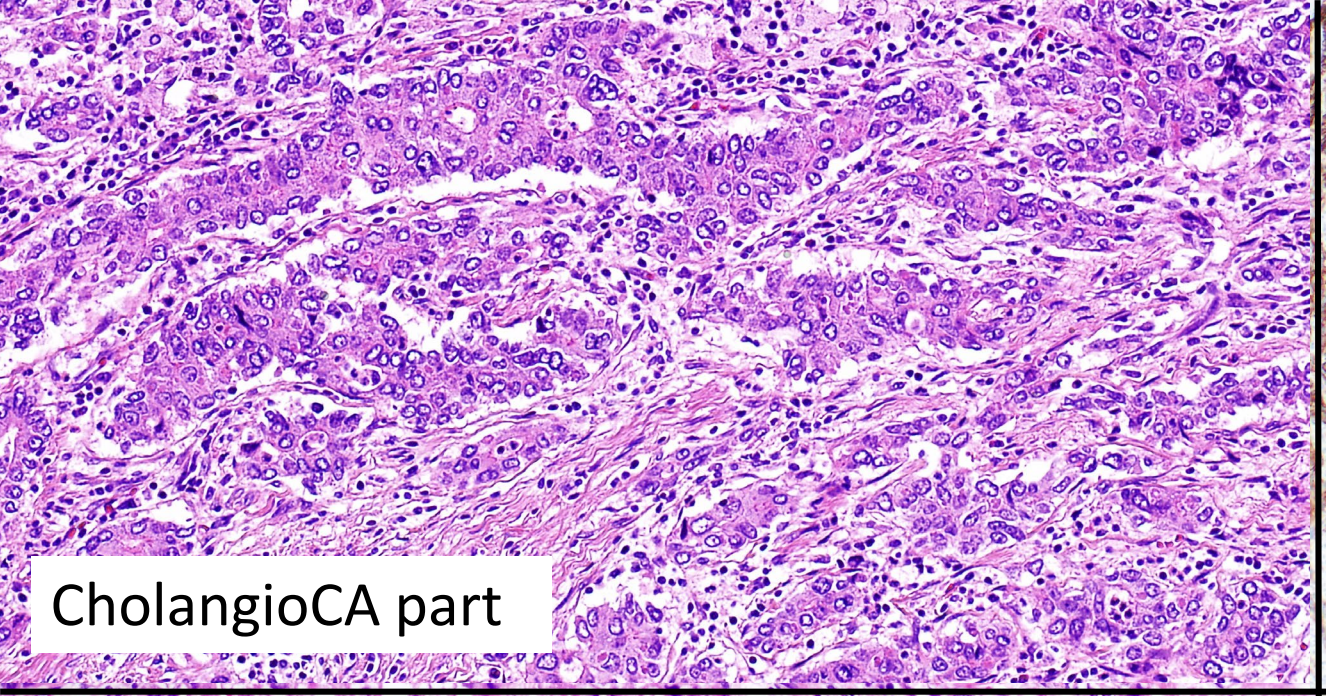

MOC31

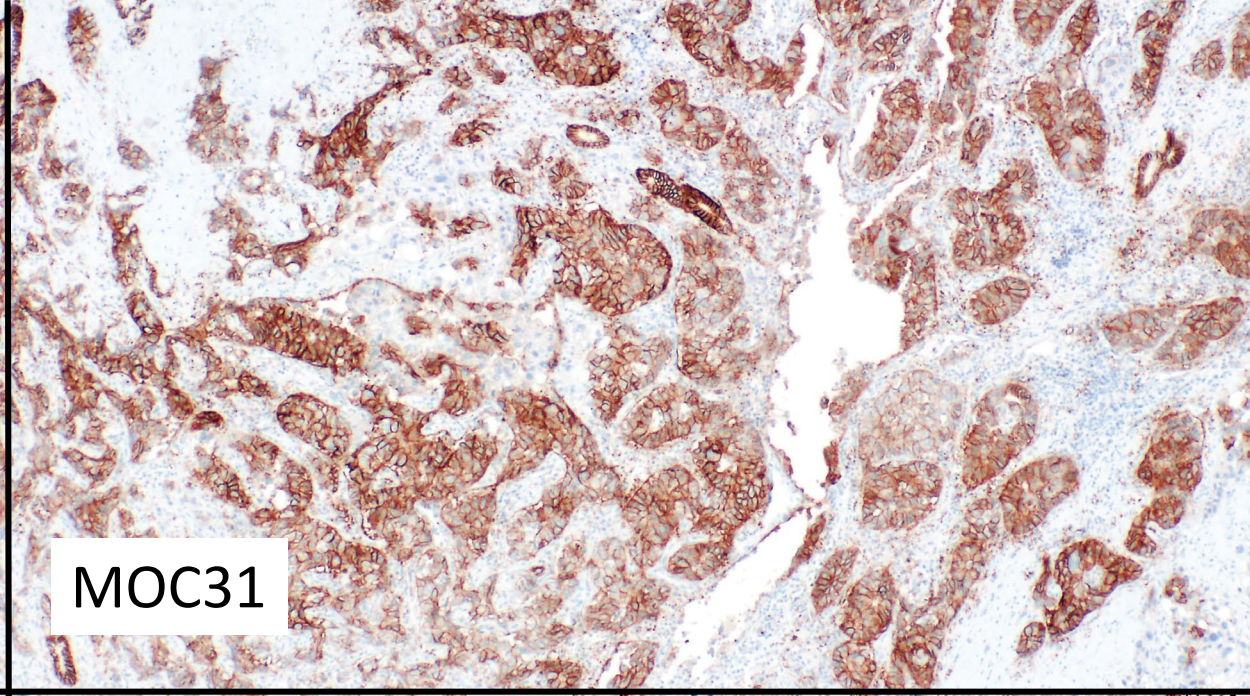

CK19 (also CK7 +)

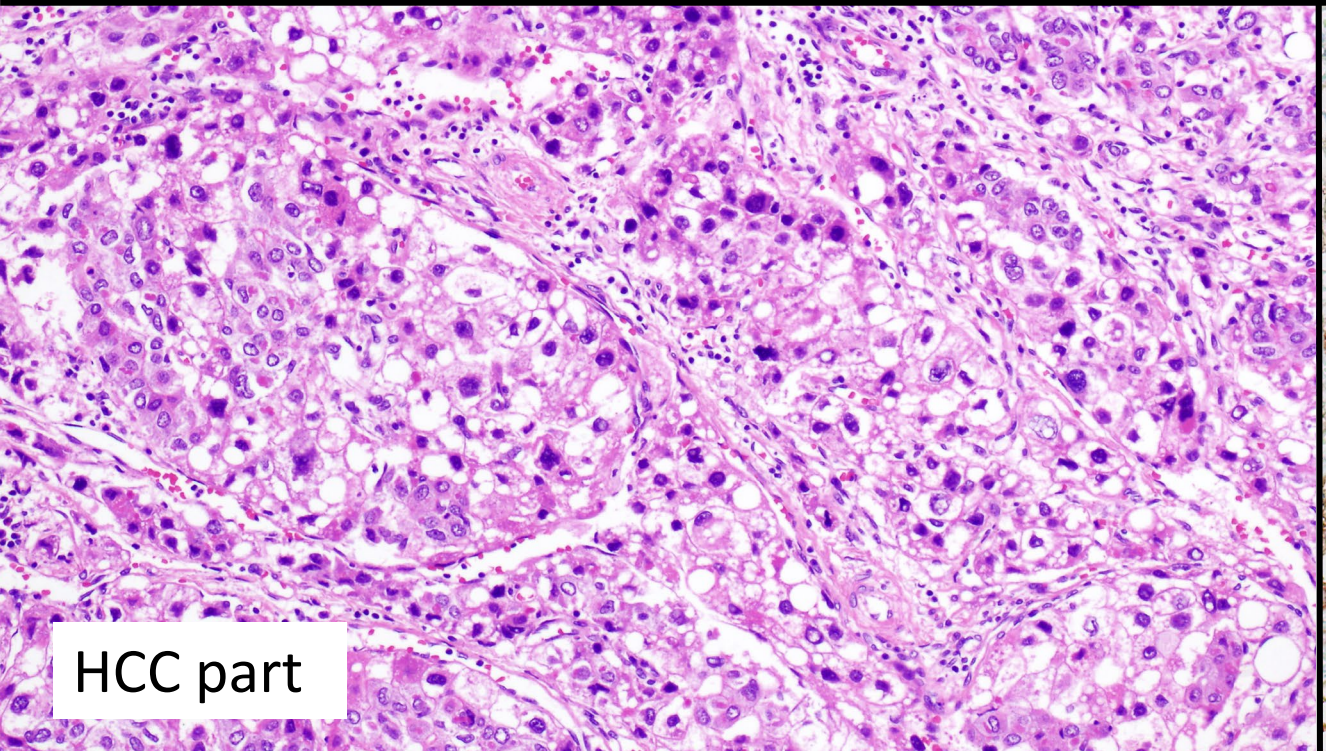

Hepar – (also Arg &Glyp-)

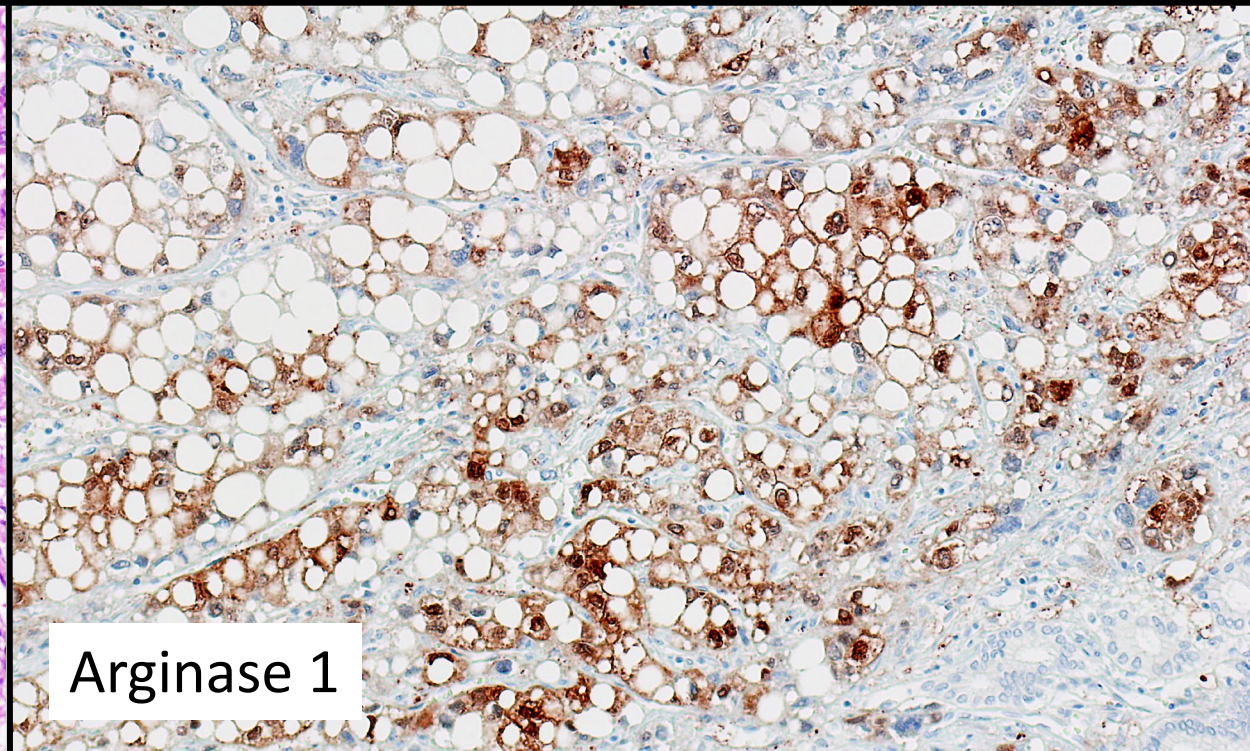


Combined HCC-cholangiocarcinoma


CholangioCA part


MOC31


HCC part


Arginase 1

Combined HCC-CholangioCA

HCC part

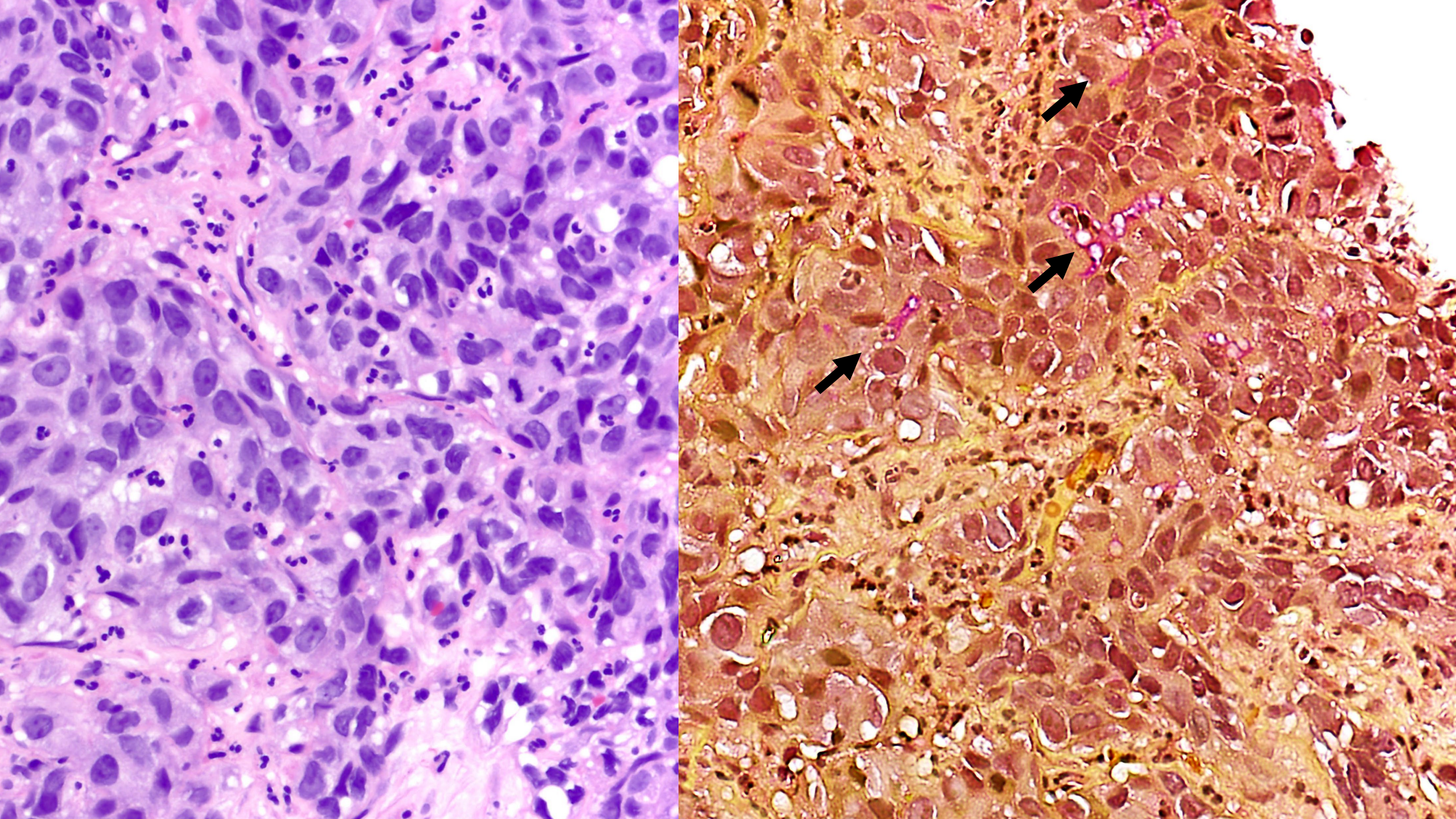
- Polygonal cells, trabecular architecture, bile production, steatotic

- I like to see 2 of these positive:
- Arginase1++
- Hep Par 1
- Glypican 3 (use with caution → 5% cholangioCA can be +)

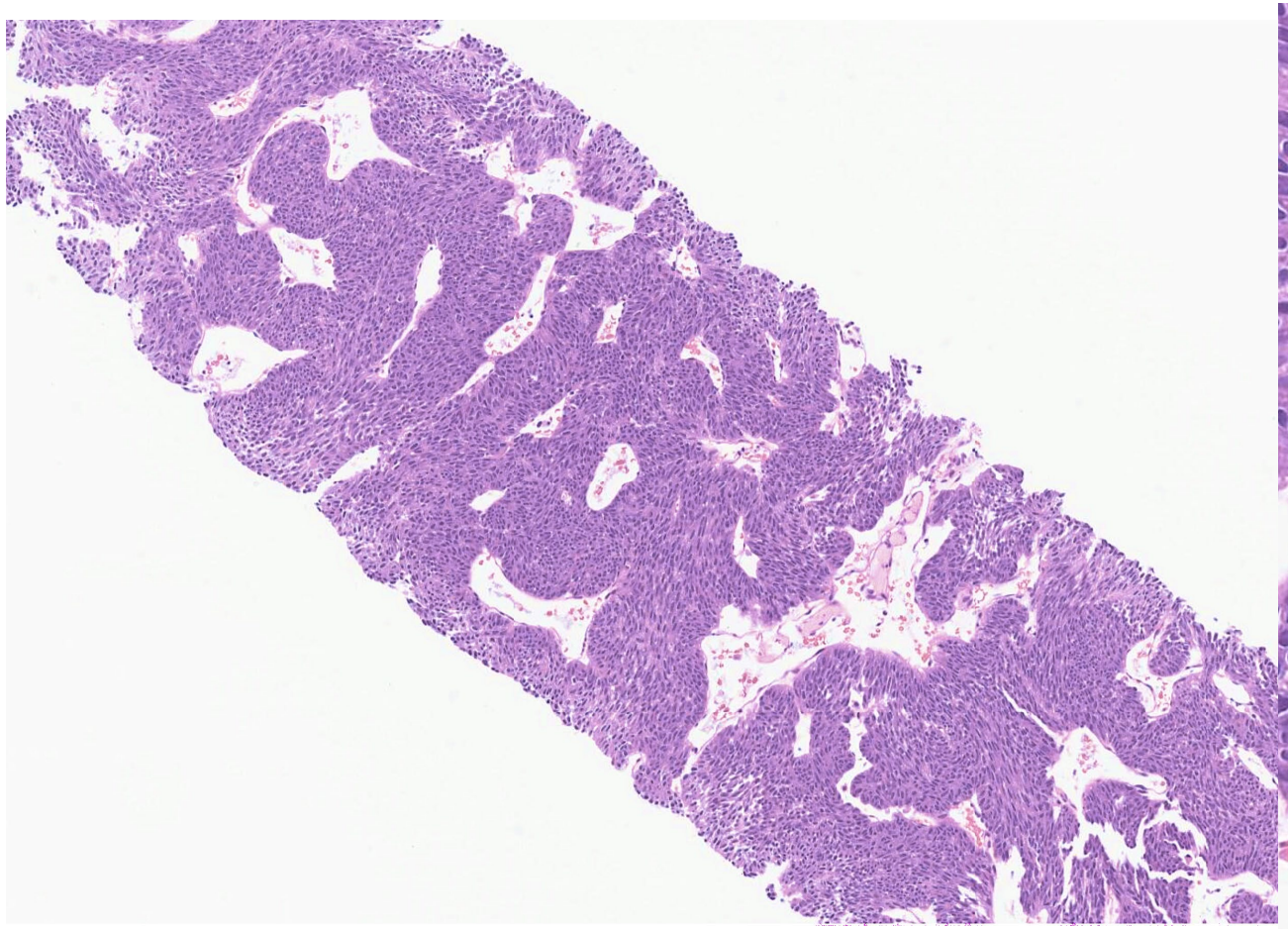
Cholangiocarcinoma part

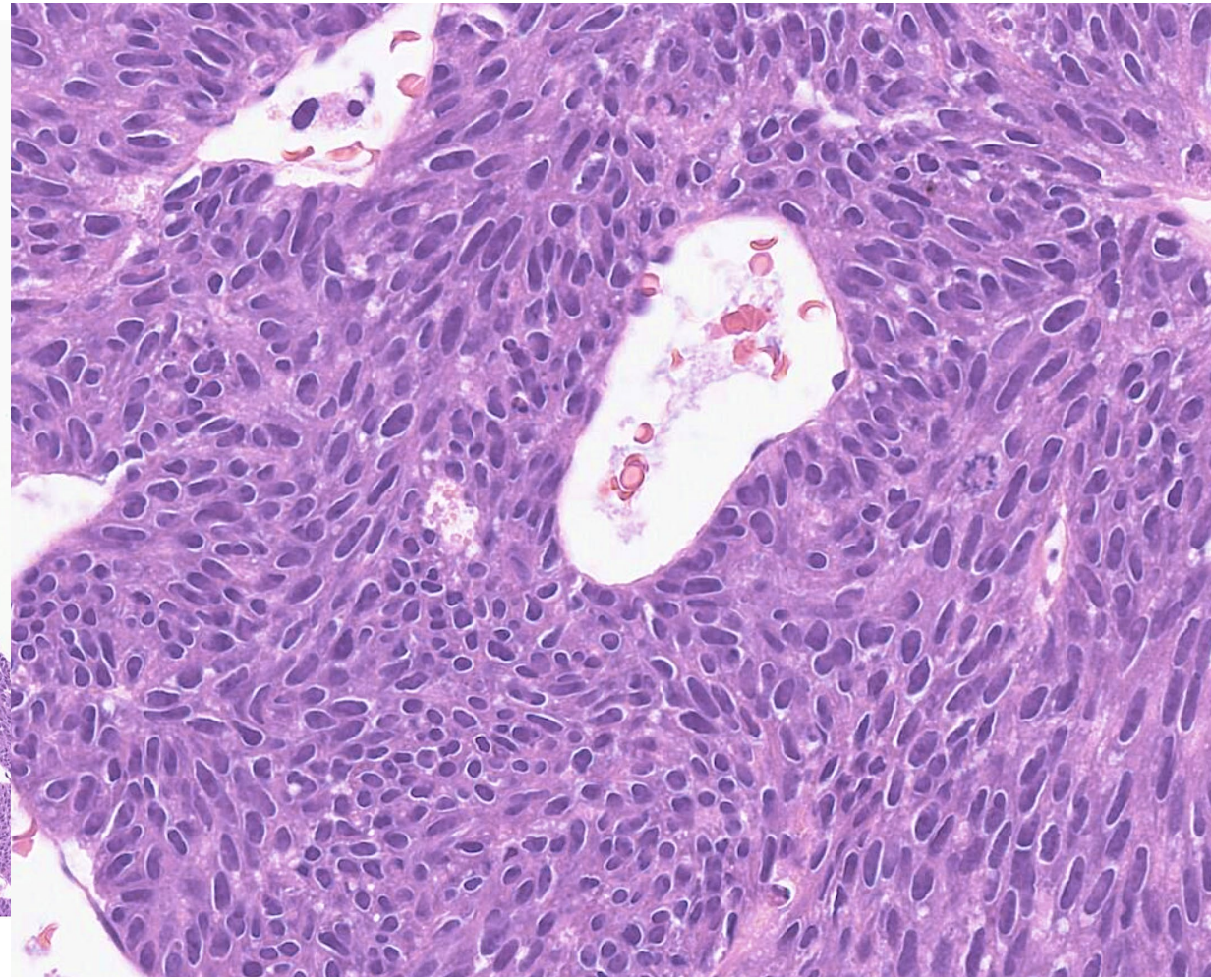
- Gland forming

- Use with caution:
- MOC31 (positive in ~5-10% HCC)
- CK19 (also ~10% of HCC)
- Mucicarmine useful when +



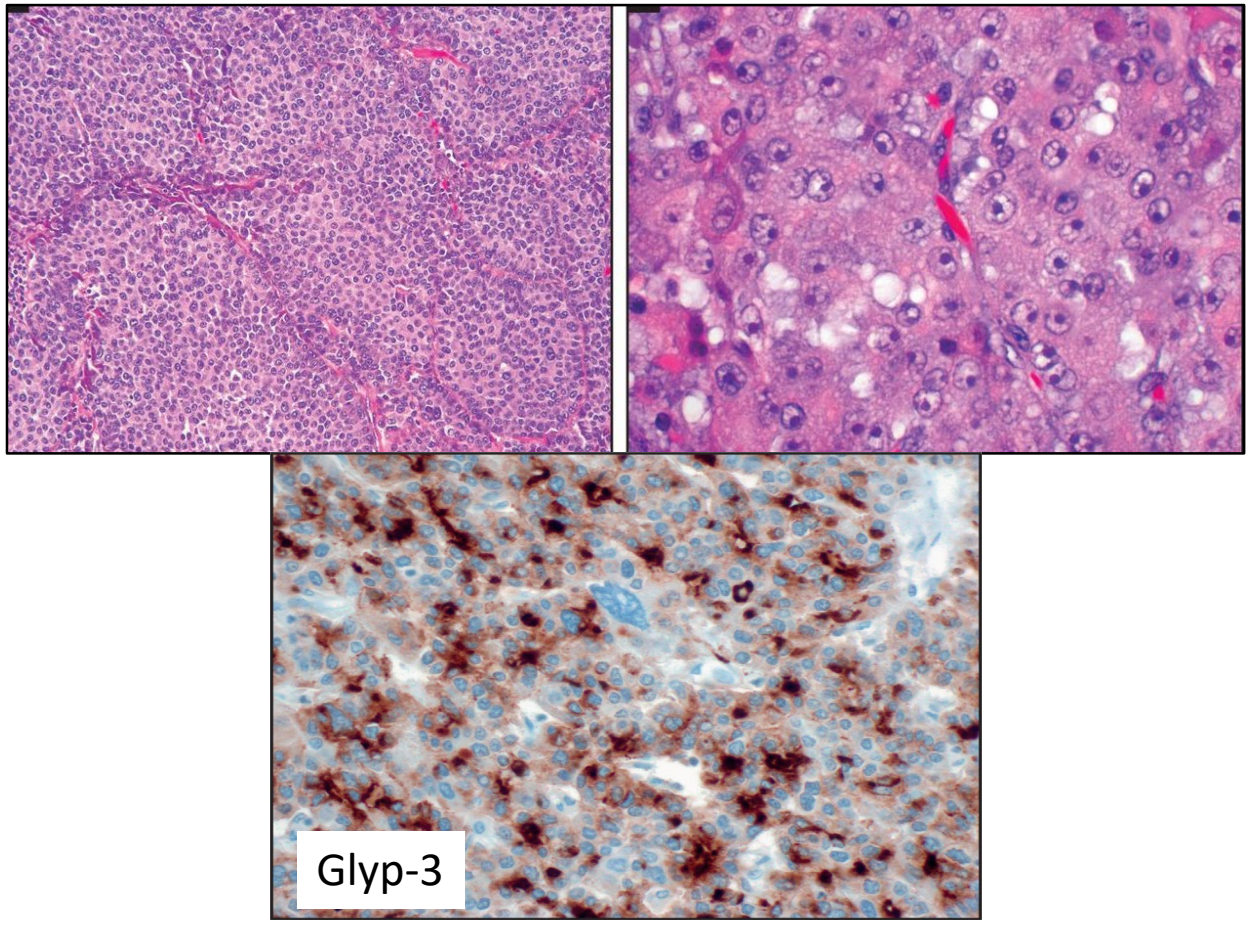
Case: 67-year-old female with firm subcutaneous nodules and lipase >1000





Hepatocellular Markers Positive in Acinar Cell Carcinoma

- Can be positive for:
  - **Glypican 3 – 25%**
  - **Albumin ISH – 25%**
  - Hep Par 1 – 4%
- Negative for Arginase-1



Am J Clin Pathol. 2016 Aug;146(2):163-
Hum Pathol. 2013 Apr;44(4):542-50.

Non-Hepatocytic Tumors that can be Positive for HCC Markers

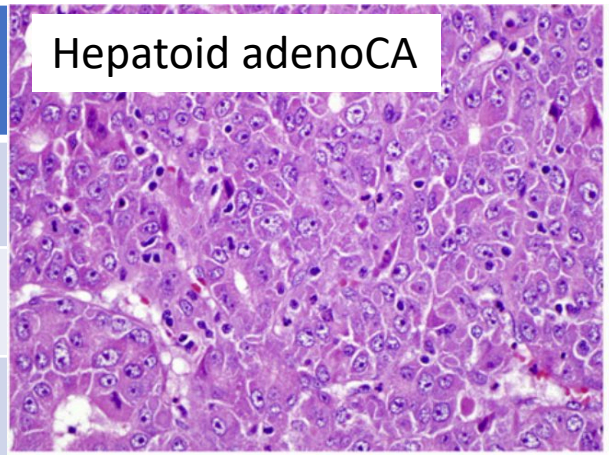
	Hep Par-1	Arg-1	Glypican-3
Gastric, esophageal	x	x rare focal	
Lung	x		
Acinar cell (1 marker + separately)	x rare		x
Prostate	x	x rare focal	
Germ cell			x
NET/NEC	x		x rare
Ovarian	x		x
Colon		x rare focal	
Breast		x rare focal	
Pancreas	x	x rare, focal	
Gallbladder	x		
Melanoma	x		x rare
Hepatoid adenoCA (can also form bile and have elevated AFP)	x	x	x

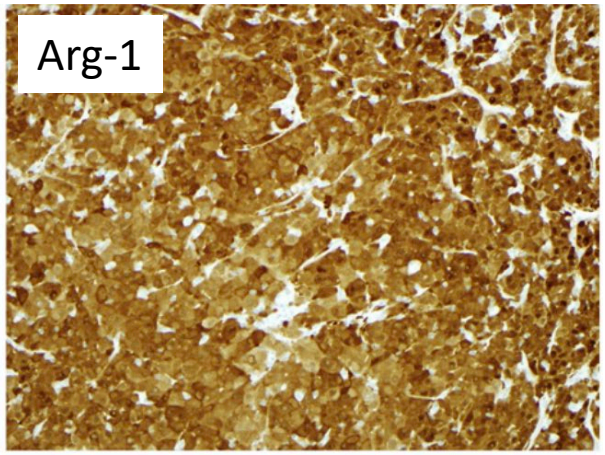
- **Scrutinize the MORPHOLOGY**
- **Use additional IHC**

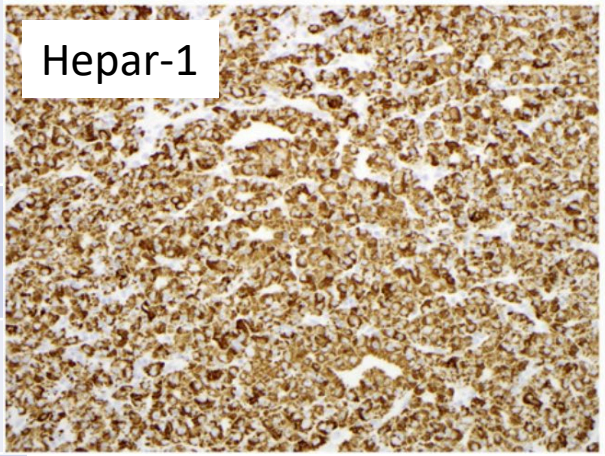
Hum Pathol. 2016 Sep;55:101-7.
Am J Surg Pathol. 2002 Aug;26(8):978-88.
Am J Clin Pathol. 2004 Nov;122(5):721-7.
Surg Pathol Clin. 2018 Jun;11(2):367-375.

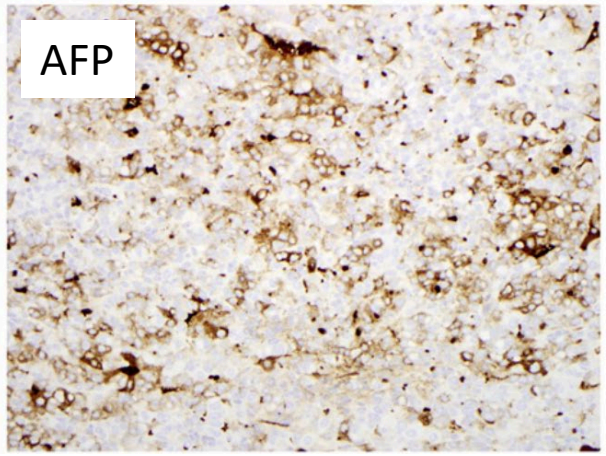
Hepatoid Adenocarcinoma (usually Gastric)

	HCC	Hepatoid adenoCA
Bile	+	+
Positive HCC markers, AFP levels	+	+
Advanced fibrosis in background liver	Favors HCC	-
Areas of tumor with NON-hepatoid morphology (mucin, gland formation)	-	+
Strong CDX2 or other stain of other organ positivity	Focal/patchy in 5-10%	+
History of gastric mass (or other sites GB, colon, gyn, lung, kidney)	-	+
SALL4	Rare in West	+









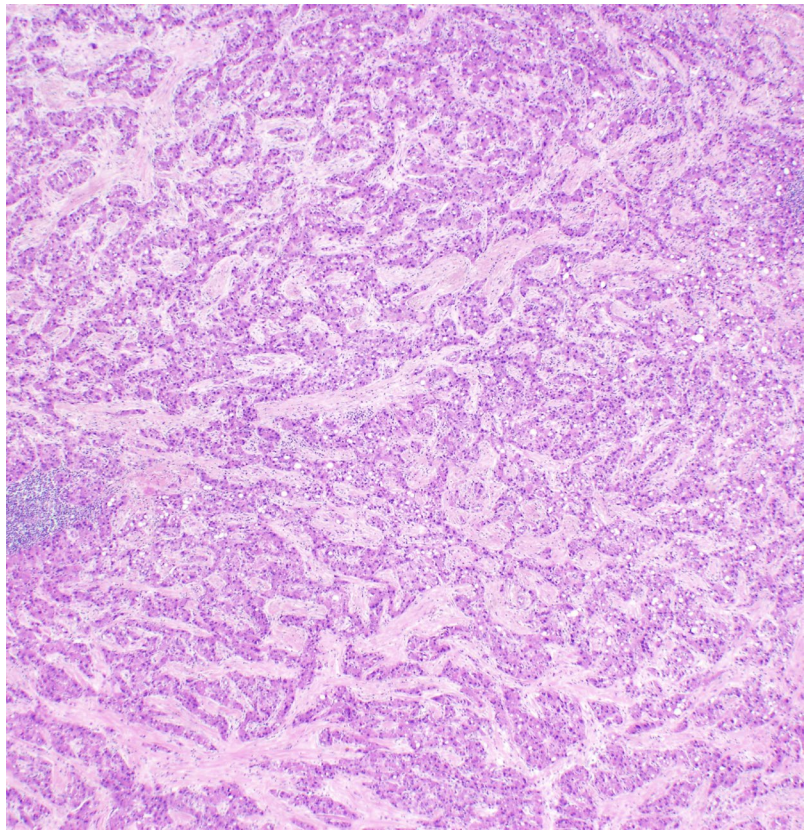
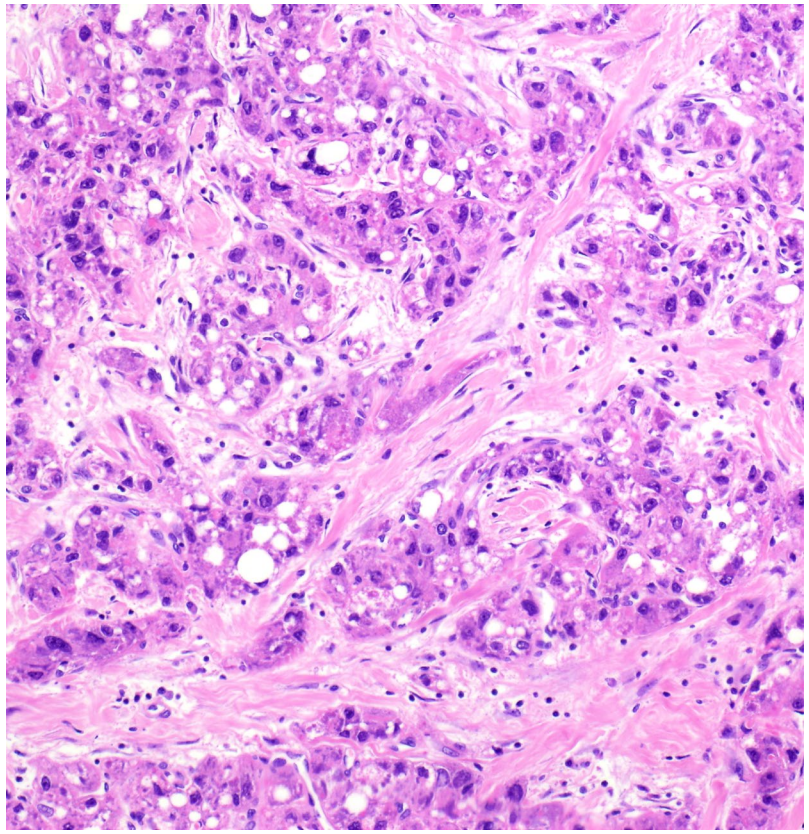
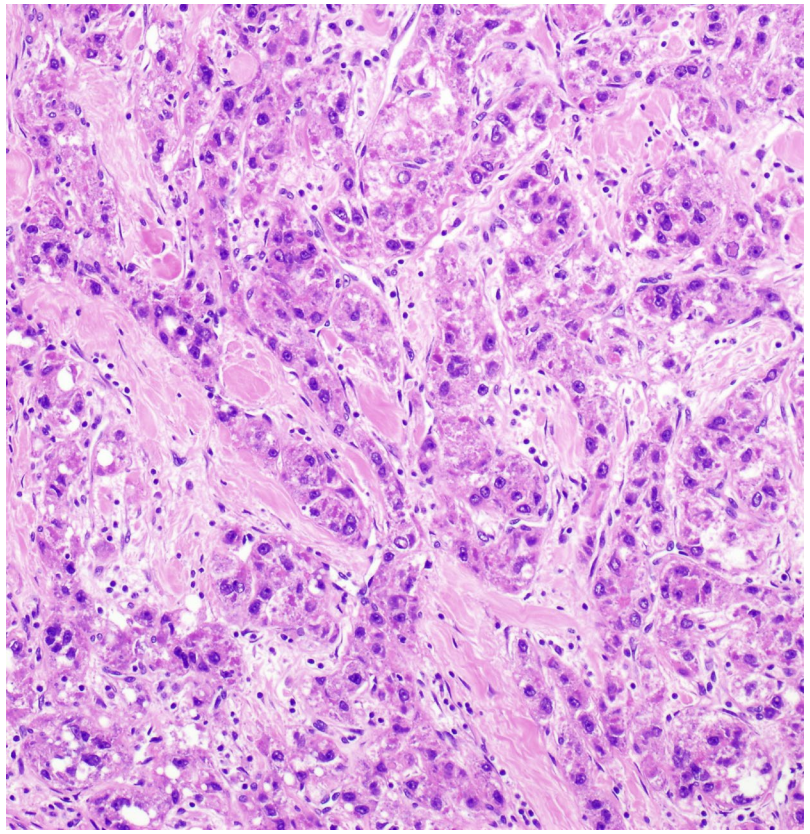
Hum Pathol. 2016 Sep;55:11-6.
Mayo Clin Proc 1997;72:1154-1160
Am J Surg Pathol. 2010 Apr;34(4):533-40.

How HCC can Mimic Non-hepatocytic Tumors

Immunohistochemical Stains that can Spuriously be Positive in HCC

SATB2 (up to 60%)
CDX2 (5-8%; usually focal/patchy, higher grade HCC)
CK20 (5-10%, higher grade HCC)
CK7 (30%)
CK19 (12% bad prognosis)
MOC31 (10-30%; patchy, weak)
CD117 (2.5%)
SALL4 (bad prognosis; 1% in West; 20% in Asia)

Histopathology. 2021 Nov;79(5):768-778

Scirrhous HCC

- Radiologically mimics Cholangiocarcinoma
- Rare
- >50% of cancer shows dense intratumoral fibrosis
- But lacks mucin and you can sometimes spot bile

Scirrhous HCC

- No difference in prognosis from HCC
- May be difficult to identify as an HCC and distinguish from cholangiocarcinoma – tend to be more **Hepar-, MOC31 & CK7 +** than other HCC

Table 2 Immunohistochemical staining of scirrhous hepatocellular carcinoma, classical hepatocellular carcinoma, and intrahepatic cholangiocarcinoma

	CEA[a]	*HepPar-1*	*GPC3*	*ARG1*	*CK7*	*CK19*	*EPCAM*
Scirrhous hepatocellular carcinoma ($n=20$)[b]	37	26	79	85	53	26	63
Classical hepatocellular carcinoma ($n=169$)[b]	54	74	69	95	2	2	11
Cholangiocarcinoma ($n=16$)[b]	0	7	6	0	100	94	100
P-value (scirrhous *vs* classical hepatocellular carcinoma)	0.223	<0.001	0.440	0.189	<0.001	<0.001	<0.001
P-value (scirrhous hepatocellular carcinoma *vs* cholangiocarcinoma)	0.026	0.209	<0.001	<0.001	0.001	0.001	0.011

Mod Pathol. 2013 Jun;26(6):782-91.

Scirrhous HCC

- No difference in prognosis from HCC
- May be difficult to identify as an HCC and distinguish from cholangiocarcinoma – tend to be more Hepar-, MOC31 & CK7 + than other HCC, **use Arg & Glypican3 + to distinguish from CholangioCA**

Table 2 Immunohistochemical staining of scirrhous hepatocellular carcinoma, classical hepatocellular carcinoma, and intrahepatic cholangiocarcinoma

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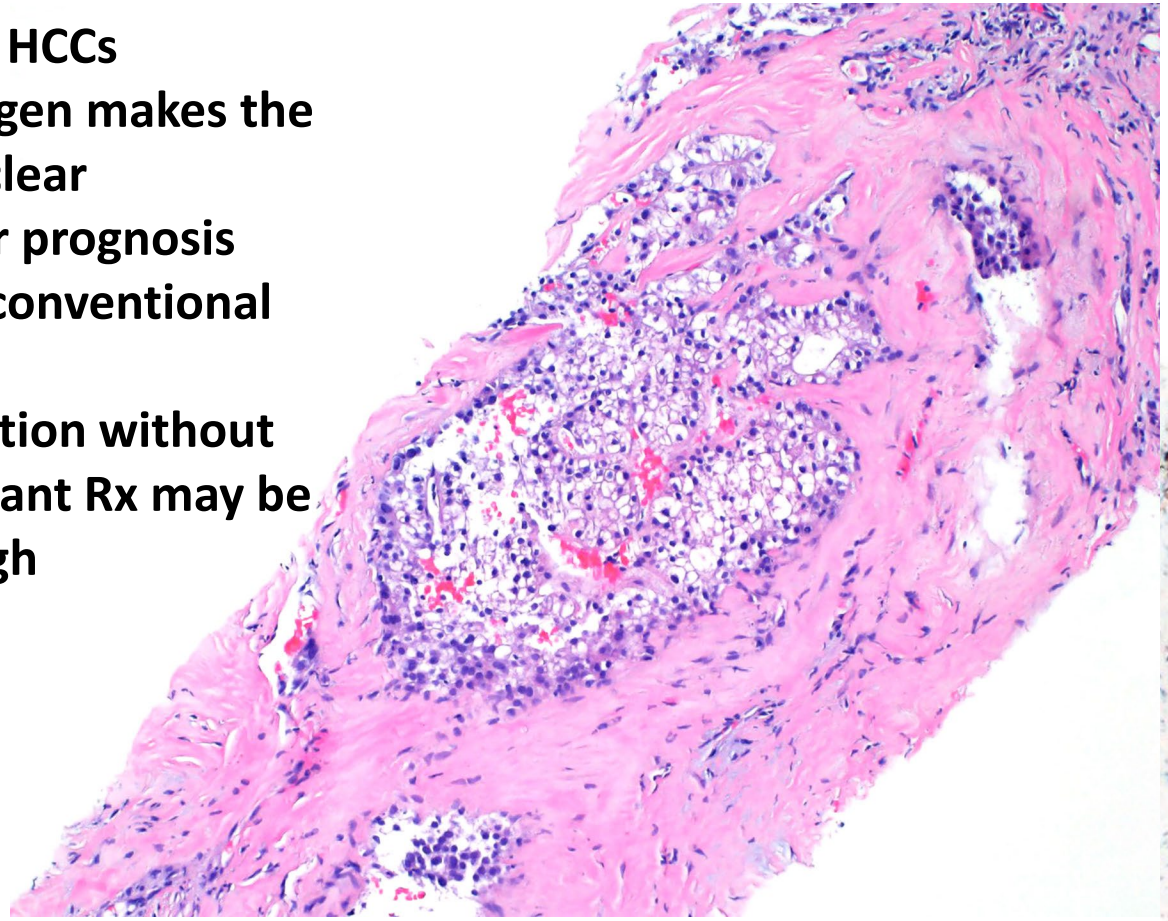
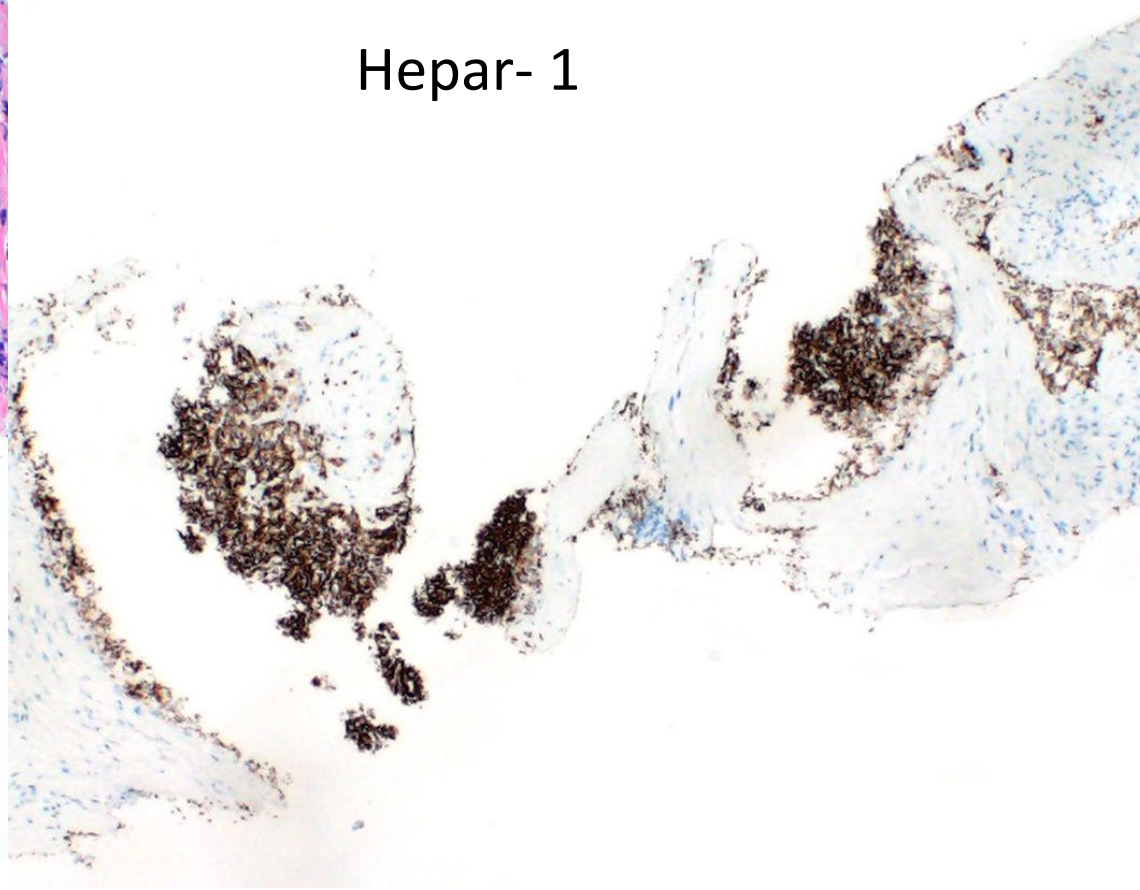
Mod Pathol. 2013 Jun;26(6):782-91.

Clear cell HCC

- ✓ **3% of HCCs**
- ✓ **Glycogen makes the cells clear**
- ✓ **Better prognosis than conventional HCC**
- ✓ **Resection without Adjuvant Rx may be enough**

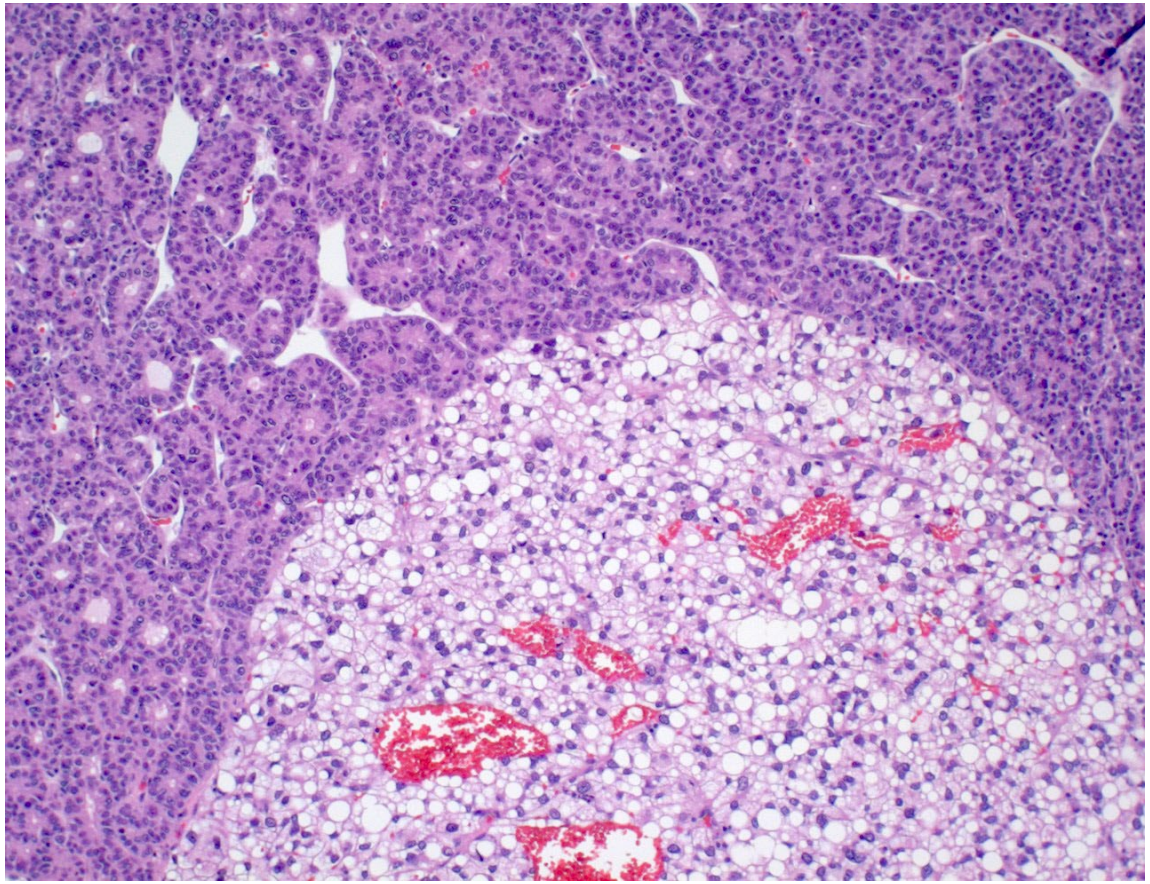


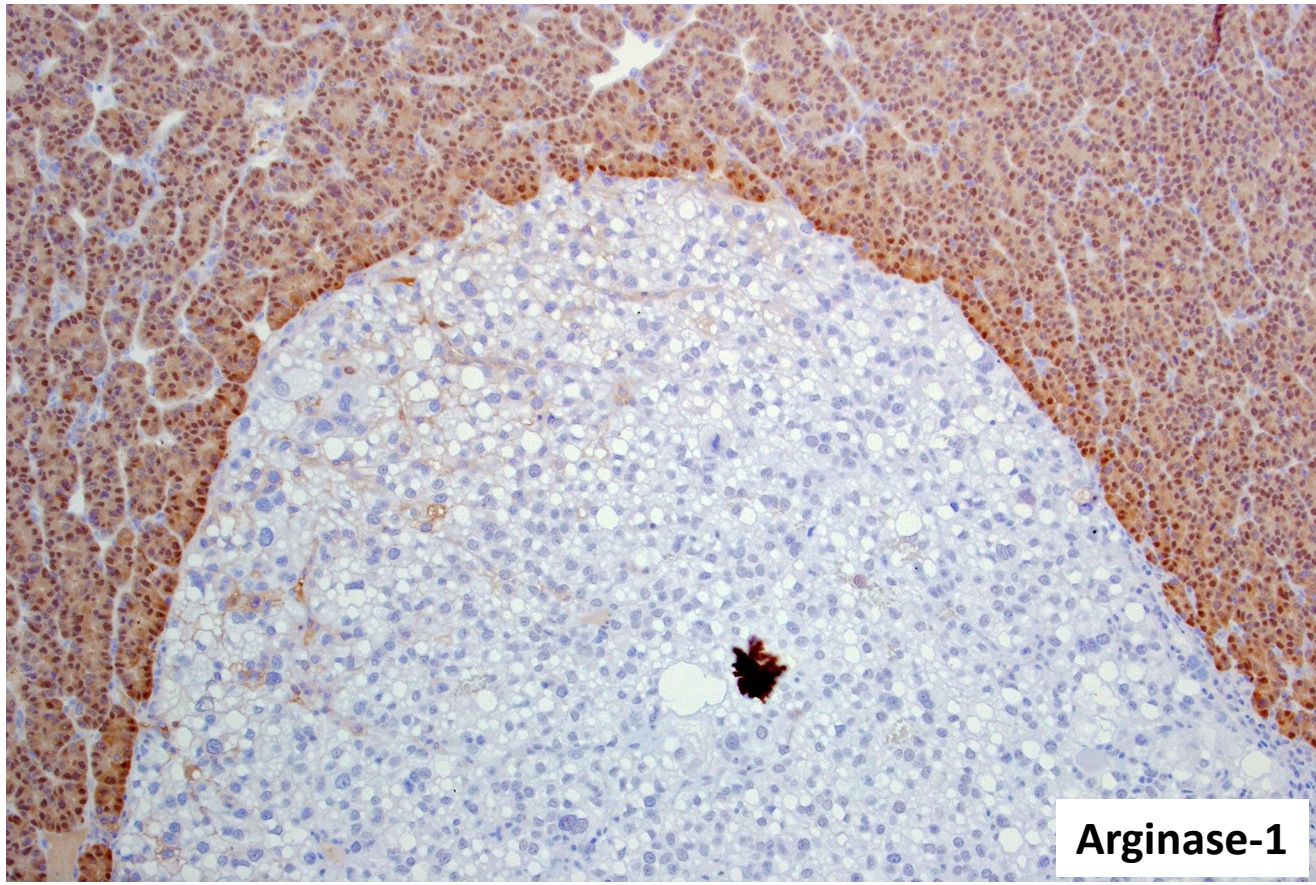
Hepar- 1



Courtesy of Dr. Laura Lamps

Clear cell HCC may be Tough to Diagnose on Biopsies





Courtesy of Dr. John Hart

Summary of Part I: Establishing that a malignant tumor is HCC

- Use all that you have to help you to diagnose HCC:
  - Clinical information of background liver disease, AFP levels, imaging
  - Microscopic: Look for bile formation, findings typical of hepatocytes (such as steatosis, Mallory-Denk bodies, pale bodies)
  - IHC: a combination of markers: Arginase1, Glypican-3, albumin-ISH

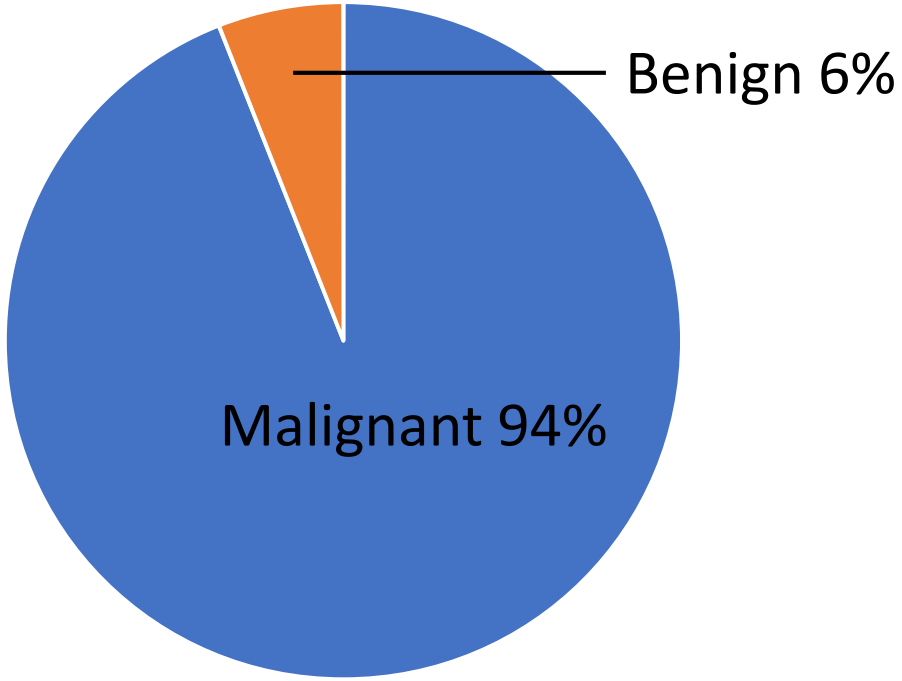
- Beware of metastases that can mimic HCC
- Beware of HCC that can mimic non-hepatocytic tumors

Outline

- ~~I. Distinguishing HCC from metastases or iCCA~~

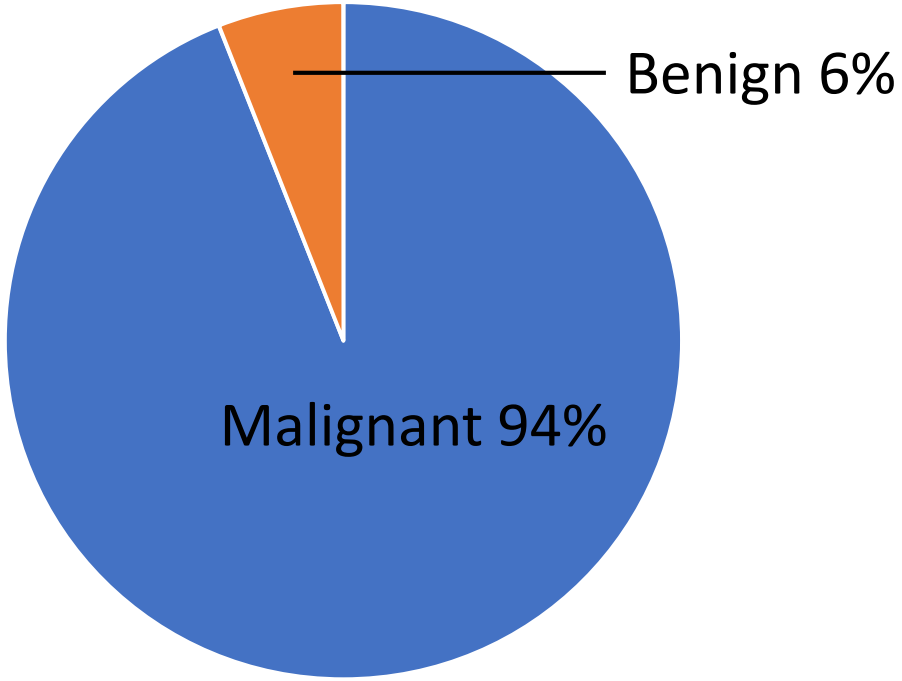
- II. Distinguishing HCC from benign hepatocellular conditions (You know it is hepatocytic but can’t tell for sure if it is malignant or not)

Primary Hepatic Tumors in the USA (excluding Hemangioma and Bile duct hamartoma)

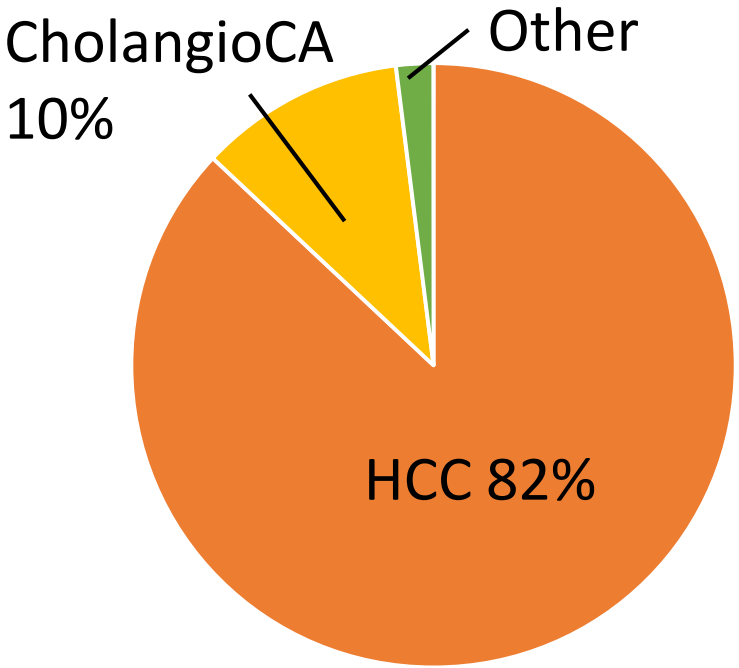


Adapted from Sternberg Diagnostic Surgical Pathology 2015 Table 37.2

Primary Hepatic Tumors in the USA (excluding Hemangioma and Bile duct hamartoma)

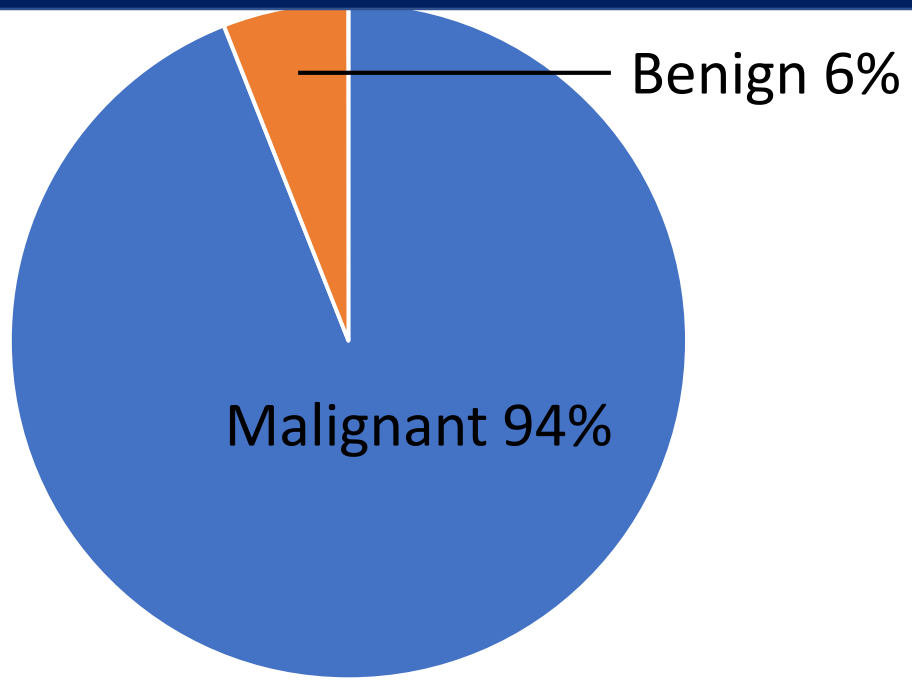


Malignant

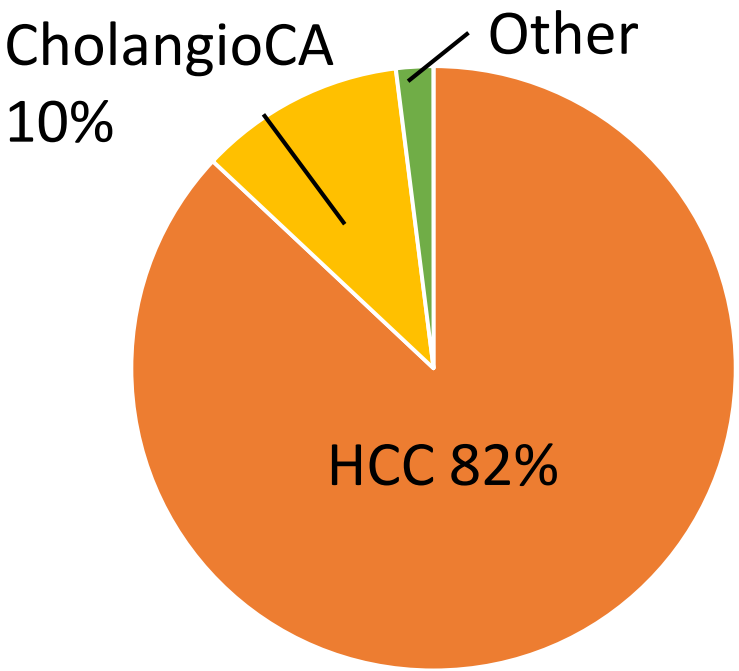


Adapted from Sternberg Diagnostic Surgical Pathology 2015 Table 37.2

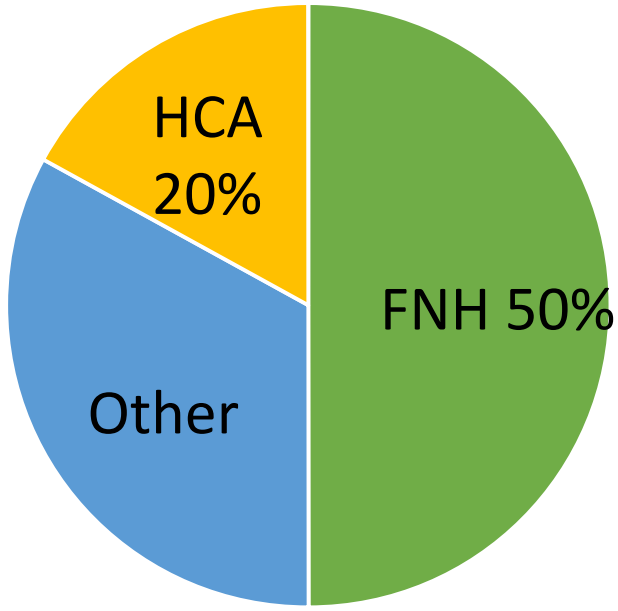
In Sum, Expect most biopsy samples of hepatocellular lesions to be HCC



Malignant



Benign



Adapted from Sternberg Diagnostic Surgical Pathology 2015 Table 37.2

Organize Liver Masses based on Background Liver Disease

Cirrhotic liver

- IS IT HEPATOCYTIC?

-**NO**

- Cholangiocarcinoma

-YES

- **HCC**
- Dysplastic Nodule
- Macroregenerative Nodule

Non-cirrhotic liver

IS IT HEPATOCYTIC?

- NO

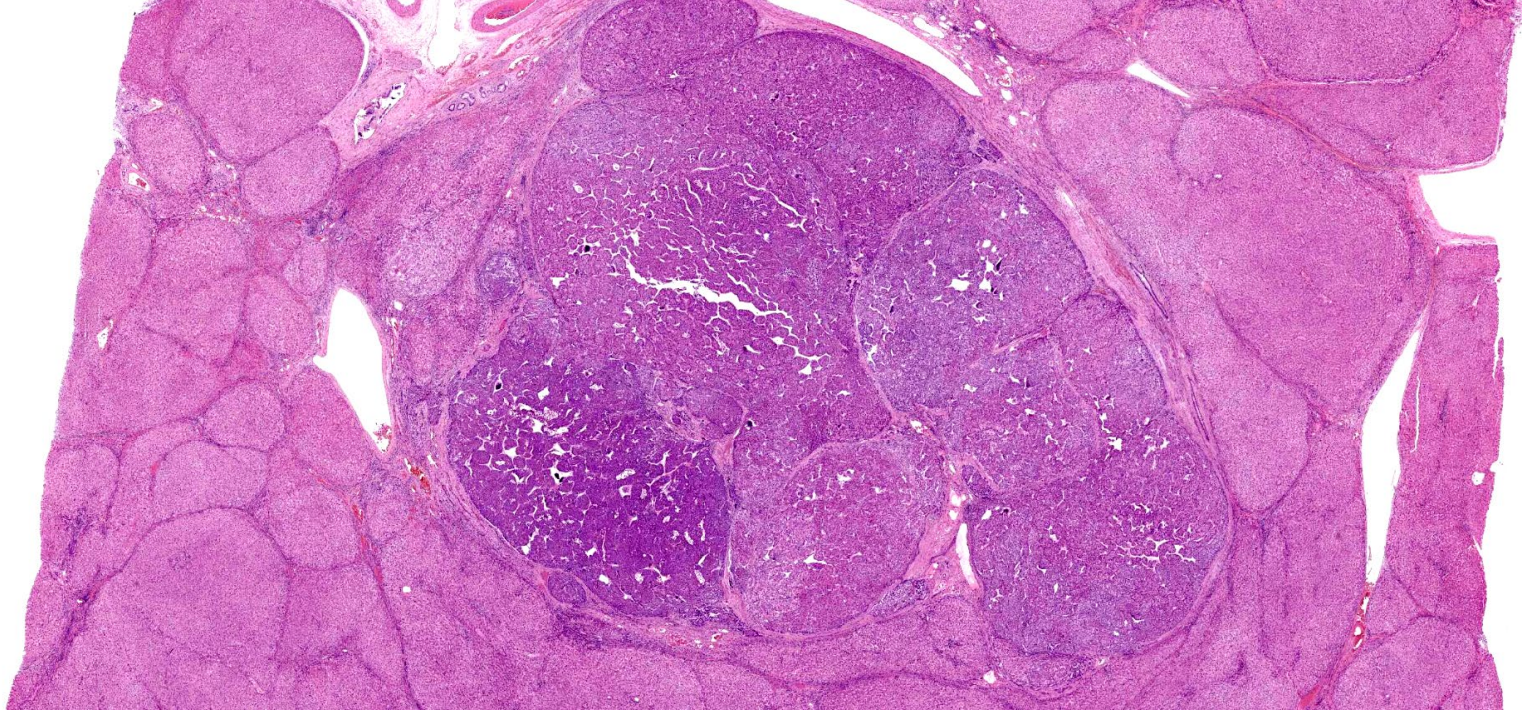
- **Metastatic tumor**
- Cholangiocarcinoma, benign biliary
- Epithelioid Hemangioendothelioma
- Angiomyolipoma

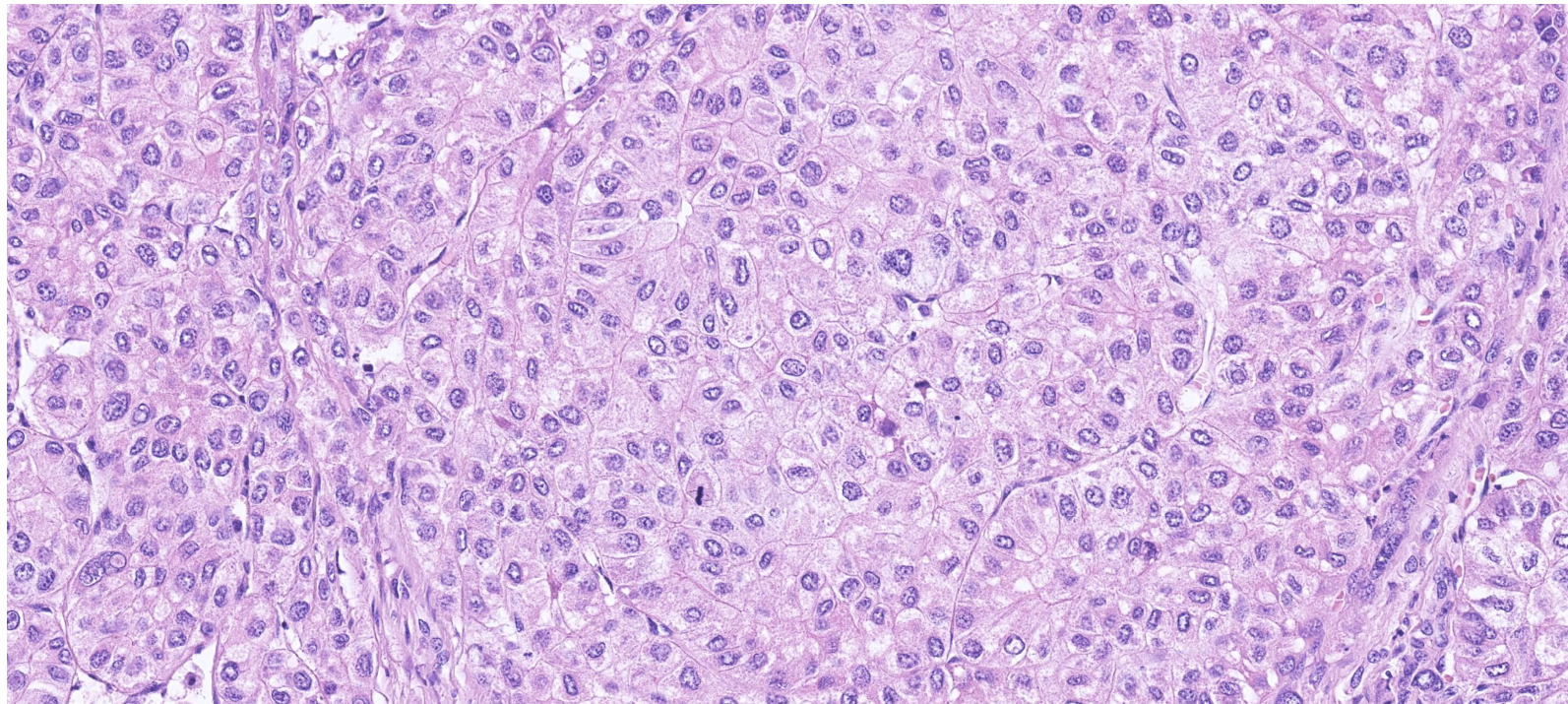
- YES

- HCC
- FNH
- HCA

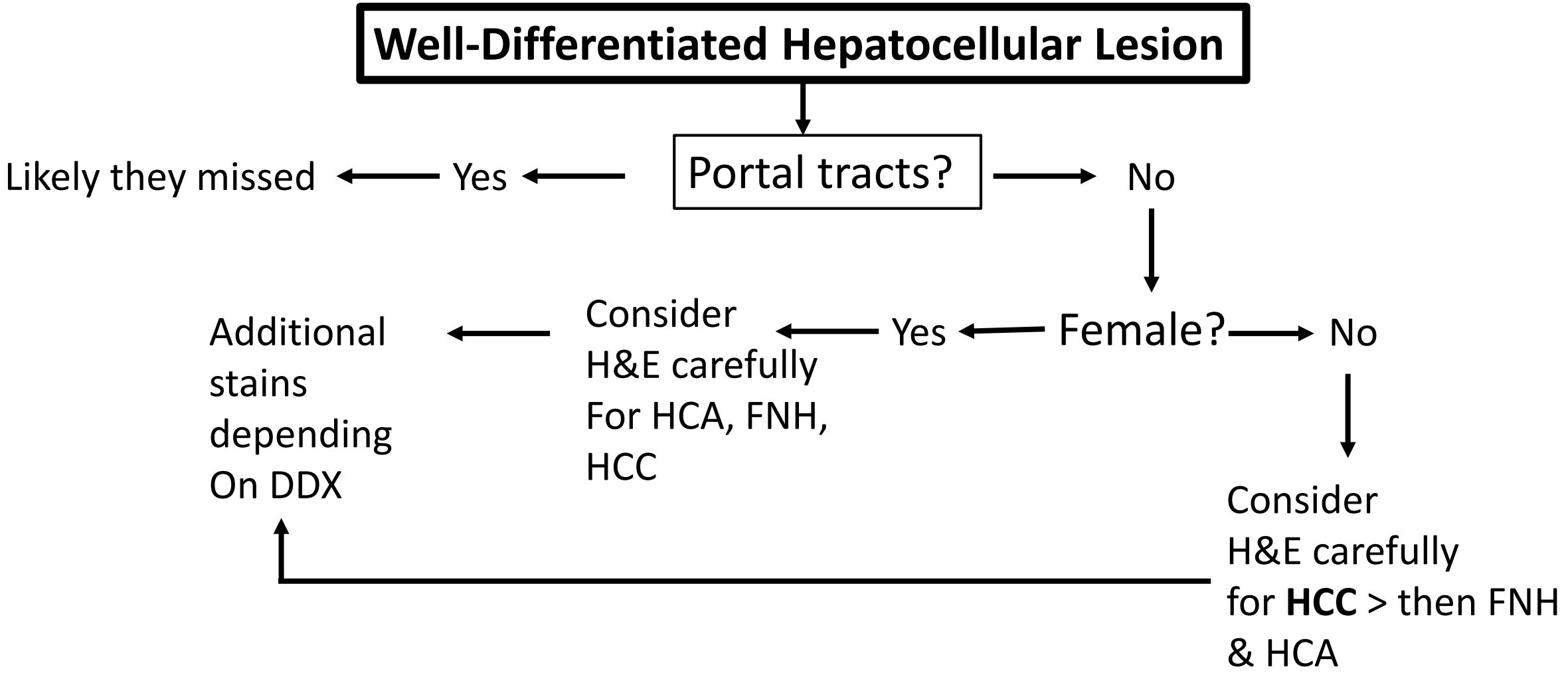
55 Male with Hepatitis C and Liver Mass

- Helpful features that favor carcinoma
- ✓ Cirrhotic background
- ✓ Heterogeneous, nodule within nodule
- ✓ Cytologic atypia
- ✓ Mitoses

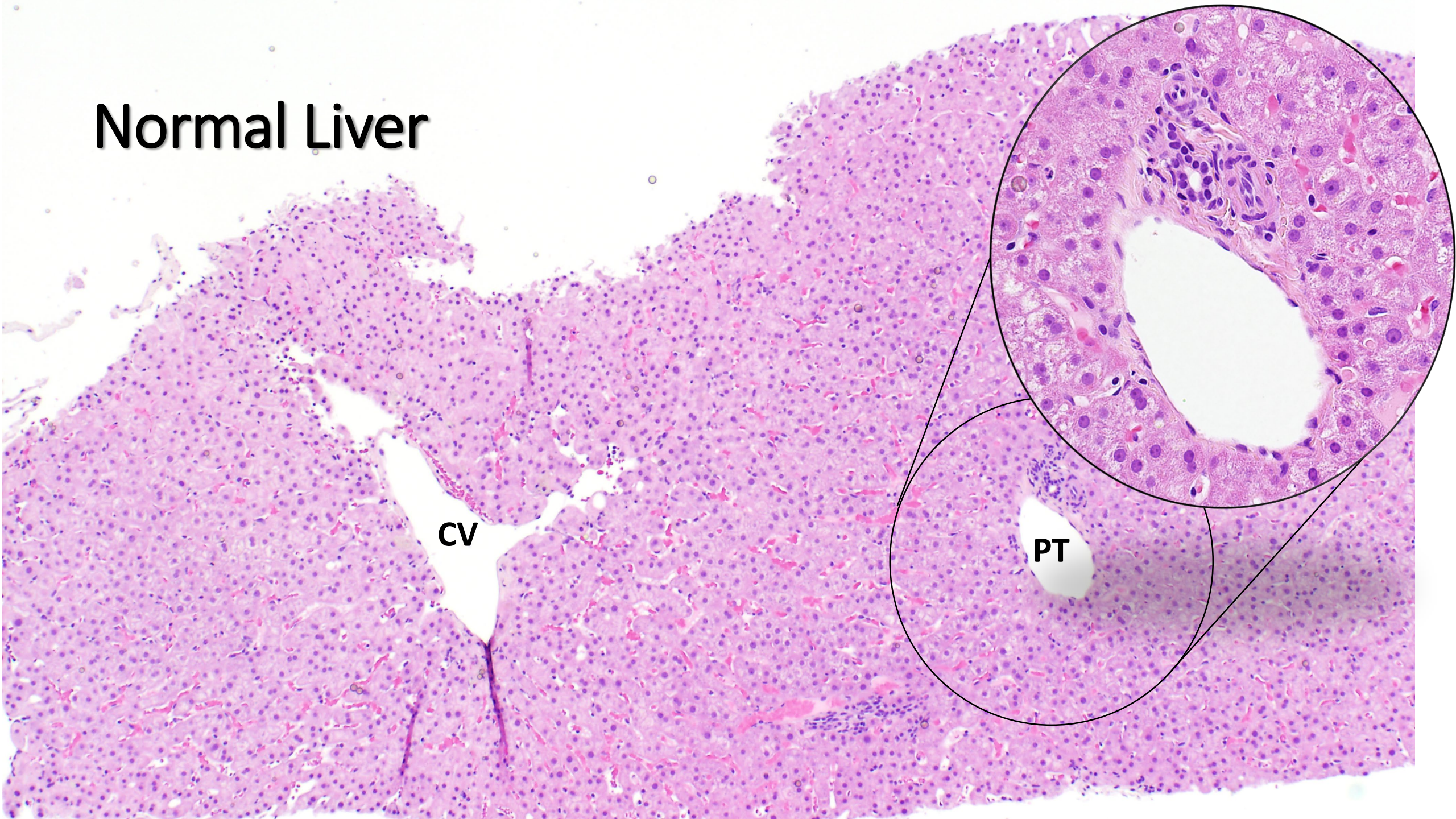




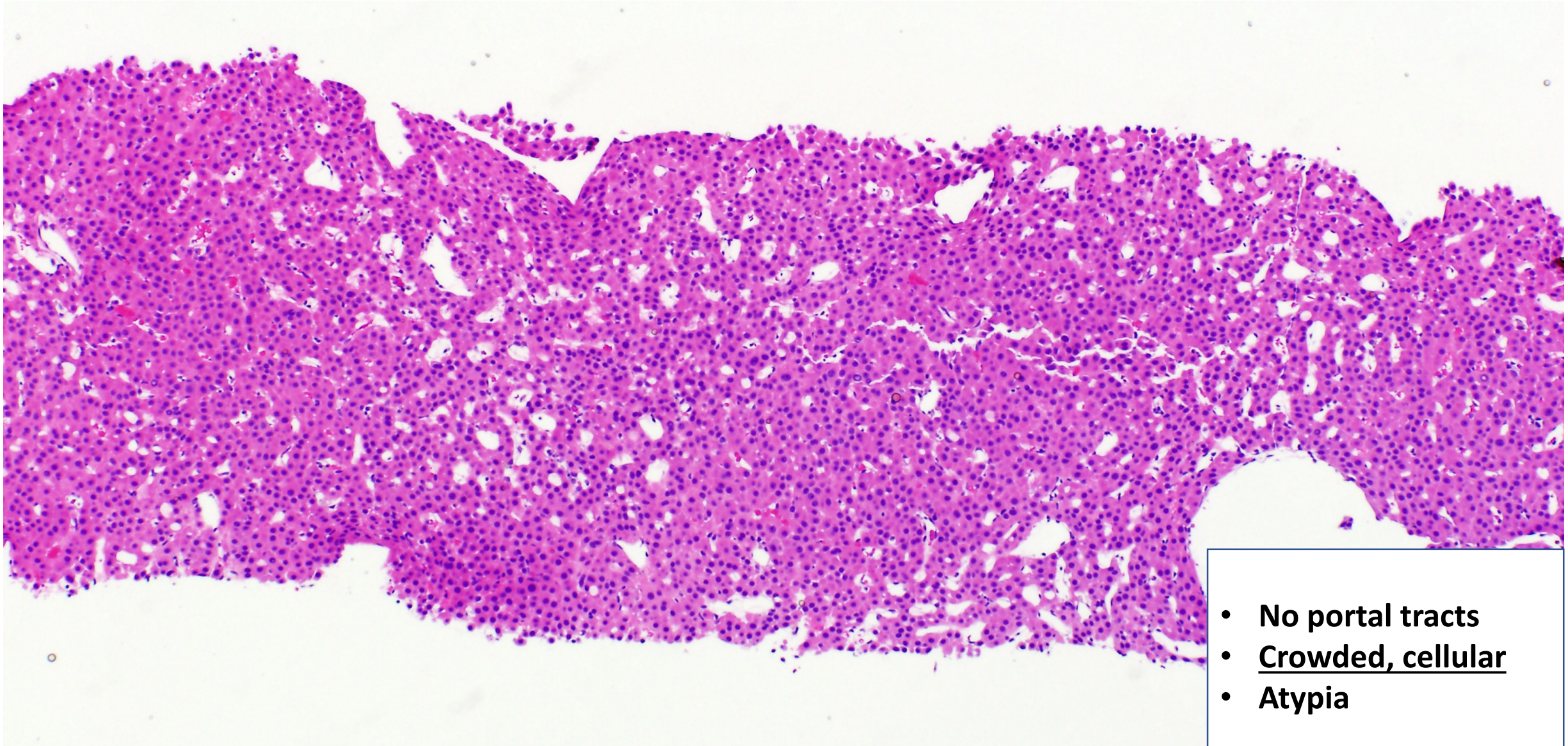
Real Life Practice “Liver Mass Biopsy” no background liver sampled, no clinical info



Normal Liver



Well differentiated Hepatocellular Carcinoma



- **No portal tracts**
- **<u>Crowded, cellular</u>**
- **Atypia**

HCC	HCA	FNH
Atypia	Minimal atypia	No atypia
Pseudoglands/pseudoacinar frequent	Pseudoglands infrequent	Can have pseudoglands – cholestatic phenomenon
Mitoses	Mitoses unusual	Mitoses unusual
Can be steatotic	Can be steatotic	Steatosis unusual (but reported)
Unpaired arteries	Unpaired arteries	Dystrophic large vessels with thick walls
No central scar unless fibrolamellar	No central scar	Central scar
No fibrotic bands, but can have stromal invasion	No prominent fibrotic bands	Fibrotic bands containing arteries & flanked by ductules (think cirrhotic looking)
Glypican 3+	Glypican 3-	Glypican 3-
Reticulin lost or expanded trabeculae	Reticulin intact (only look in non-steatotic areas)	Reticulin intact (rarely shows focal expansion, near periphery of lesion, like cirrhosis)
CD34 diffuse sinusoidal	CD34 not diffuse	CD34 patchy
GS diffuse if beta catenin activated	GS focal, only diffuse if beta catenin activated	GS maplike – sometimes confusing on biopsy

HCC vs. Benign Liver Lesions

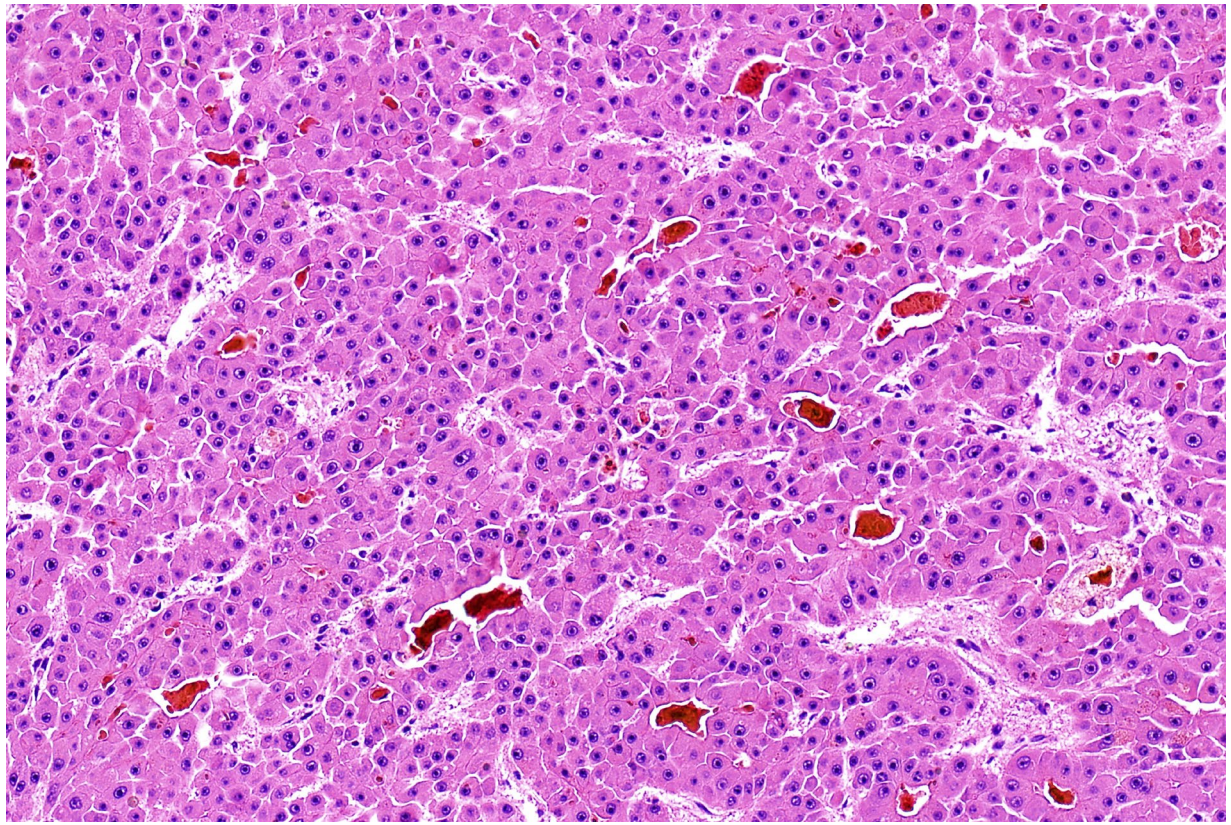
Useful Immunomarkers for Distinguishing Well-Differentiated Hepatocellular Carcinoma (WDHCC) From Hepatocellular Adenoma (HCA) and High-Grade Dysplastic Nodule (HGDN)

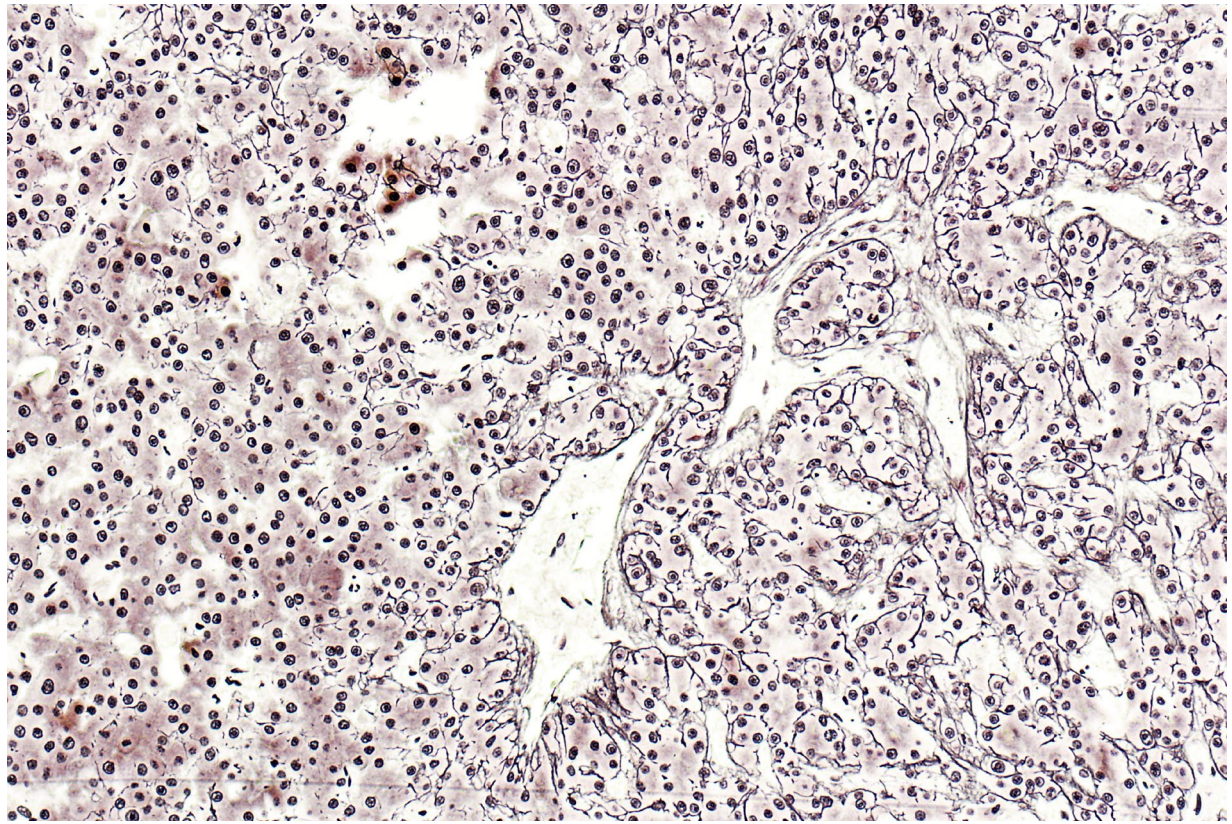
Marker	WDHCC, %	HCA, %	HGDN, %
Glypican-3	50–69	0	<10
Glutamine synthetase (strong and diffuse)	35–60	10-15	<15
Heat shock protein 70	40–78	0	<10
Positive in at least 2 of the above 3 markers	50–72	0	0
CD34 (diffuse sinusoidal pattern)	95[a]	20	+/–
Clusterin (enhanced canalicular pattern)	75	0	No data
CK7	Absence of ductules at border (invasive growth)	No value	Presence of ductules at border (noninvasive growth)

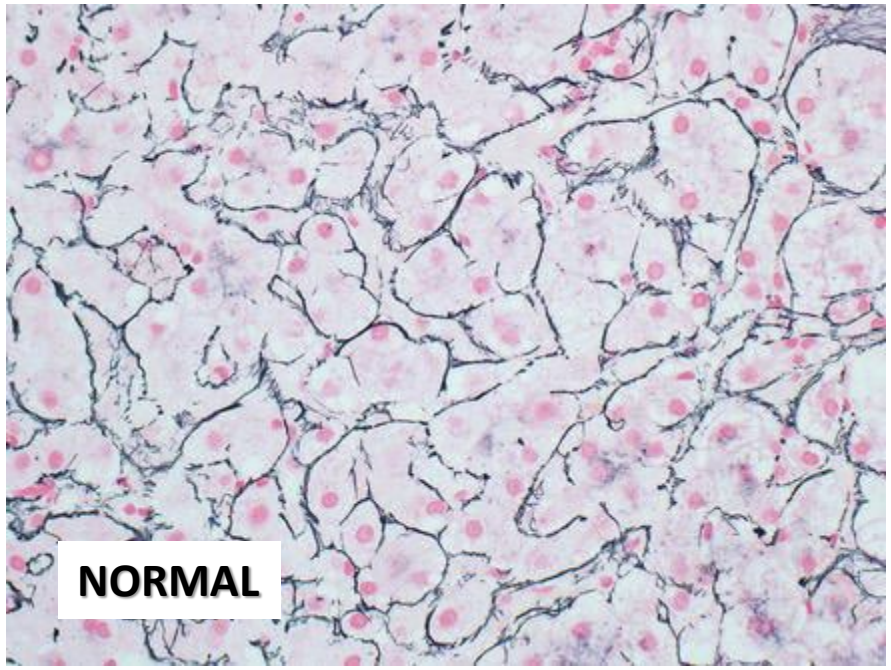
- I use these most: reticulin, CD34 (glypican-3, glutamine synthetase if I am still not sure)

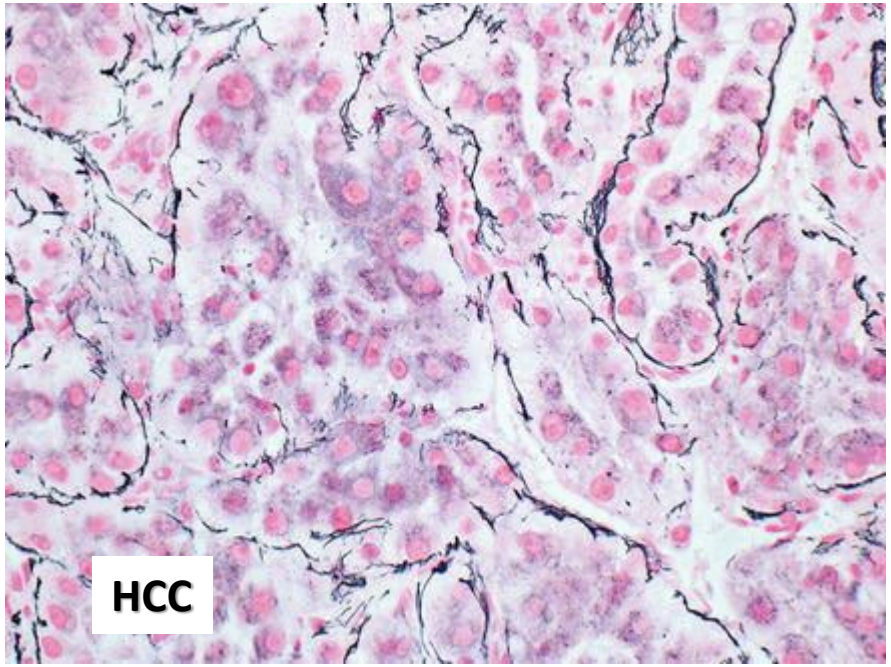
Arch Pathol Lab Med. 2017;141:1155–1180

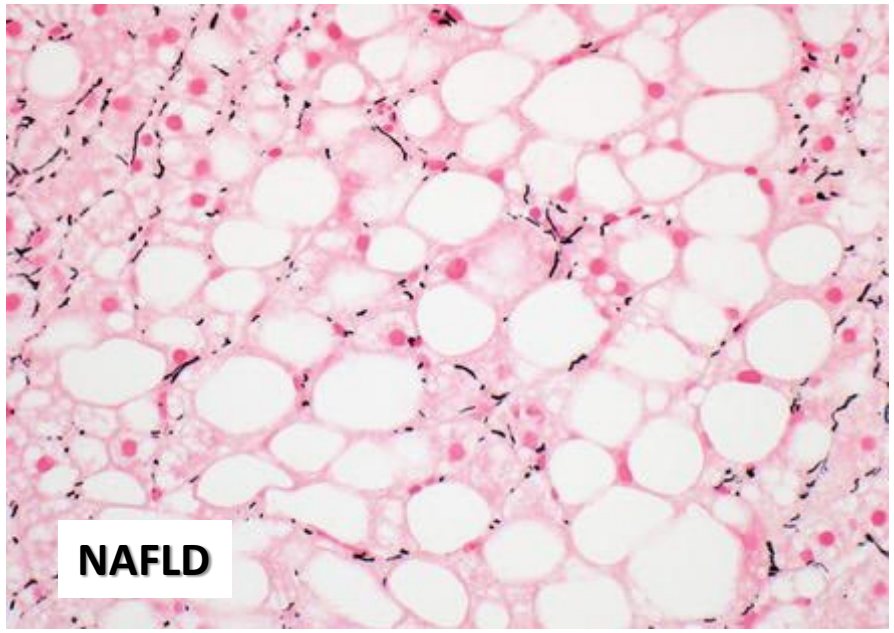
HCC – Loss of reticulin







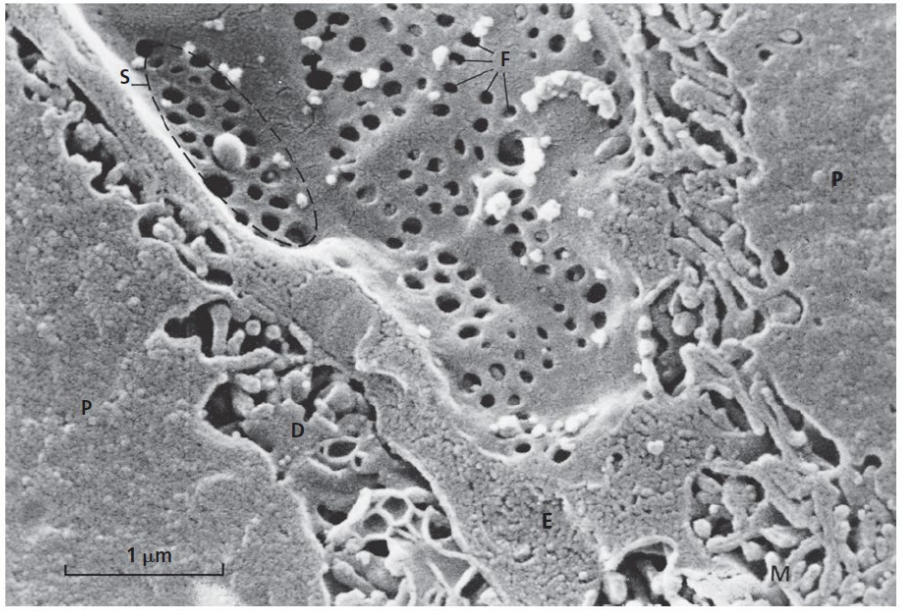




Watch out for Fatty liver disease:
Non-neoplastic cause for Spurious reticulin loss

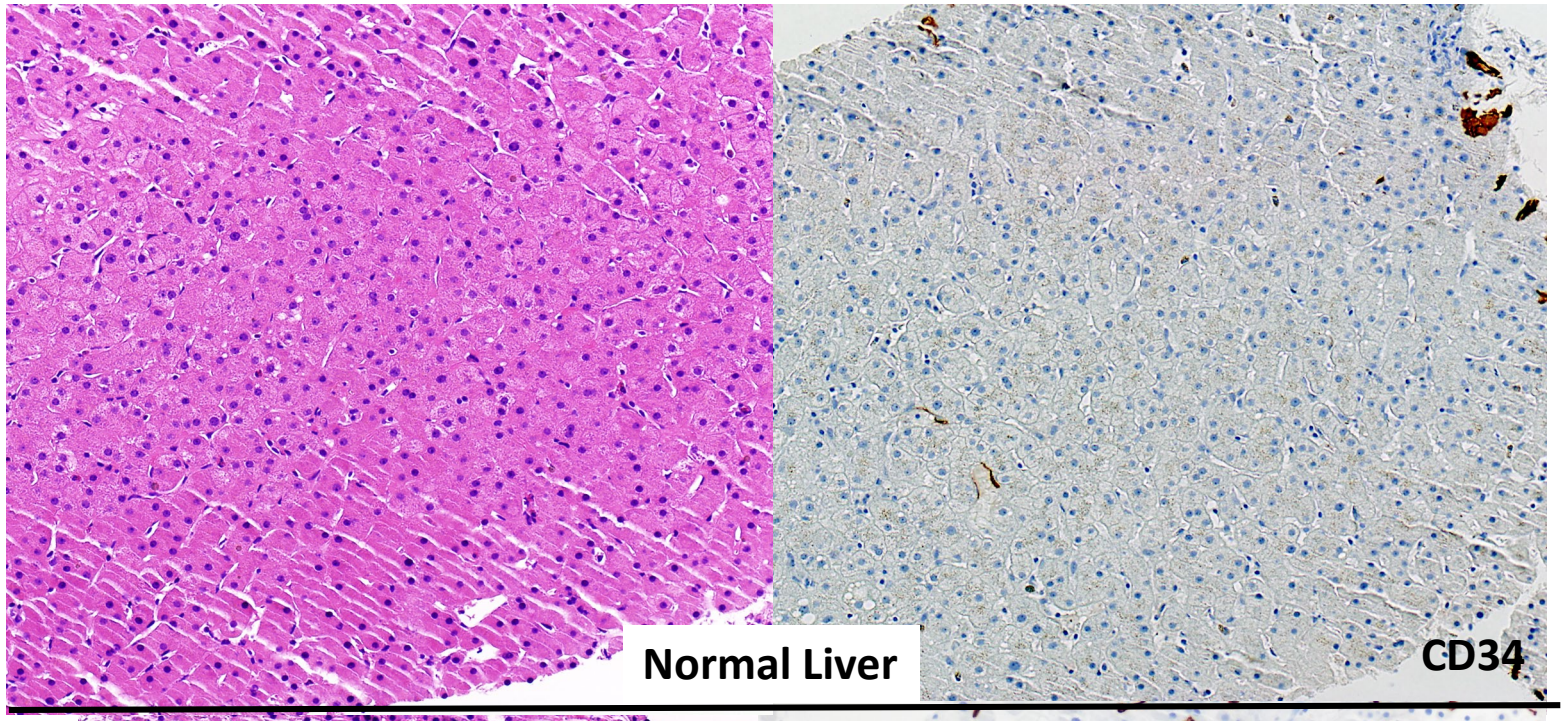
Torbenson M.S. (2015) Hepatocellular Carcinoma. In: Mounajjed T., Chandan V., Torbenson M. (eds) Surgical Pathology of Liver Tumors. Springer, Cham

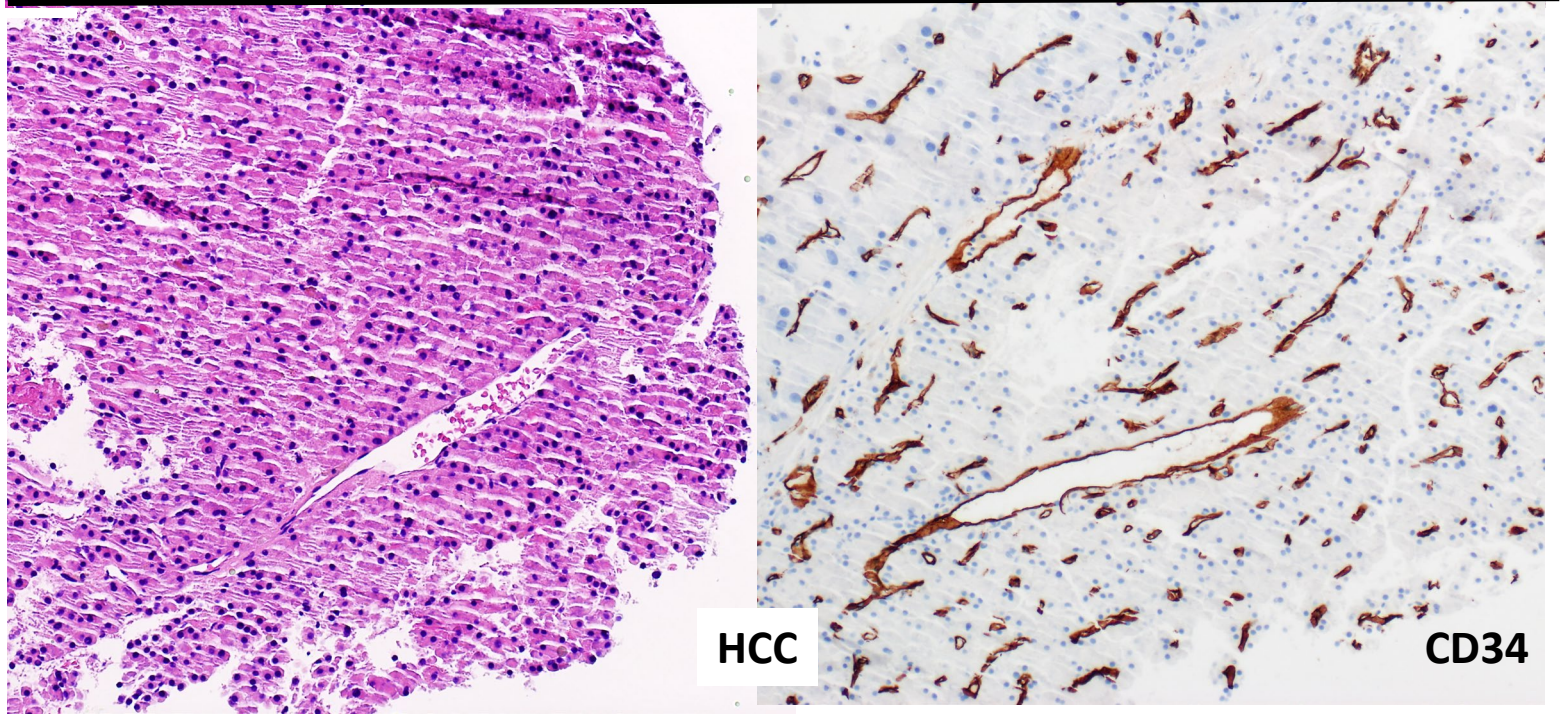
From Yamada's Textbook of Gastroenterology



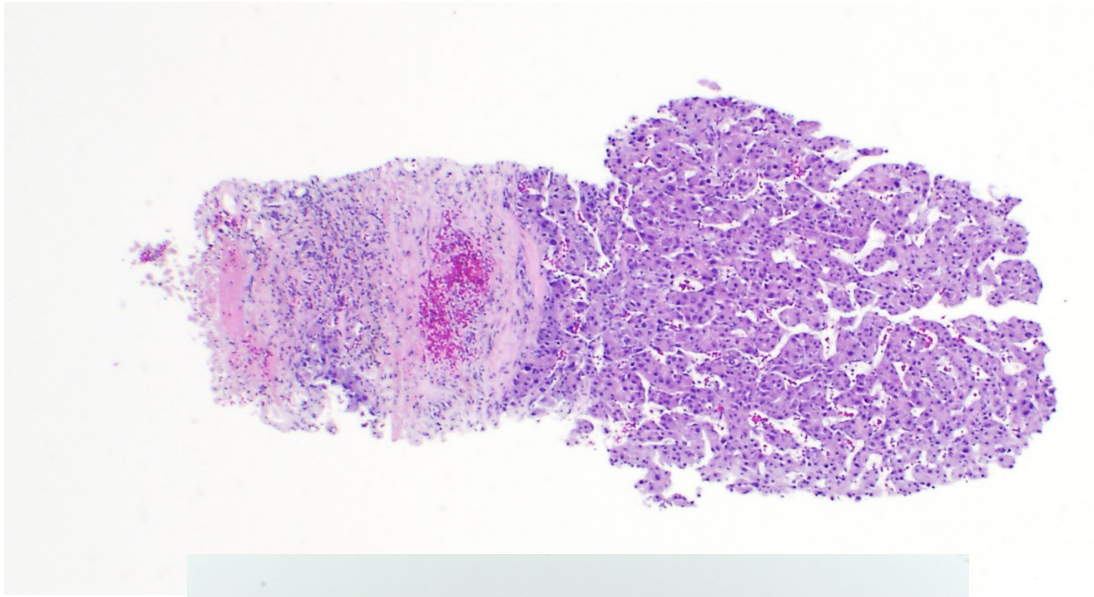
CD34

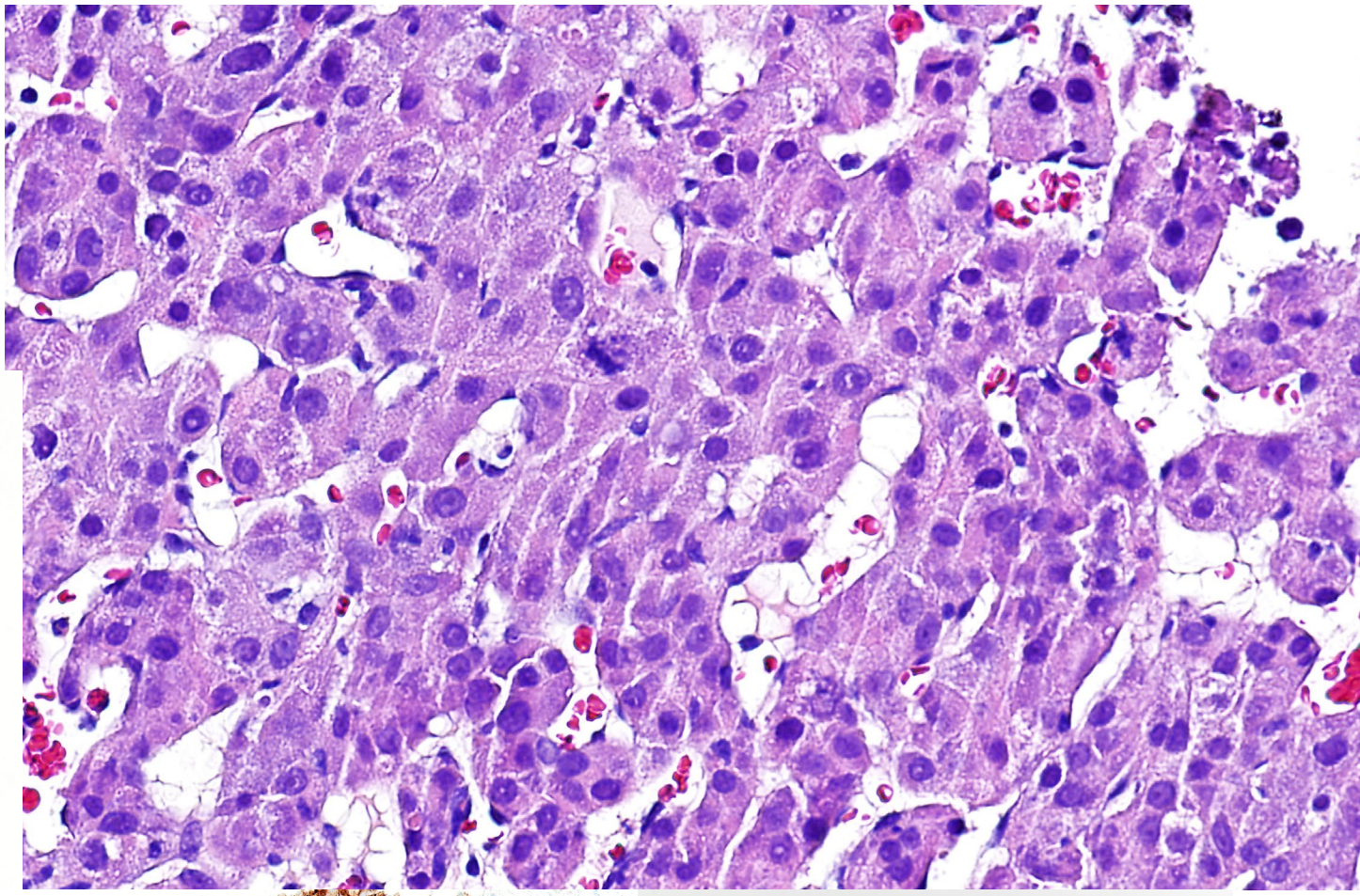
- **Normal Liver sinusoids are fenestrated; act as filtration barrier**
- **CD31,34 negative, unlike regular endothelial cells**
- **HCC has diffuse CD34 positivity in sinusoids**

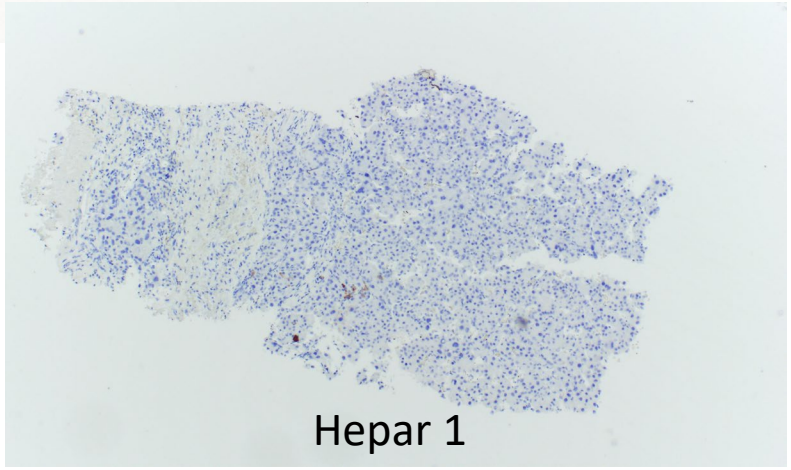




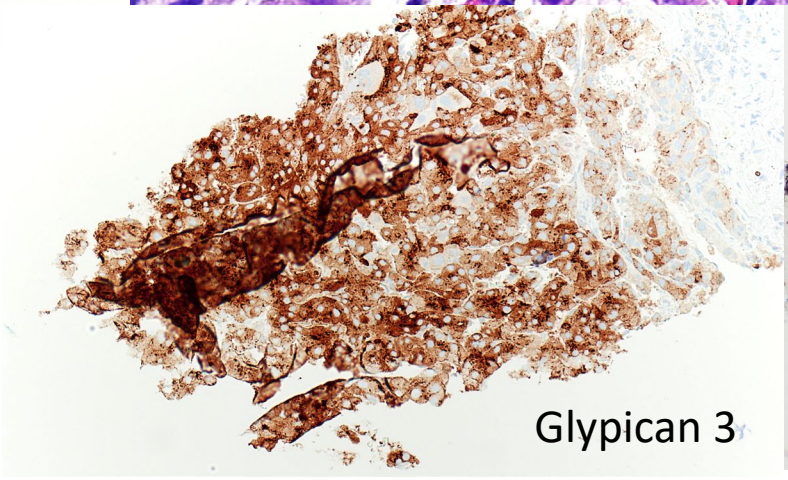
HCC on a Small Biopsy



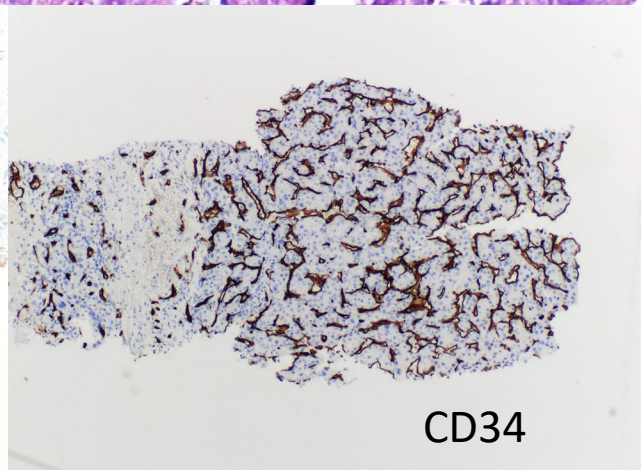




Hepar 1

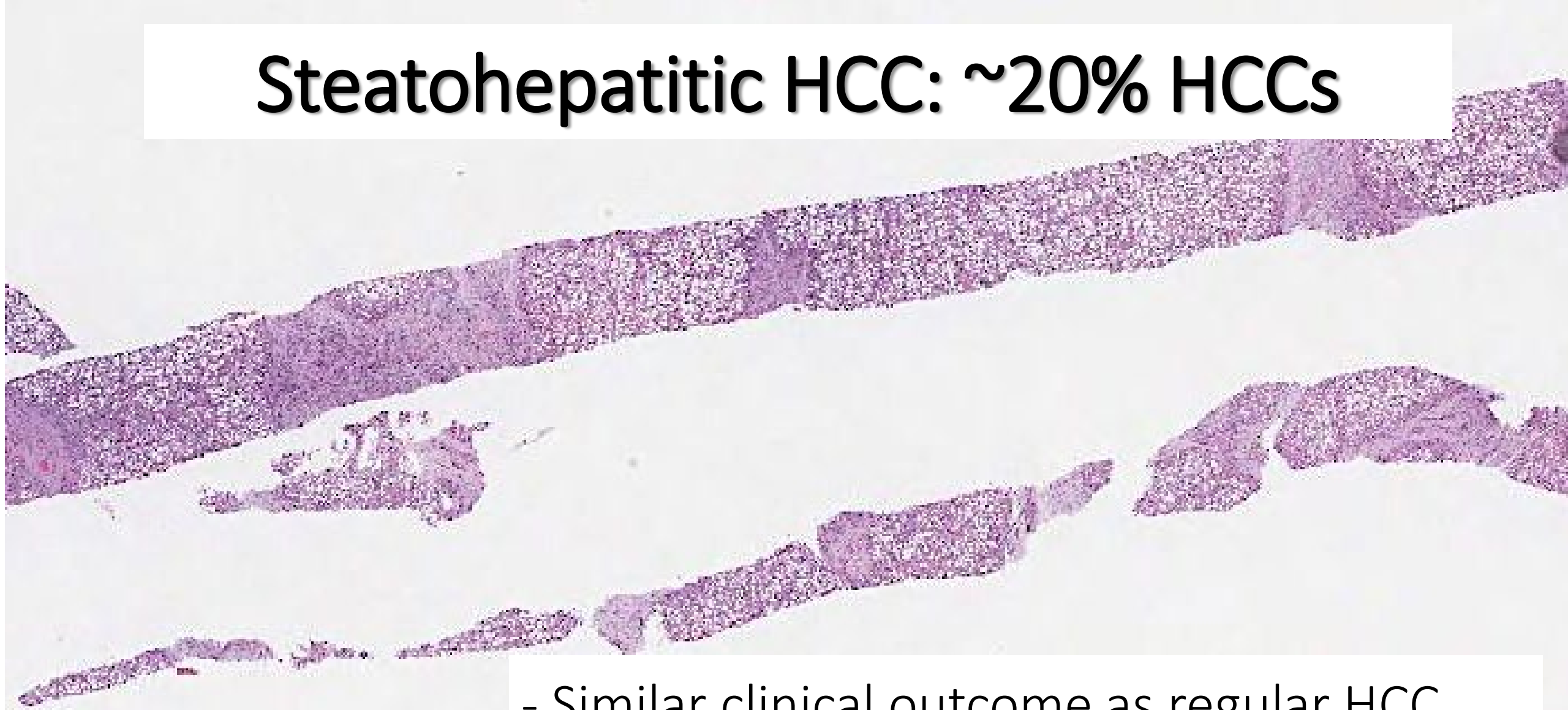


Glypican 3

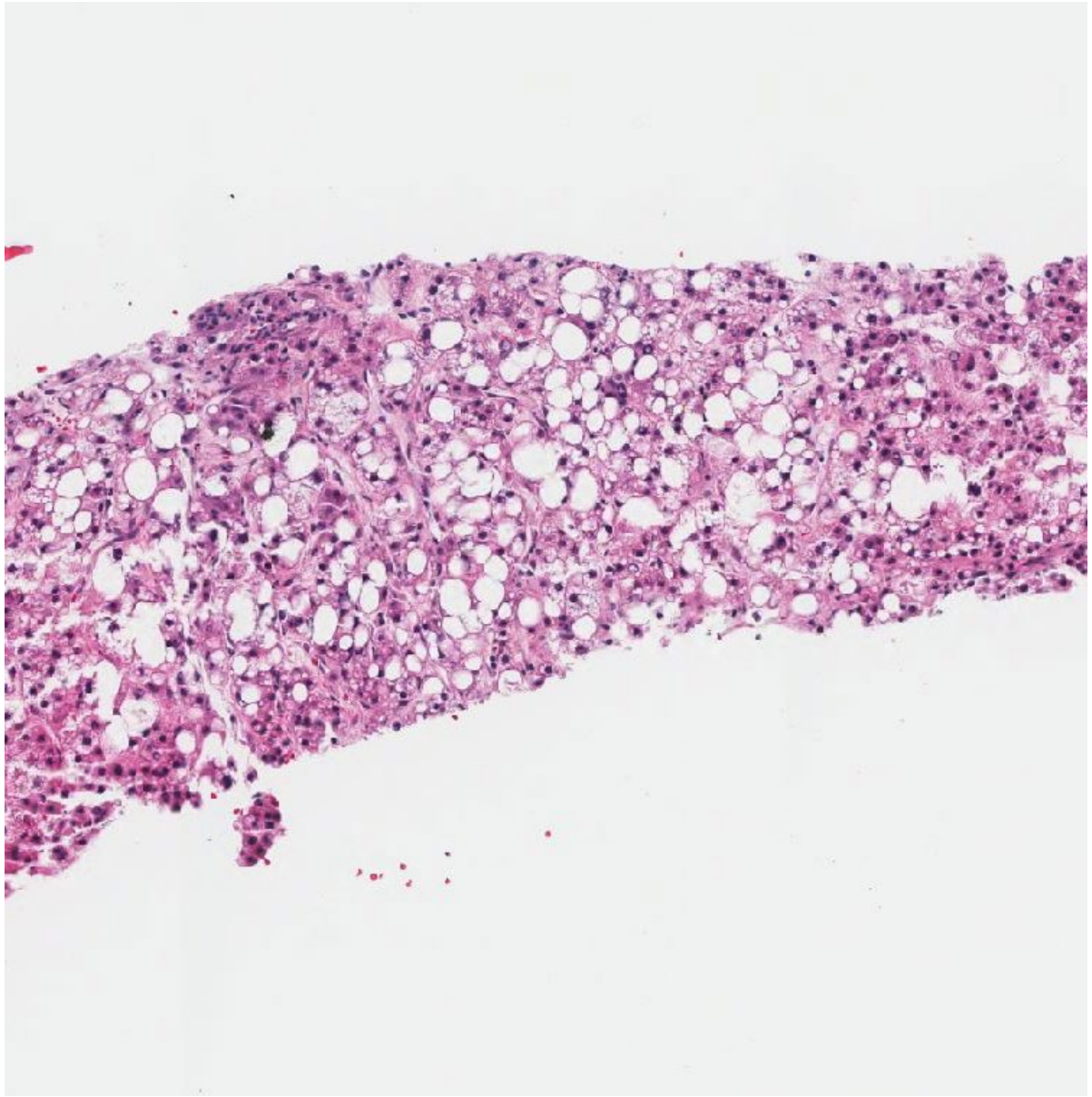


CD34

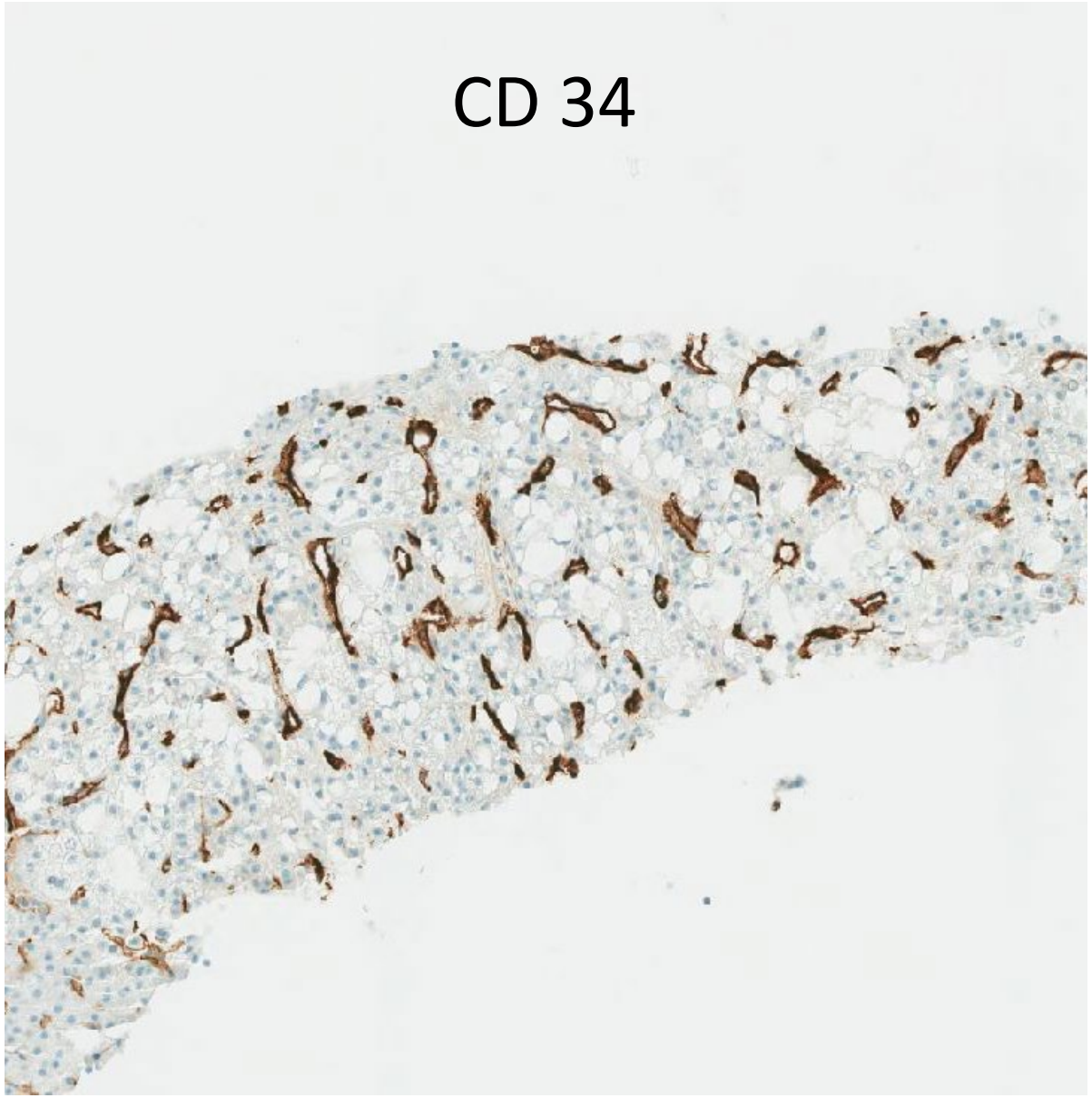
Steatohepatitic HCC: ~20% HCCs



- Similar clinical outcome as regular HCC
- Just know it exists because easy to mistake for non-lesional liver



CD 34



Hepatocellular Adenoma

♀ - OCPs major risk factor

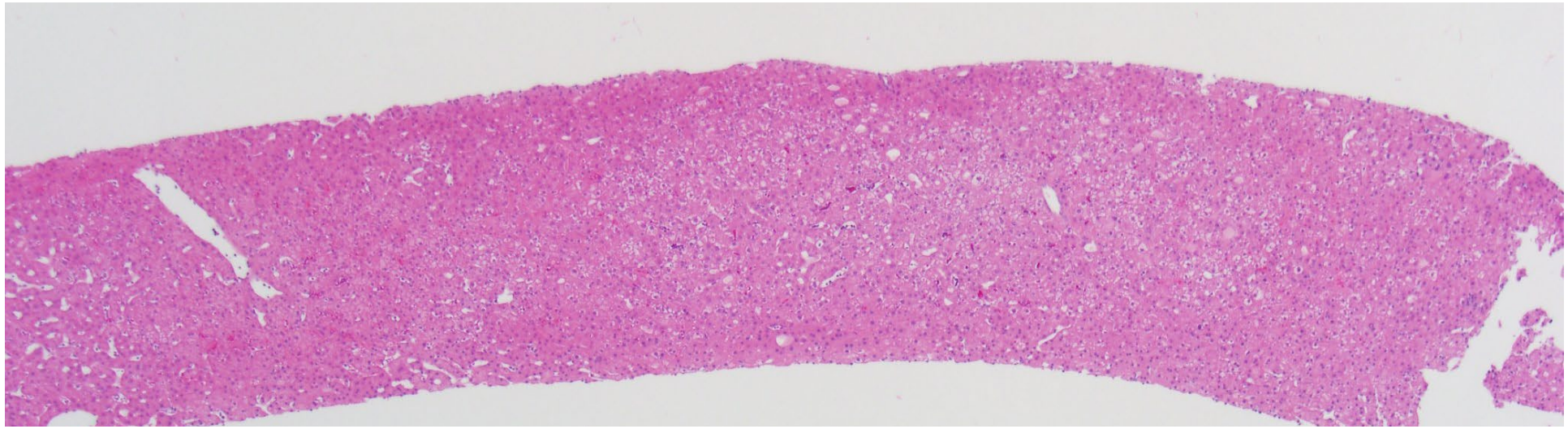
Can bleed (25%) or turn into HCC (4-8%)

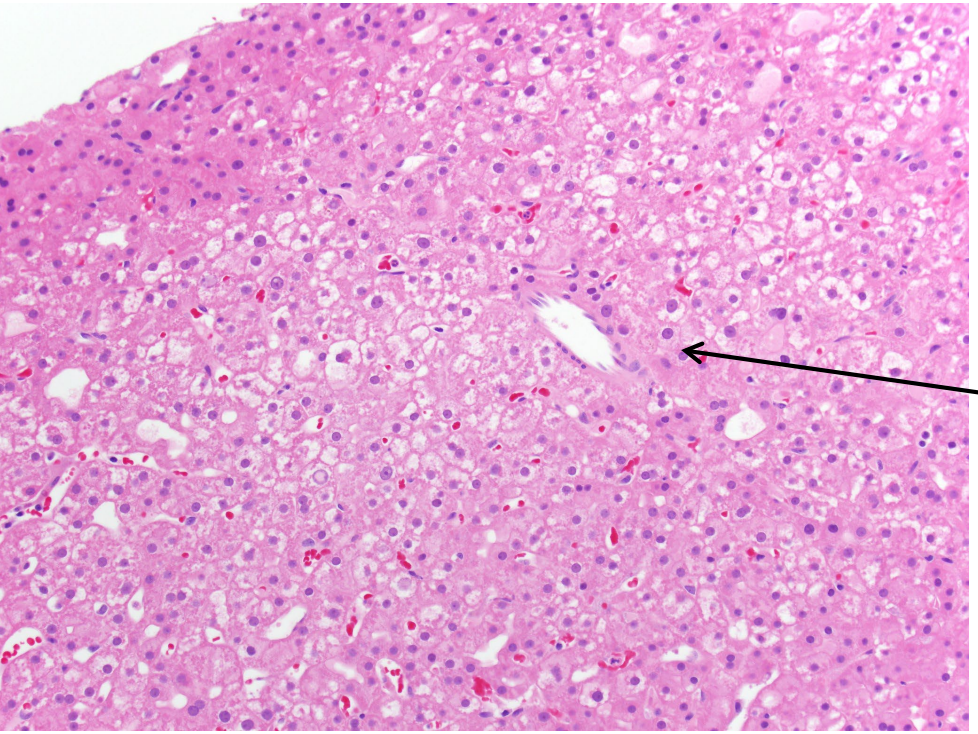
35% incidental

33%-45% >1 HCA

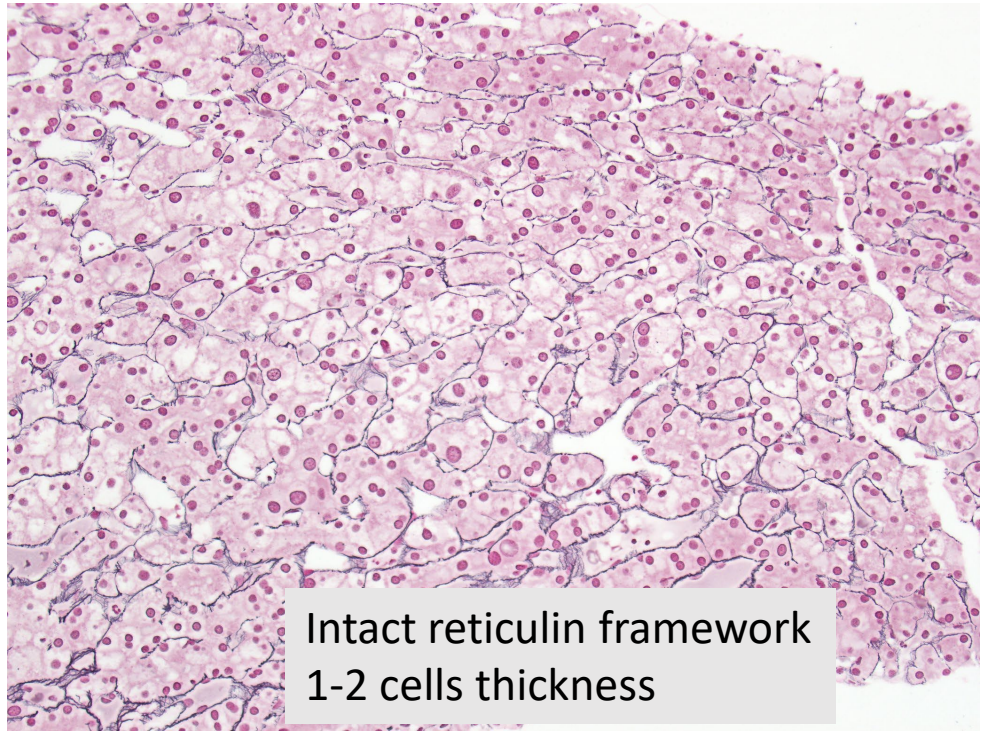
Gastroenterology 2017;152:880–894
Histopathology. 2022 May;80(6):878-897.

No portal tracts in a long stretch of benign-appearing hepatic parenchyma

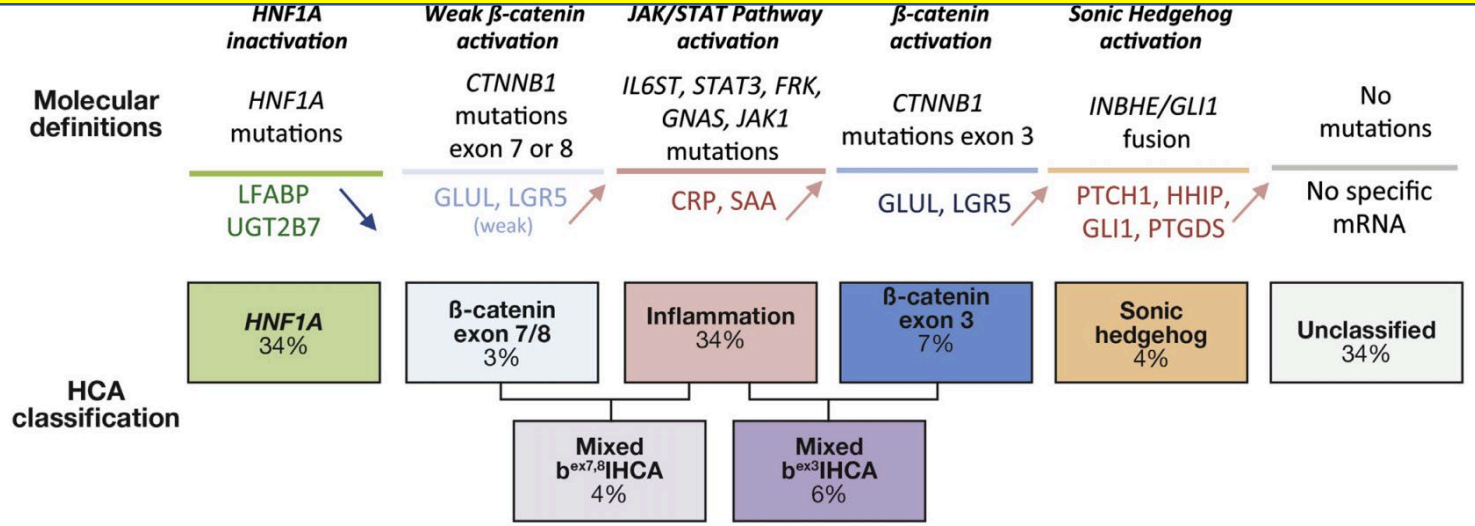




- ✓ Arises in non-cirrhotic liver
- ✓ Benign neoplastic hepatocytes devoid of portal tracts; unpaired arteries present
- ✓ Minimal atypia
- ✓ Mitoses unusual



DO I NEED TO SUBTYPE?



Risk of hemorrhage:
- Beta catenin exon 7/8
- Sonic hedgehog

Highest risk of cancer:
- Beta catenin exon 3

Gastroenterology 2017;152:880–894

Molecular Classification of Hepatocellular Adenoma Associates With Risk Factors, Bleeding, and Malignant Transformation

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EASL Guideline: HCA Management

- HCA resection recommended irrespective of size in 1) males and in any instance of proven 2) β-catenin mutation
  - Males have 60% risk of progression to HCC; risk of HCC with beta catenin mutation is 40%

- Female with HCA (irrespective of size) will be advised to lose weight and stop OCP→repeat MRI in 6 months → resection if >5 cm or significant increase in size, otherwise, annual imaging

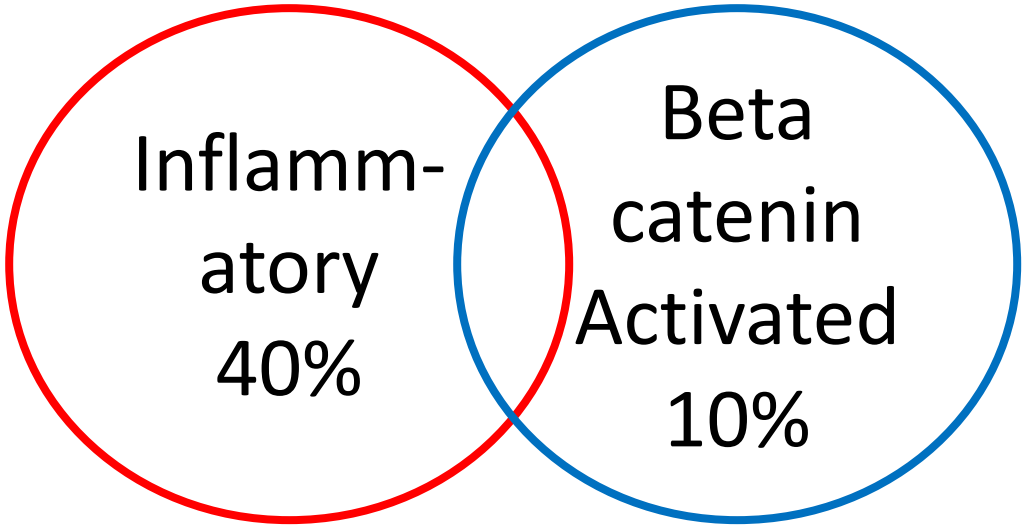
- In one study, 27% of HCA were biopsied prior to resection and biopsy was definitive in 61%
- The remaining 39% were either insufficient tissue (33%) or could not be distinguished from HCC (56%) or FNH (11%)

Journal of Hepatology 2016 vol. 65 j 386–398
Hepatology 2021; 74; 1595– 1610.

HCA Subtypes Summary

HNF1 alpha mutated 30%

- Marked steatosis
- IHC: Loss of LFABP
- **Having mutation excludes B-catenin**



Inflammatory 40%

- Assoc. w obesity
- Sinusoidal dilat + inflammation
- IHC: CRP & SAA +

Beta catenin Activated 10%

- ↑Risk of Cancer; ♂
- IHC: GS diff +, b-cat +
- **Resection regardless of size**

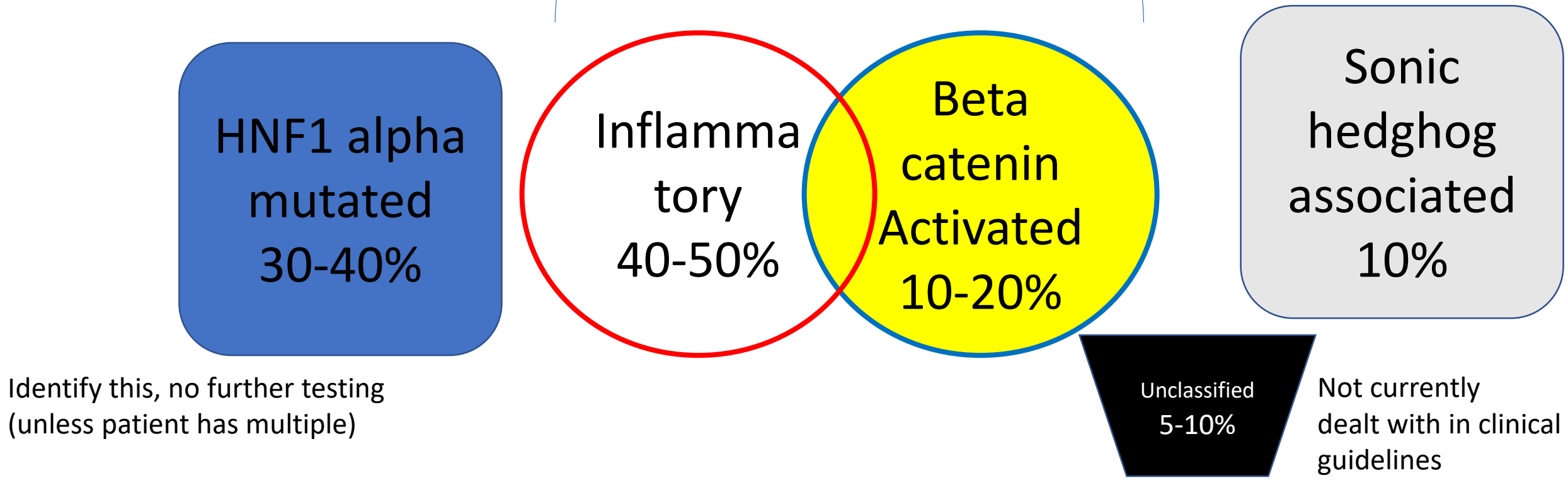
Sonic hedghog associated 10%

- Associated with hemorrhage, regardless of size
- IHC: ASS-1 +

EASL Guidelines. J Hepatol. 2016 Aug;65(2):386-98.

Practical approach: HCA Subtypes

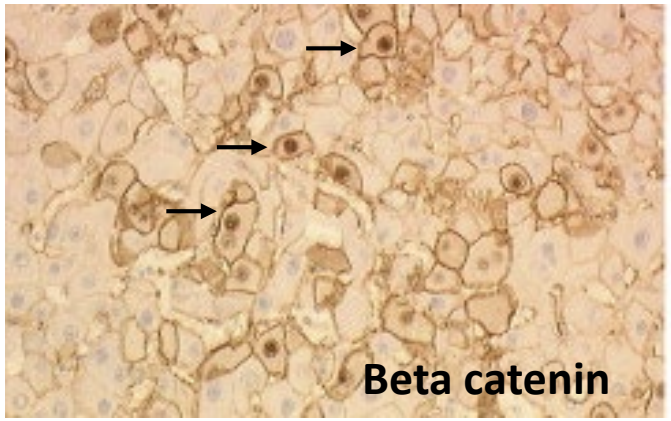
If positive for beta catenin, diffuse GS: no further testing; needs to be resected
If GS stain confusing, offer molecular testing for b-catenin & TERT (DDX is FNH)



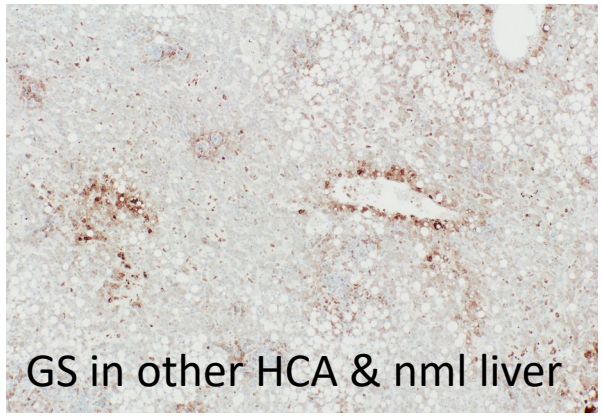
Identify this, no further testing (unless patient has multiple)

Not currently dealt with in clinical guidelines

HCA Subtype – Beta catenin Activated



Vs

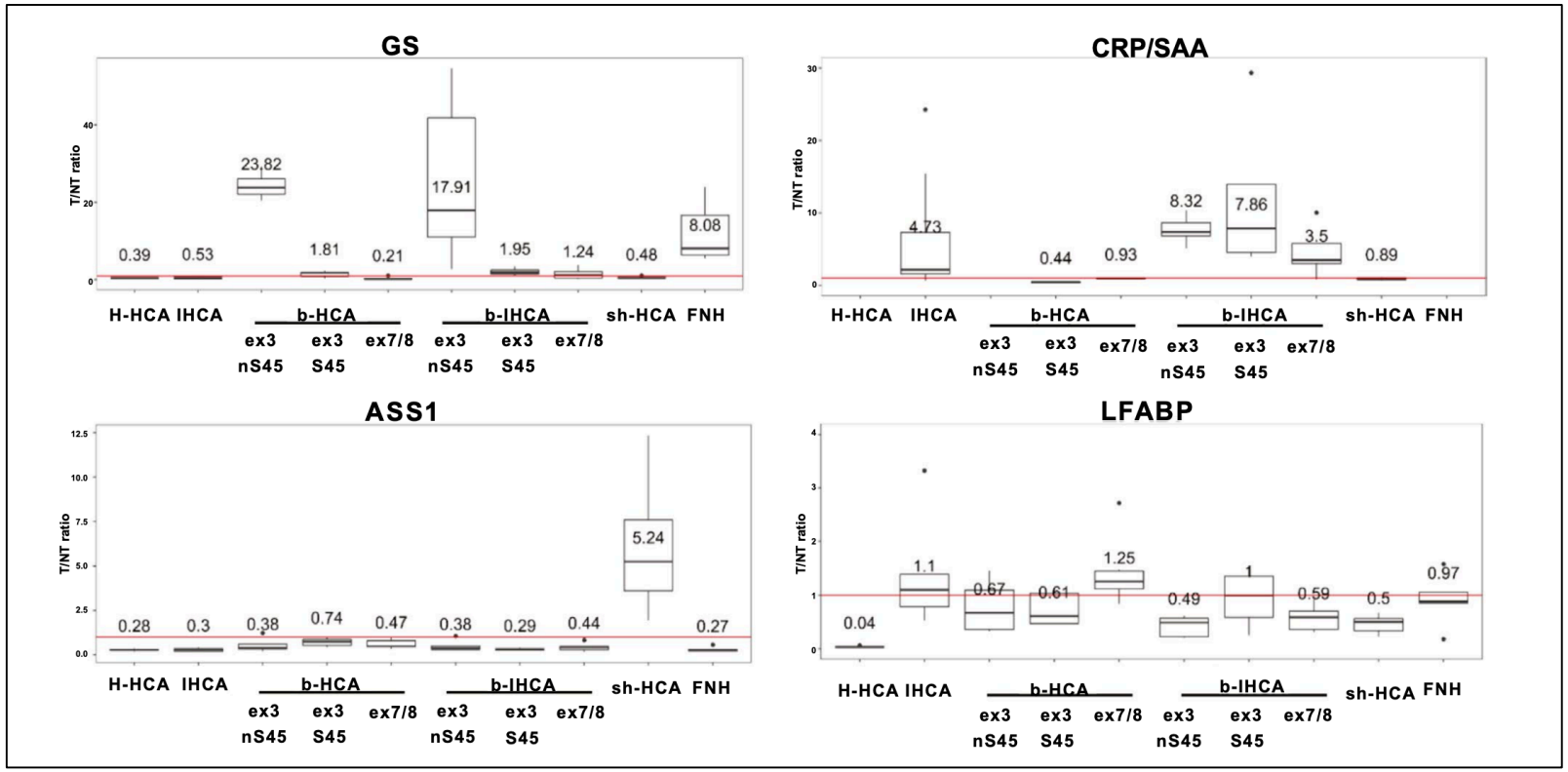


- IHC not great:
  - Focal beta catenin+
  - Diffuse GS + (target gene of b-cat)
  - Together 100% specificity, but low sensitivity ~75%

Clin Liver Dis. 2010;14(4):719-729.

Proteomic Profiling

- FFPE tissue, 1 mm2 on 3 × 5 µm section cuts
- Used mass-spectrometry–based proteomic analysis and defined a specific proteomic profile of each of the HCA subgroups based on abundance of proteins observed



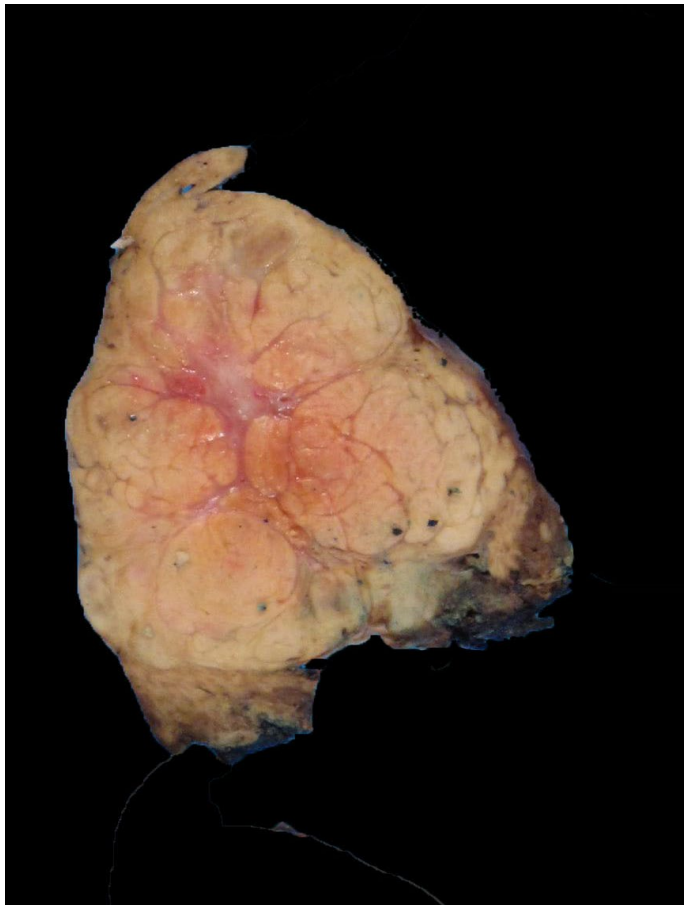
- Not much noticeable utility (that I can tell) ID'ing **the HCA** subtypes of interest except for sonic Hedghog HCA
- However, they claim to be able to tell the difference between **HCC and HCA** via observing how close the proteomic profile of a tumor is to HCA or HCC based on a reference database of proteomic profiles

Hepatology 2021; 74; 1595– 1610.

Focal Nodular Hyperplasia

- FNH - 2nd most common benign liver lesion

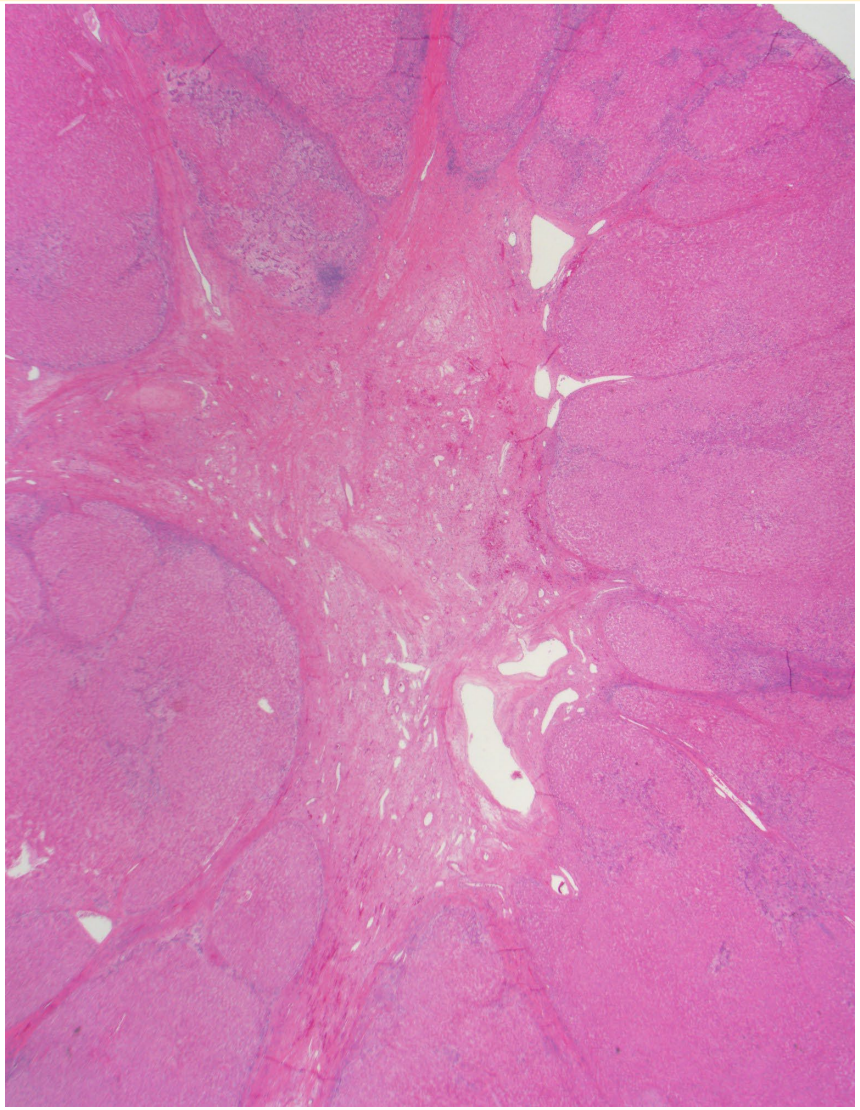
- F:M 8:1, 30-50
- Most asymptomatic and incidentally found
- Biopsy if imaging is inconclusive



Gastroenterology. 2000 Mar;118(3):560-4.
Nat Rev Gastroenterol Hepatol. 2014 Dec;11(12):737-49.
EASL Clinical Practice Guidelines. J Hepatol (2016)

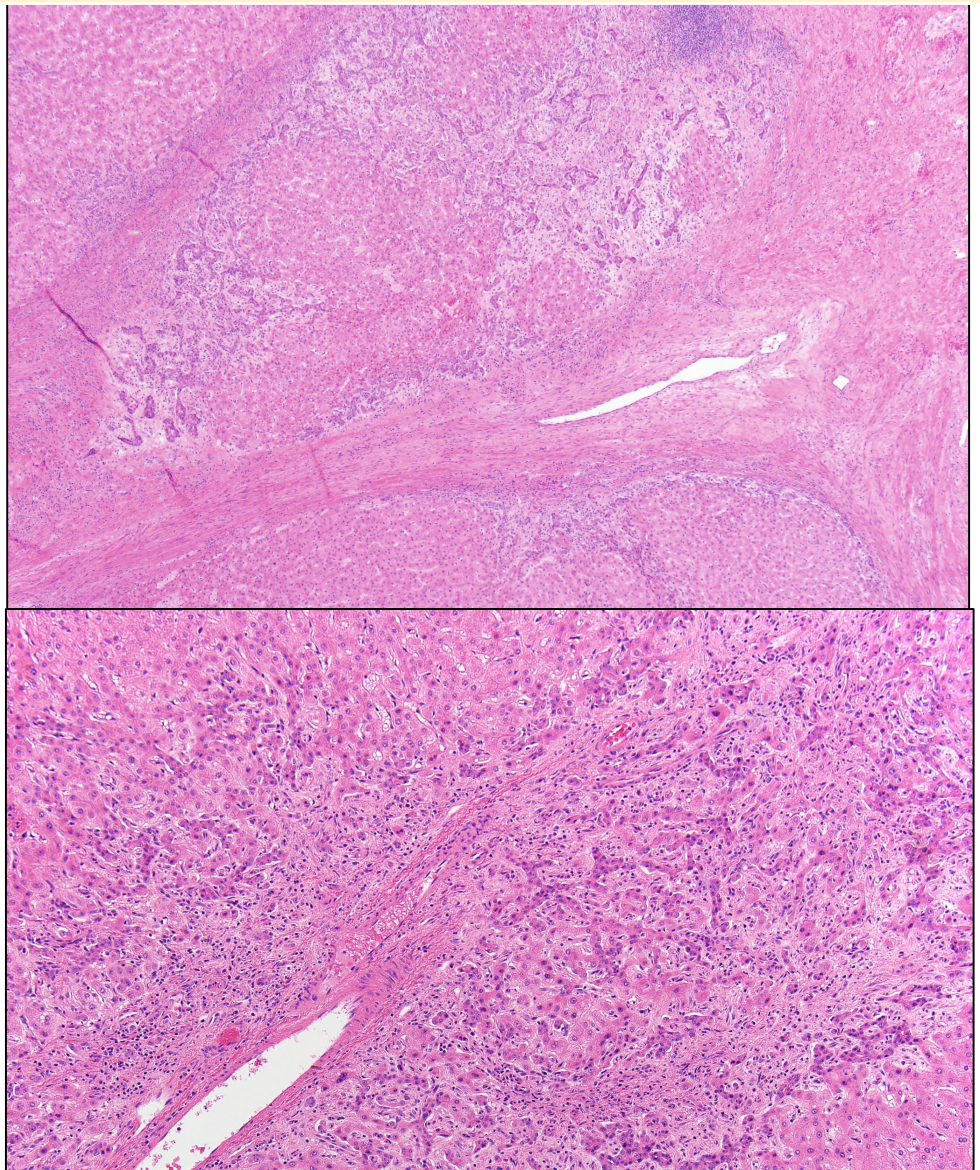
Focal Nodular Hyperplasia Histology

- Microscopic:
  - Nodular/ “pseudo-cirrhotic” architecture surrounding a central scar:
    - Nodules of benign hyperplastic hepatocytes separated by fibrous septa radiating from central scar



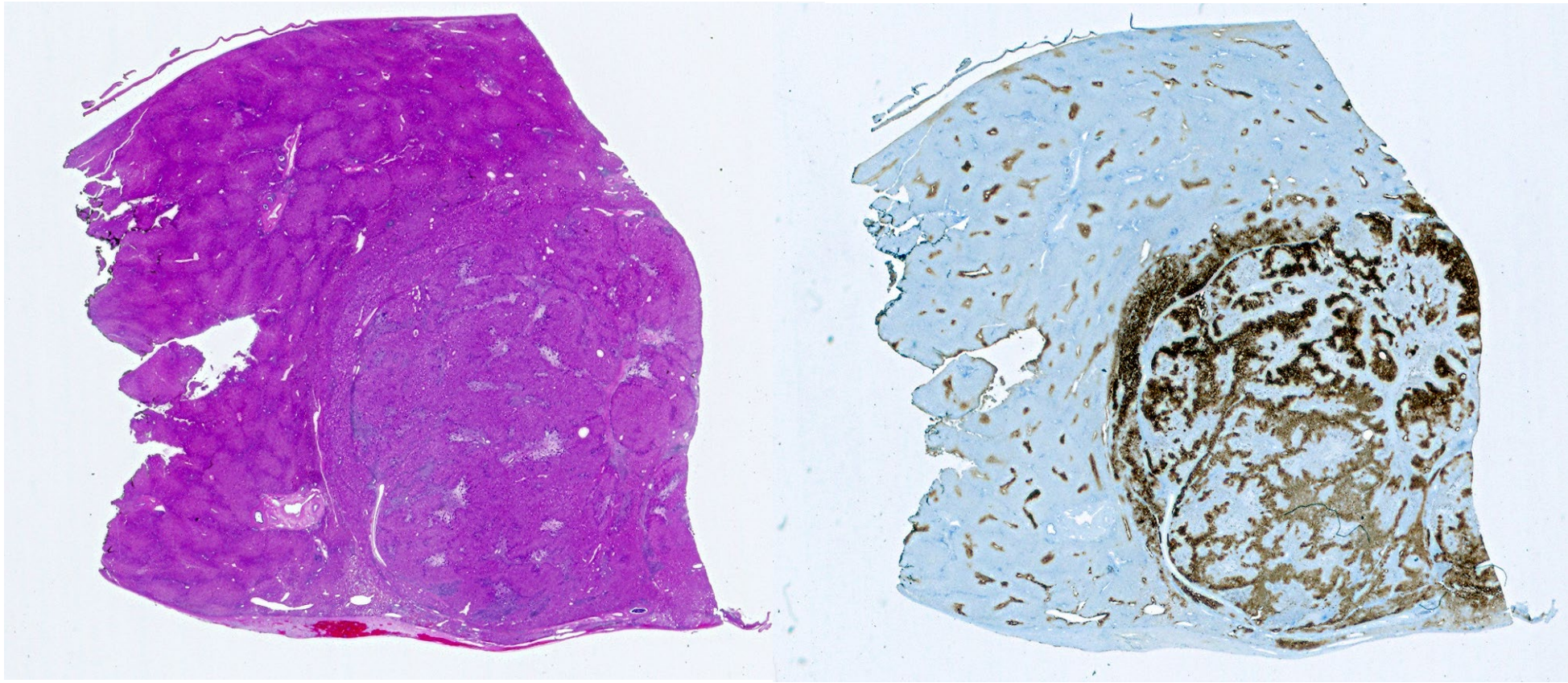
Focal Nodular Hyperplasia

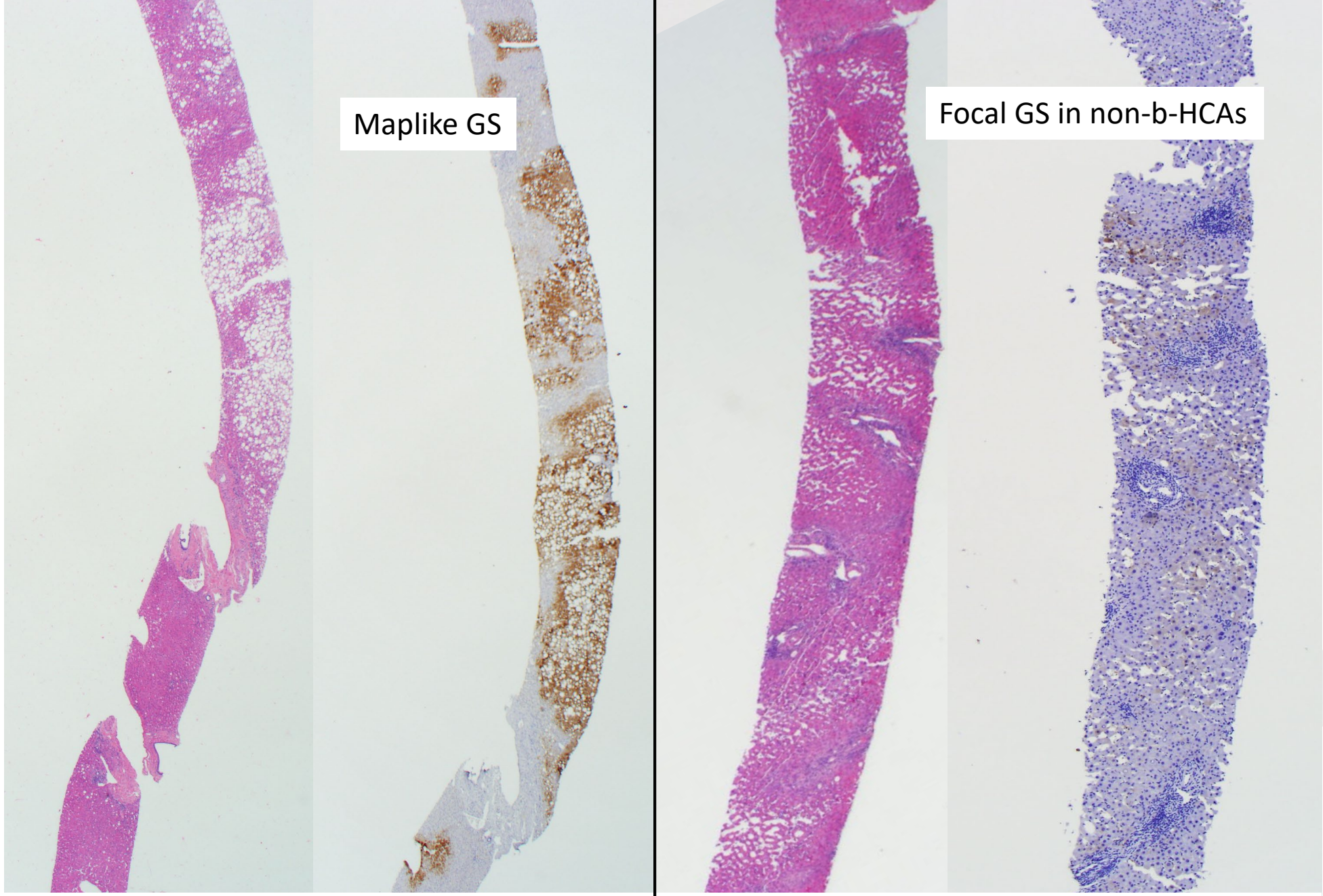
- Microscopic:
- NO NORMAL PORTAL TRACTS
  - Fibrous bands contain:
    - **Dystrophic arteries,** abnormally large
    - Presence of **ductular reaction** at interface of fibrous bands and the parenchyma
    - No portal venule, no normal duct
    - Hepatocytes 2 cells in thickness



Nat. Rev. Gastroenterol. Hepatol.2014; 11, 737–749

Glutamine Synthetase staining in FNH





FNH

HCA

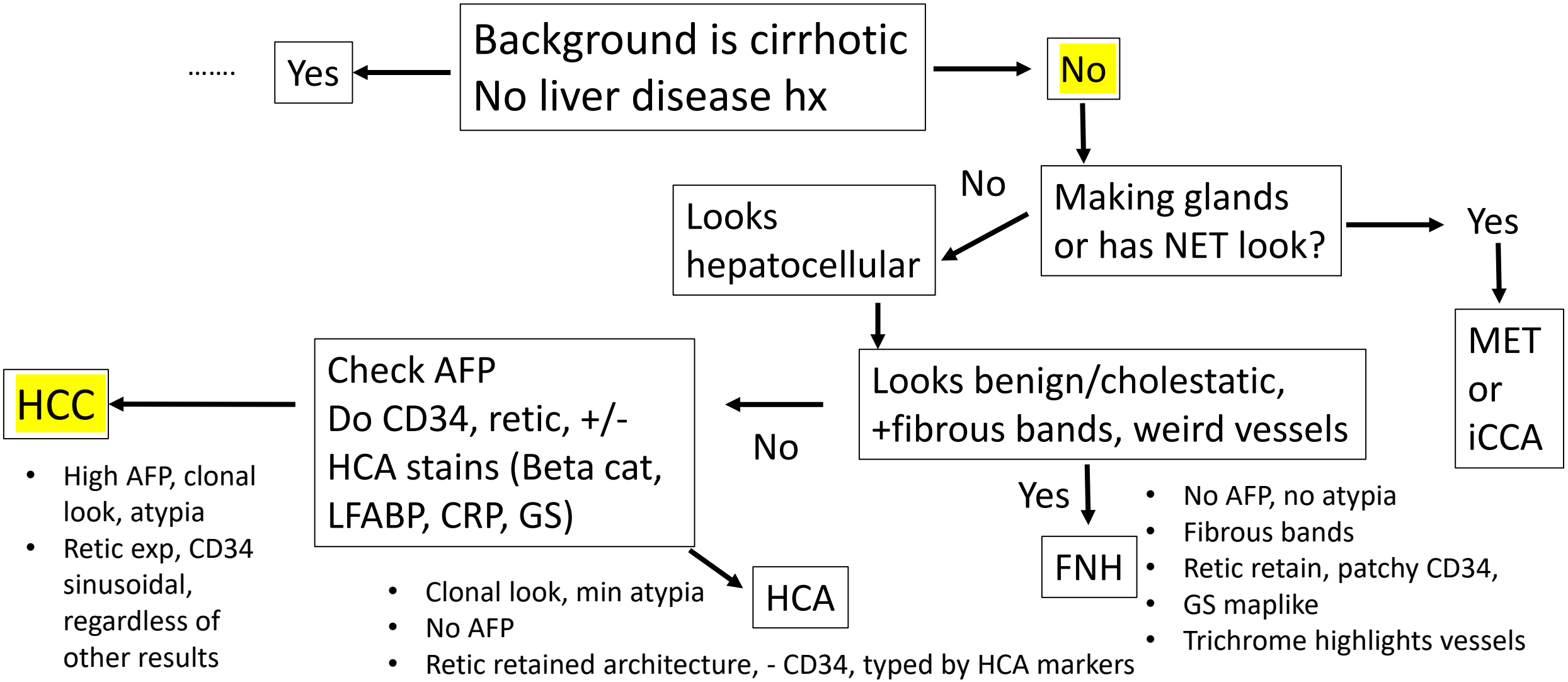
Management of FNH

- No complications, so no follow-up indicated
- No need to stop OCP, pregnancy OK
- **No resection** indicated, even with slow growth

Am J Gastroenterol. 2014 Sep;109(9):1328-47

EASL Clinical Practice Guidelines. J Hepatol (2016)

Conclusion:
Liver Mass Biopsy



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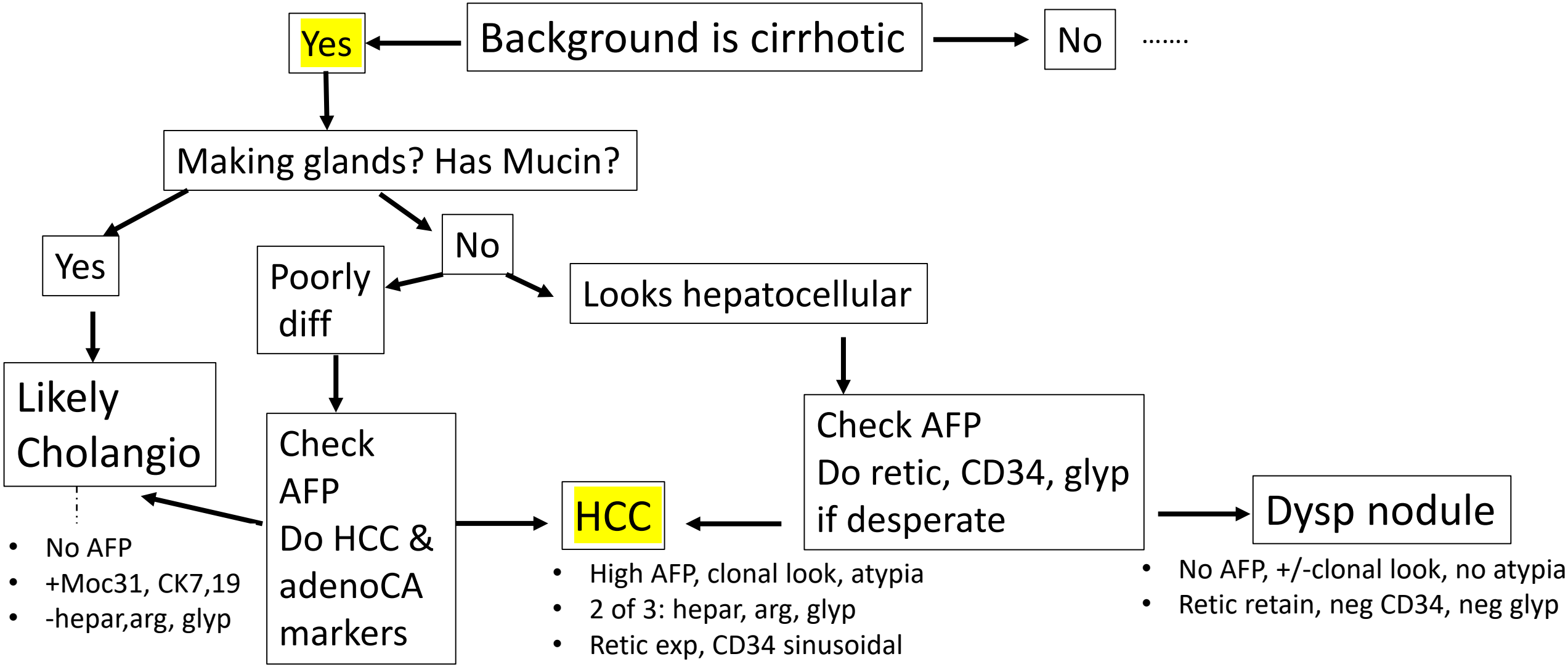
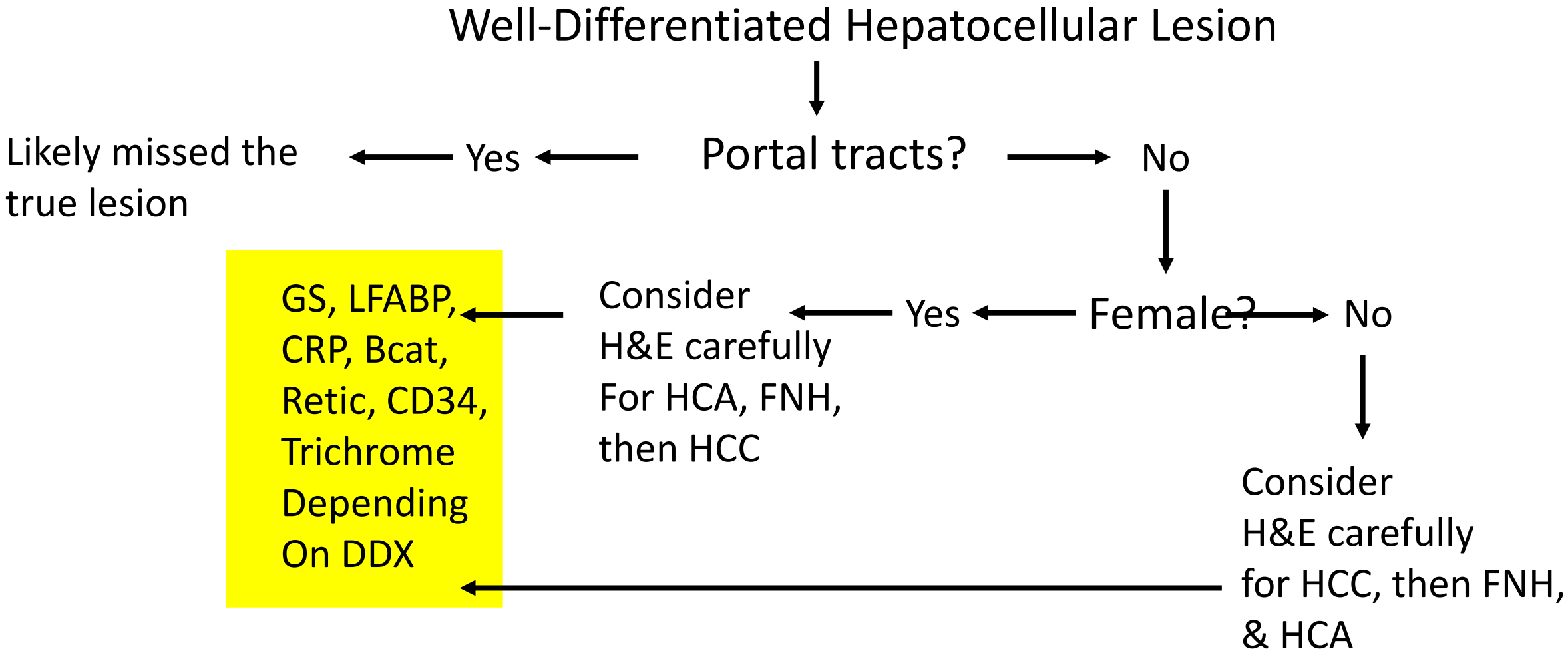


Real Life Practice "Liver Mass Biopsy"
No background liver sampled, no clinical info



LAMPS

APPELMAN

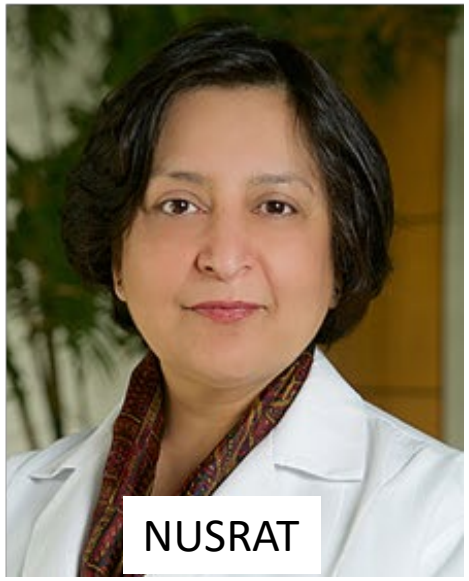
GREENSON

OWENS

SHI

ASSARZADEGAN

CHOI



NUSRAT

Thank You

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Real Life Practice "Liver Mass Biopsy"
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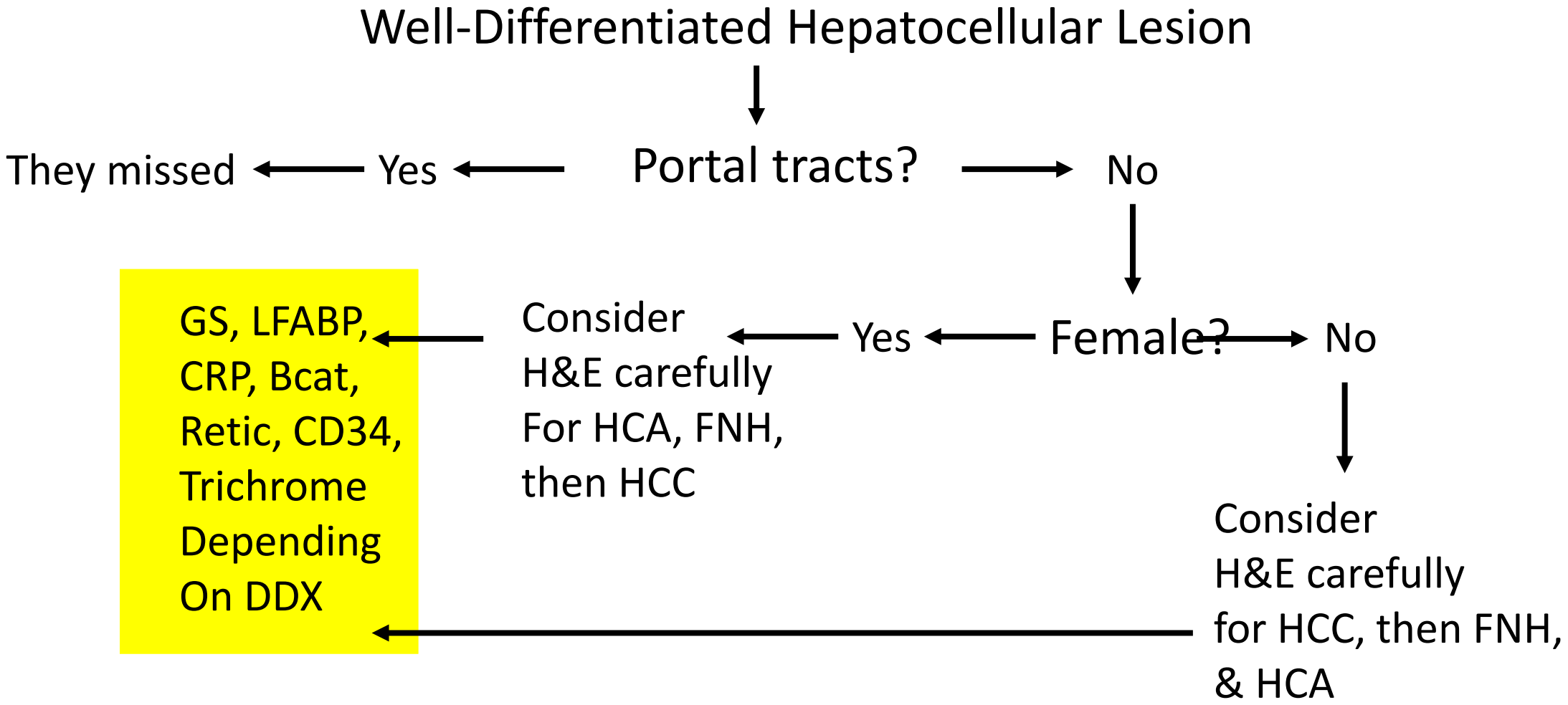
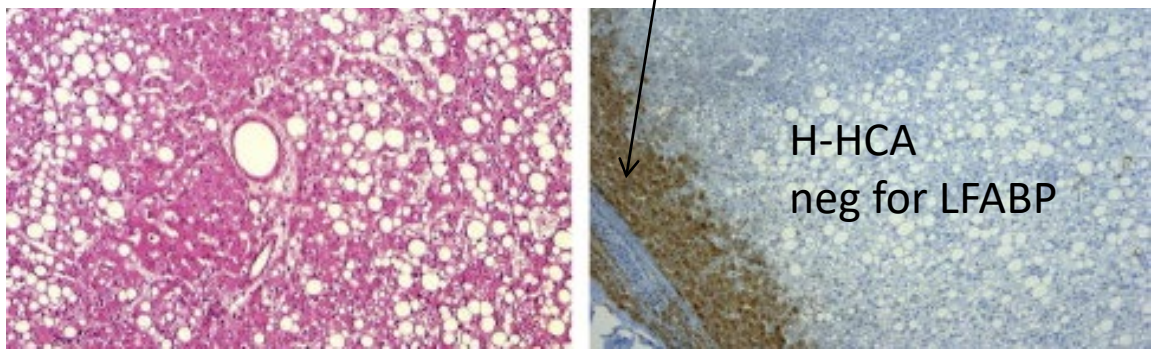


HCA Subtype – HNF1A

HNF1 alpha mutated 30-40%

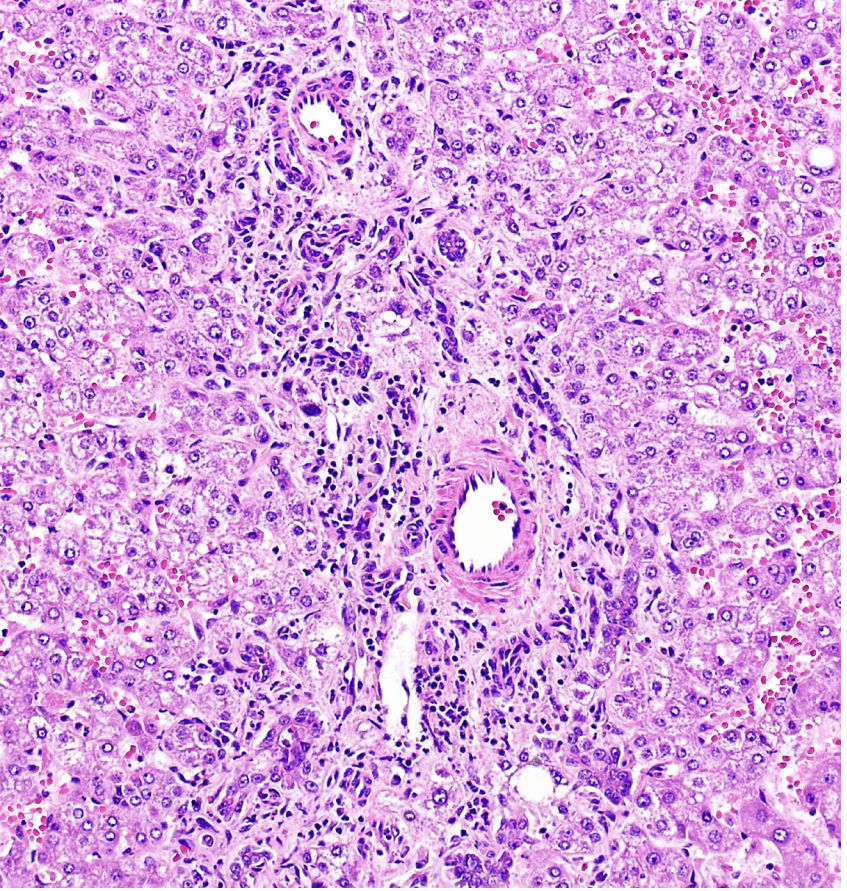
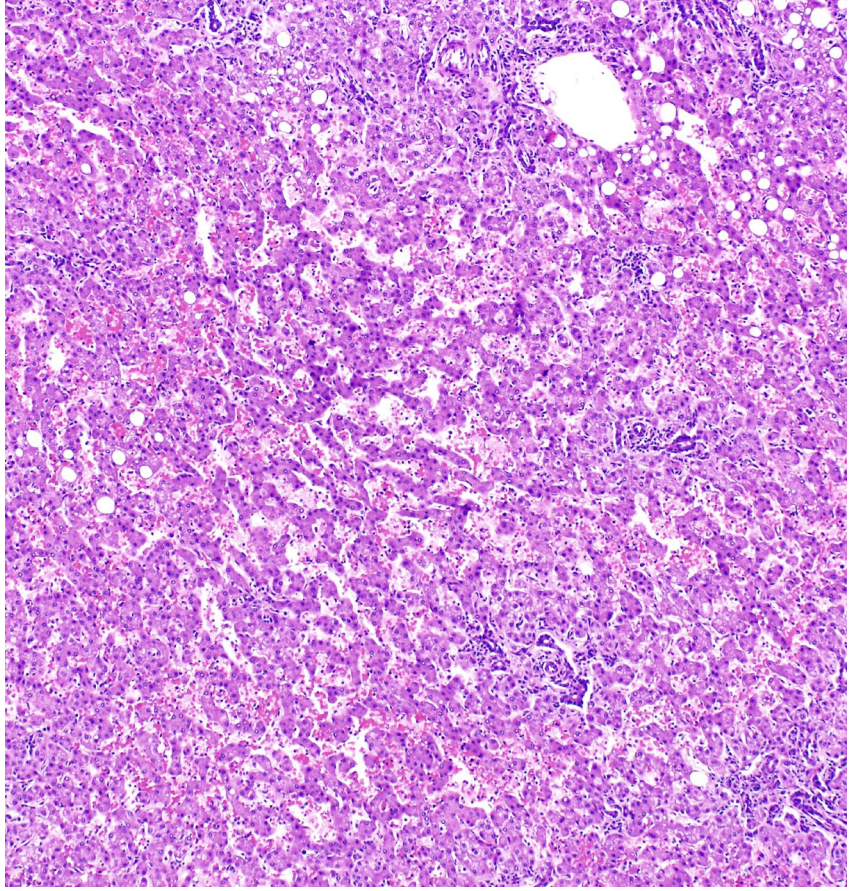
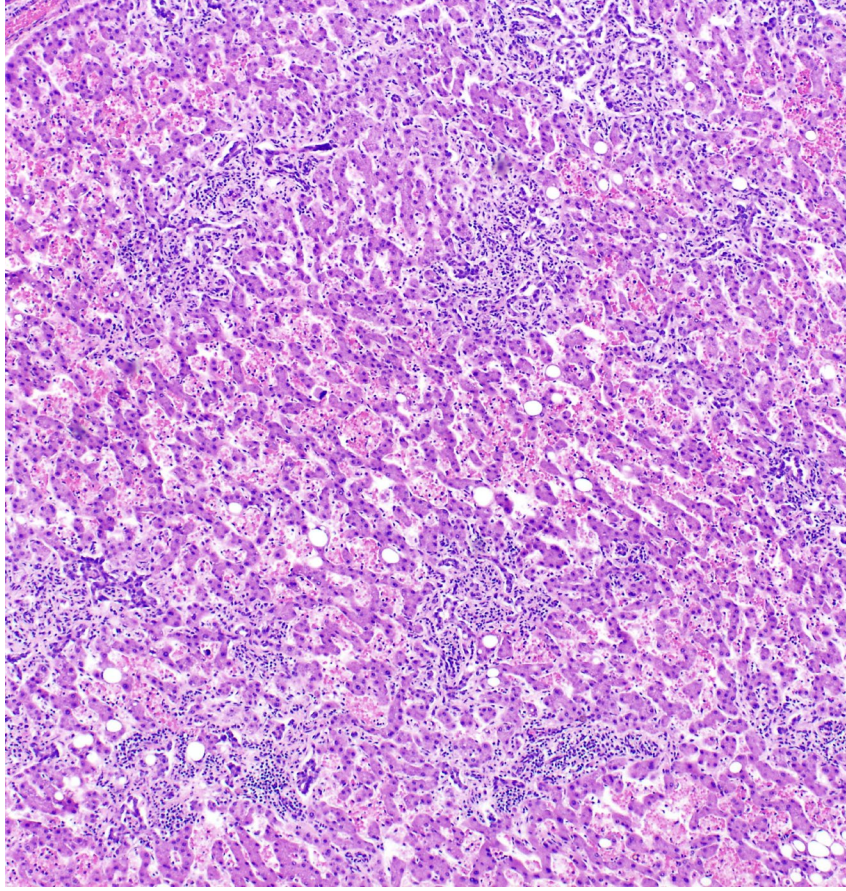


- HNF1A

INACTIVATING MUTATION

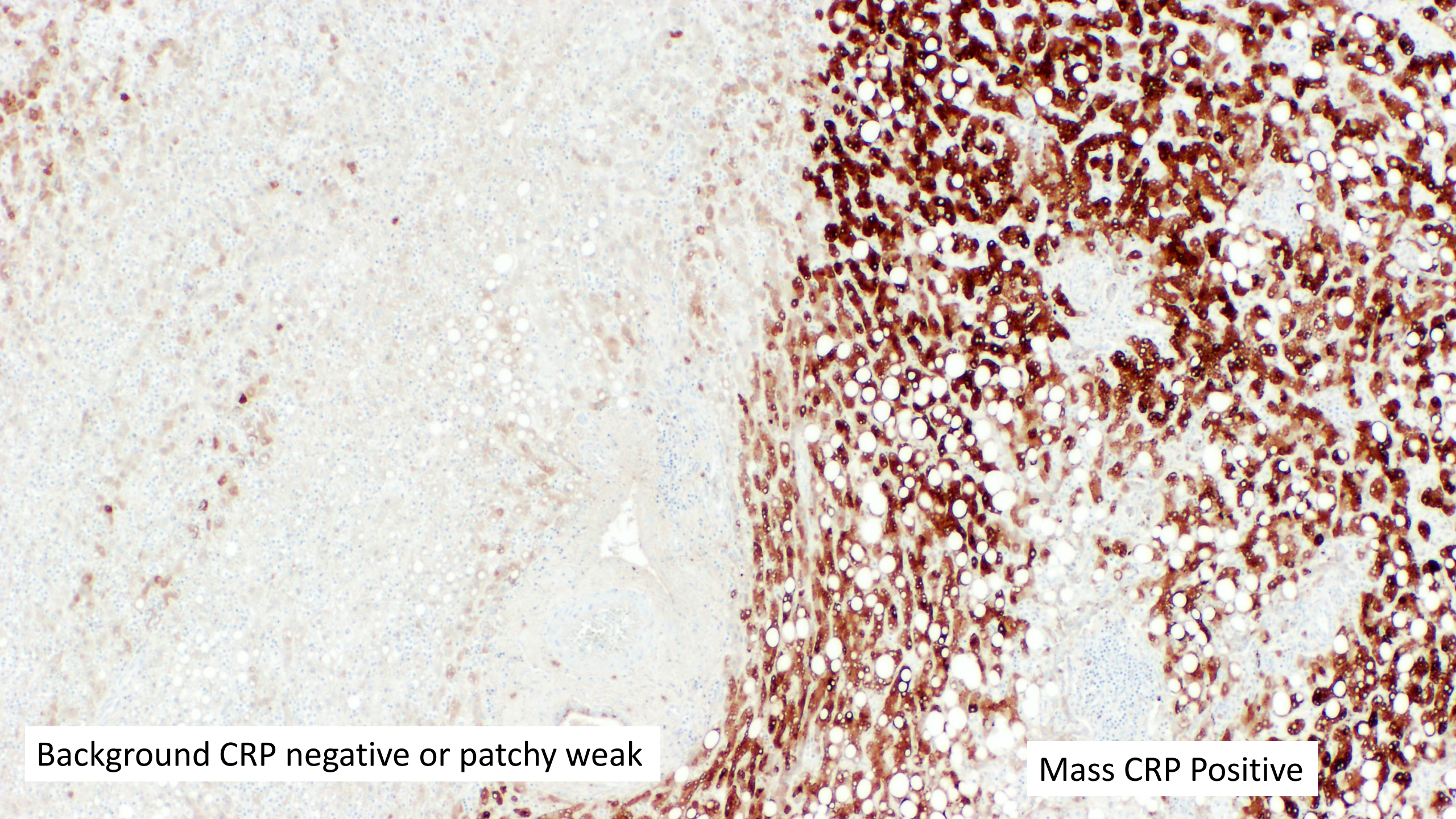
- Marked Steatosis in HCA
- Absence of expression of genes controlled by HNF1A
  - IHC Hallmark: LOSS of LFABP (100% sens, spec)

Clin Liver Dis. 2010;14(4):719-729.

Inflammatory HCA

- Unpaired arteries with small bile ductules ("pseudo-portal tracts")
- Sinusoidal Dilatation
- Inflammatory cells
- Diffuse + Serum amyloid A or C-reactive protein


Background CRP negative or patchy weak
Mass CRP Positive