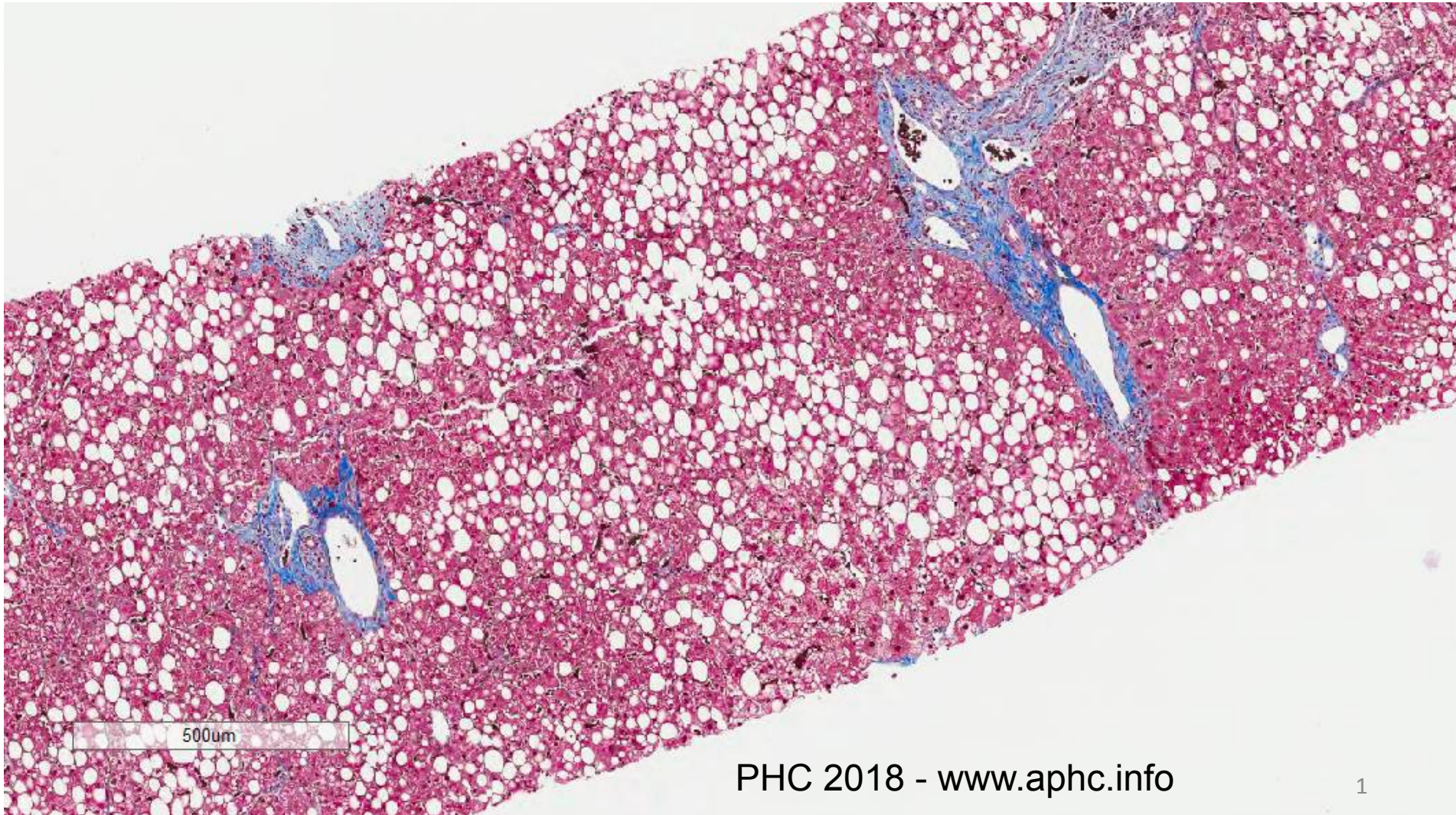
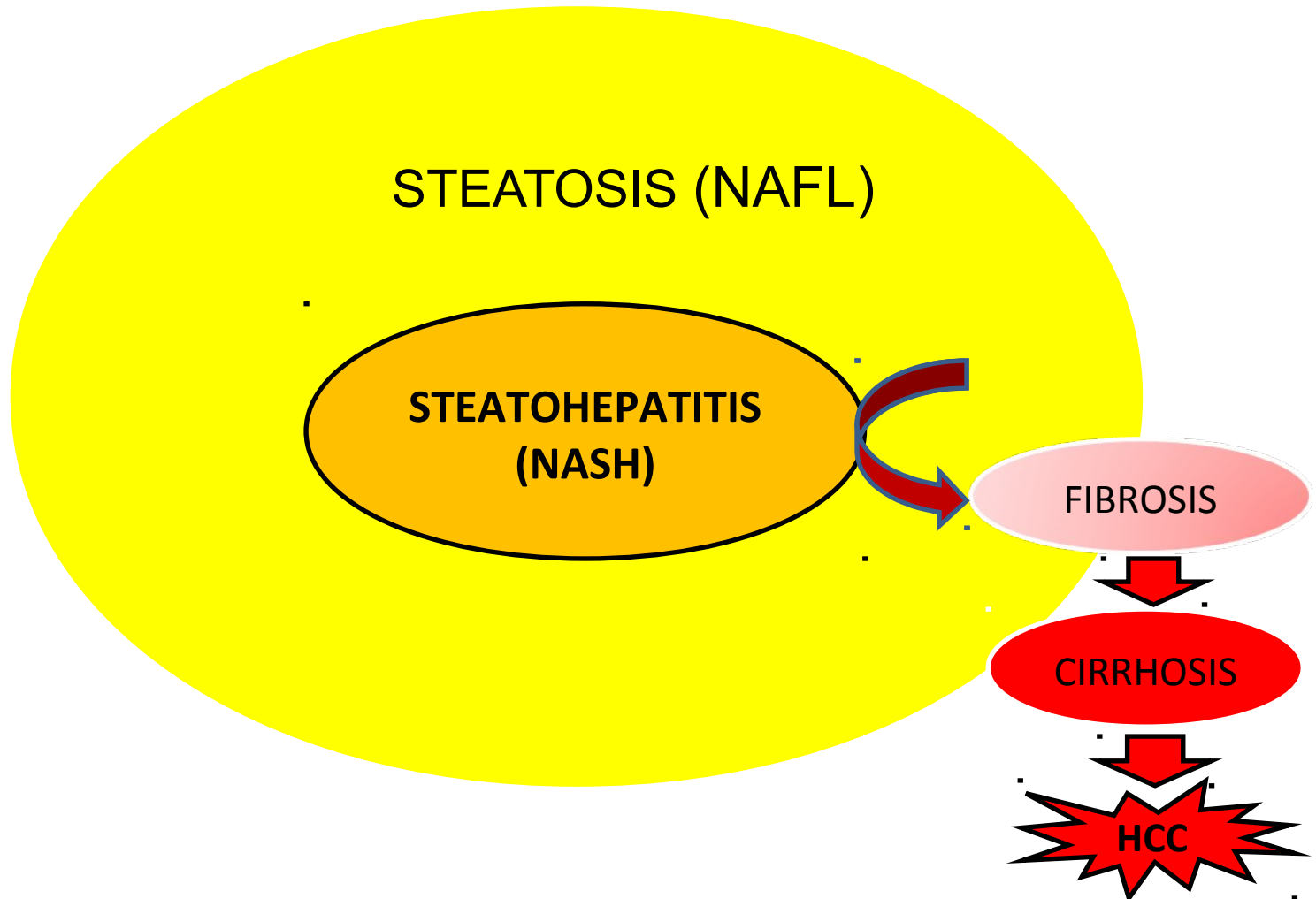


DIAGNOSIS OF NASH

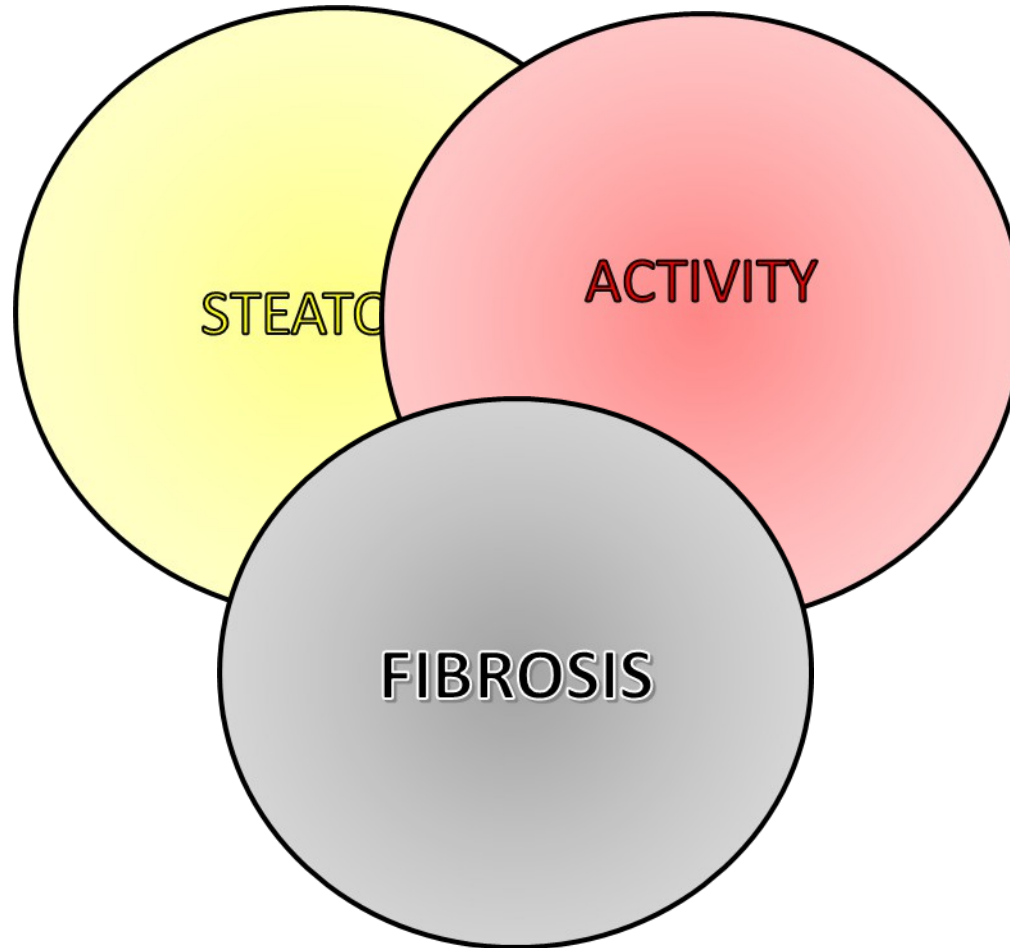
LIVER BIOPSY

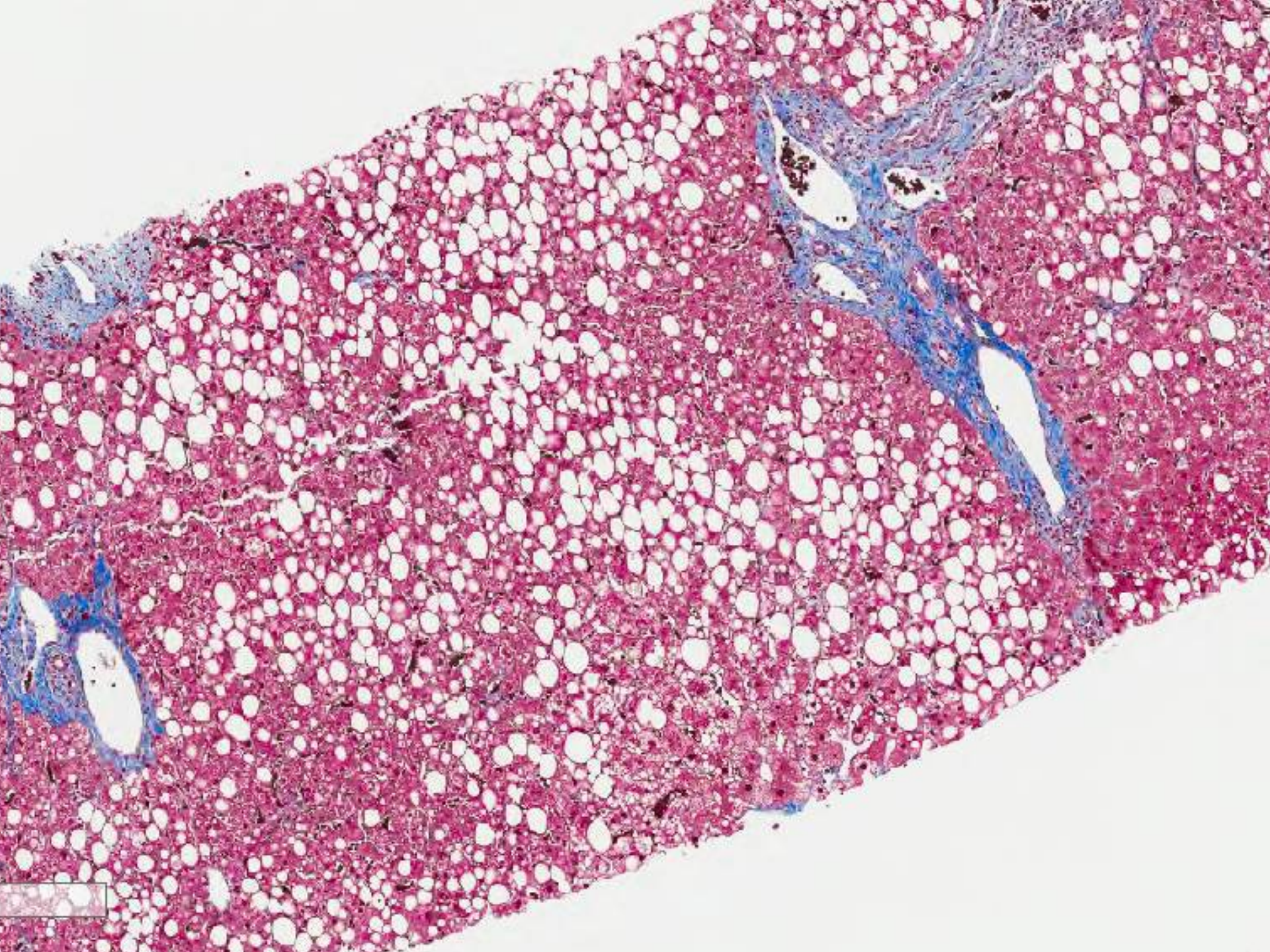


THE NATURAL HISTORY OF NAFLD



UNDER THE LENS : THE 3 HISTOLOGICAL COMPONENTS OF NAFLD ARE INTERMINGLED





**LIVER BIOPSY IS THE ONLY TOOL
THAT GIVES YOU, IN ONE SHOT, A
FULL EVALUATION OF THE VARIOUS
FEATURES (S_A_F) WITH
SEMIQUANTITATIVE EVALUATION**

EASY TO ARGUE AGAINST LIVER BIOPSY

- Biopsy is not a safe procedure
- Patient may refuse liver biopsy
- There is a risk of sampling error
- There is a risk variability in assessment between pathologists
- Non invasive biomarkers to replace liver biopsy

EASY TO ARGUE AGAINST LIVER BIOPSY


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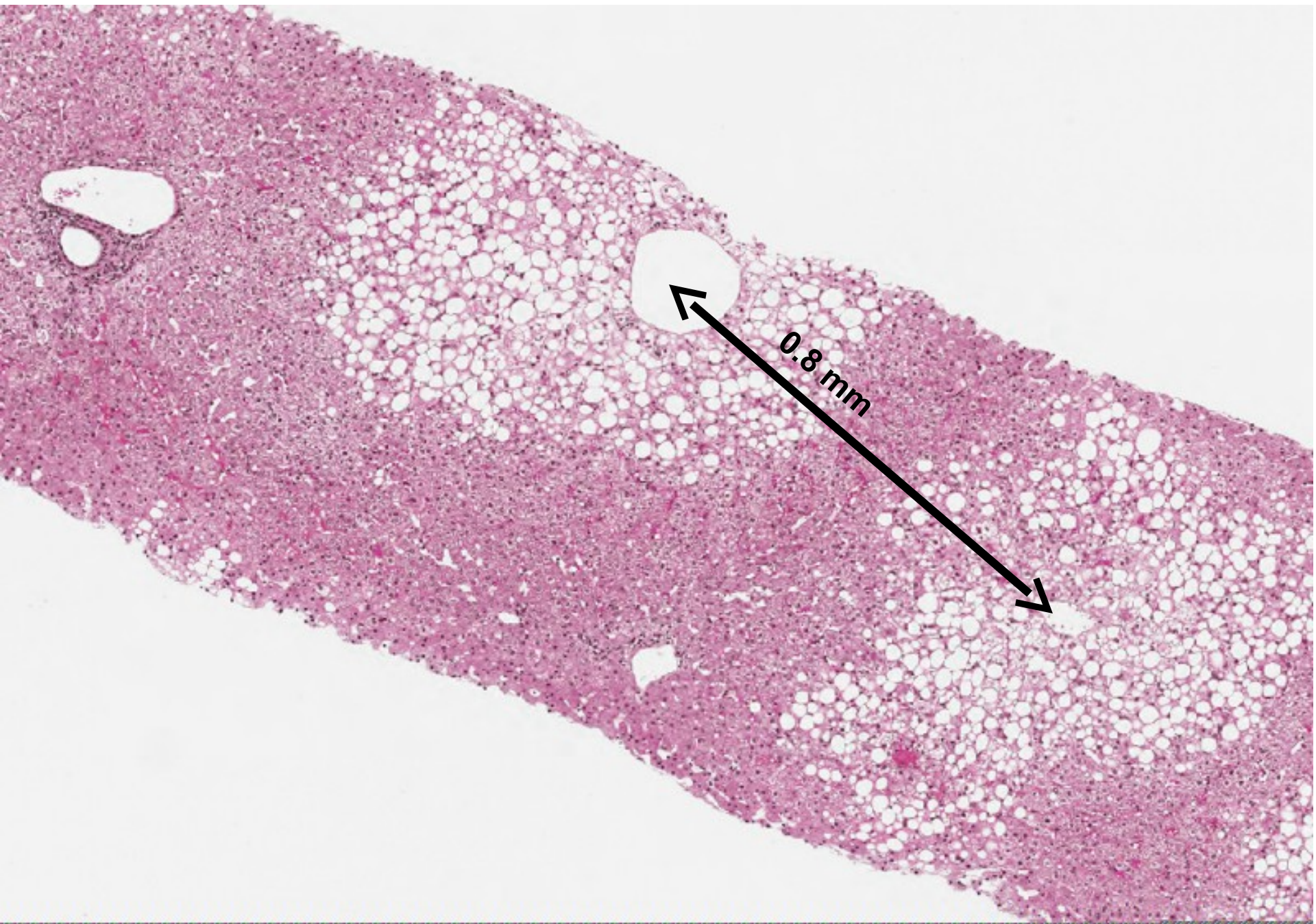
Liver biopsy in the post-transplant setting

- Our local experience :
 - Between 2006 – 2016
 - > 1500 transplantations in Beaujon hospital
 - 3 biopsies / per patient / per 10 years (1 – 12)
 - No reluctance from hepatologist → full acceptance from patients

Motivation of the hepatologist is the key ; serious disease, treatments available, no non invasive alternative


WHY TO KEEP LIVER BIOPSY IN NAFLD

- Biopsy is not a safe procedure 
- Patient refuse liver biopsy
- There is risk of sampling error
- There is risk variability between pathologists
- Non invasive biomarkers to replace liver biopsy



0.8 mm

WHY TO KEEP LIVER BIOPSY IN NAFLD

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- Patient refuse liver biopsy
- There is risk of sampling error
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- Non invasive biomarkers to replace liver biopsy

The FLIP algorithm

NAFL

NAFL

NAFL

NAFL

NASH

NASH

NAFL

NASH

NASH

Histopathological algorithm and scoring system for evaluation of liver lesions in morbidly obese patients. Bedossa P, Poitou C, Veyrie N, Bouillot JL, Basdevant A, Paradis V, Tordjman J, Clement K. Hepatology. 2012 Nov;56(5):1751-9

REPRODUCIBILITY OF DIAGNOSIS OF NASH WITH FLIP ALGORITHM

40 biopsies (Steatosis, NASH)	1st session (unsupervised)	2 nd session (with classifier)
Liver Pathologists (n=6)		
• κ score	0.54 (moderate)	0.66 (substantial)
• Nbr of biopsies with agreement between all pathologists	26/40 (65 %)	34/40 (85 %)
General Pathologists (n=10)		
• κ score	0.35 (fair)	0.70 (substantial)
• Nbr of biopsies with agreement between all pathologists	18/40 (45 %)	34/40 (85 %)

The FLIP Pathology consortium, Hepatology 2014

The definition of NASH by an association of 3 features and a clear definition of each of them make the diagnosis of NASH strongly reproducible

WHY TO KEEP LIVER BIOPSY IN NAFLD

Laurent should argue :

- Biopsy is not a safe procedure
- Patient refuse liver biopsy
- There is risk of sampling error
- There is risk variability between pathologists
- Non invasive biomarkers to replace liver biopsy



Non invasive biomarkers in NAFLD

WHY TO KEEP LIVER BIOPSY IN NAFLD

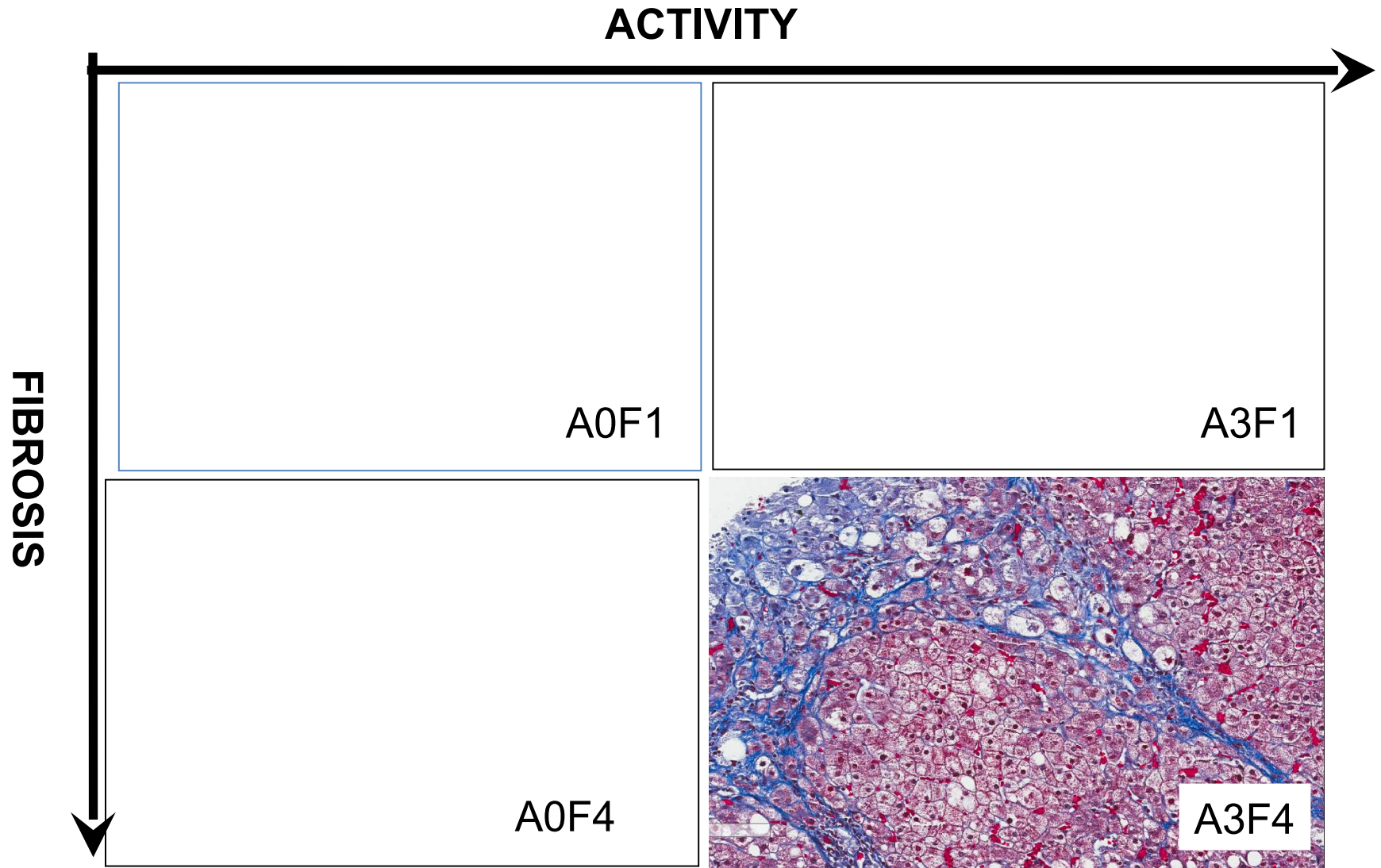
- Biopsy is not a safe procedure
- Patient refuse liver biopsy
- There is risk of sampling error
- There is risk variability between pathologists
- Non invasive biomarkers to replace liver biopsy: still an unmet need

Why a liver biopsy ?

- NAFLD subgroups are defined by liver tissue damages
- NAFLD: complex disease with association of various pathophysiological features
- Each feature has a clinical relevance

THE STRENGTH OF LIVER PATHOLOGY

MANY VARIATIONS OF NAFLD



Relevance for choosing customized treatment

Anti-inflammatory

STEATOSIS	A0	A1	A2	A3	A4
F0	A0F0	A1F0	A2F0	A3F0	A4F0
F1	A0F1	A1F1	A2F1	A3F1	A4F1
F2	A0F2	A1F2	A2F2	A3F2	A4F2
F3	A0F3	A1F3	A2F3	A3F3	A4F3
F4	A0F4	A1F4	A2F4	A3F4	A4F4

WHY TO KEEP LIVER BIOPSY IN NAFLD

- Biopsy is not a safe procedure
- Patient refuse liver biopsy
- There is risk of sampling error
- There is risk variability between pathologists
- Non invasive biomarkers to replace liver biopsy still an unmet need

The reality is:

- NAFLD is a pandemic
- Most of the patients have a benign disease
- No treatment available

→ **Biopsy should be considered only for selected**

When to biopsy ?

- Clinical trial
- Comorbidity
- Possibly serious disease

NON INVASIVE TOOL AND LIVER BIOPSY

A POWERFUL ASSOCIATION





TAKE-HOME MESSAGES

- **Liver biopsy is still the gold standard**
- **Non invasive test still an unmet need but strongly needed NOT TO replace liver biopsy BUT TO select the subgroup of patients who will benefit from a liver biopsy**
- **Liver biopsy will stay in the armamentarium of hepatologist in NAFLD**