Special stains

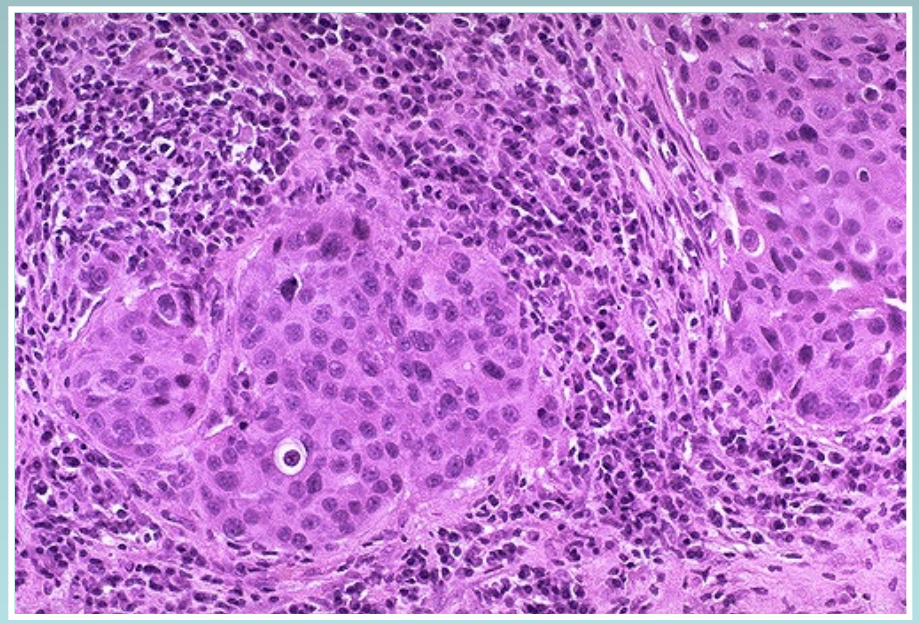
Iron/Hemosiderin	Prussian blue
Lipids	Sudan stain (Sudan II, Sudan III, Sudan IV, Oil Red O, Sudan Black B)
Carbohydrates	Periodic acid-Schiff stain
Amyloid	Congo red
Bacteria	Gram staining (Methyl violet/Gentian violet, Safranin) · Ziehl-Neelsen stain/acid-fast (Carbol fuchsin/Fuchsine, Methylene blue) · Auramine-rhodamine stain (Auramine O, Rhodamine B)
Connective tissue	trichrome stain: **Masson's trichrome stain**/Lillie's trichrome (Light Green SF yellowish, Biebrich scarlet, Phosphomolybdic acid, Fast Green FCF) Van Gieson's stain
Other	H&E stain (Haematoxylin, Eosin Y) · Silver stain (Gömöri methenamine silver stain, Warthin–Starry stain) · Methyl blue · Wright's stain · Giemsa stain · Gömöri trichrome stain · Neutral red · Janus Green B

Hematoxylin + Eosin (H & E)

הצביעה השגרתית המבוצעת בחתכי רקמה

המטוקסילין – צבע בסיסי המתחבר לחומצות הגרעין

אאוזין – צבע חומצי המתחבר לקצה הבסיסי של החלבונים בציטופלסמה



Pas stain

Demonstrate :

- Glycogen
- Basement membranes
- Neutral mucosubstance

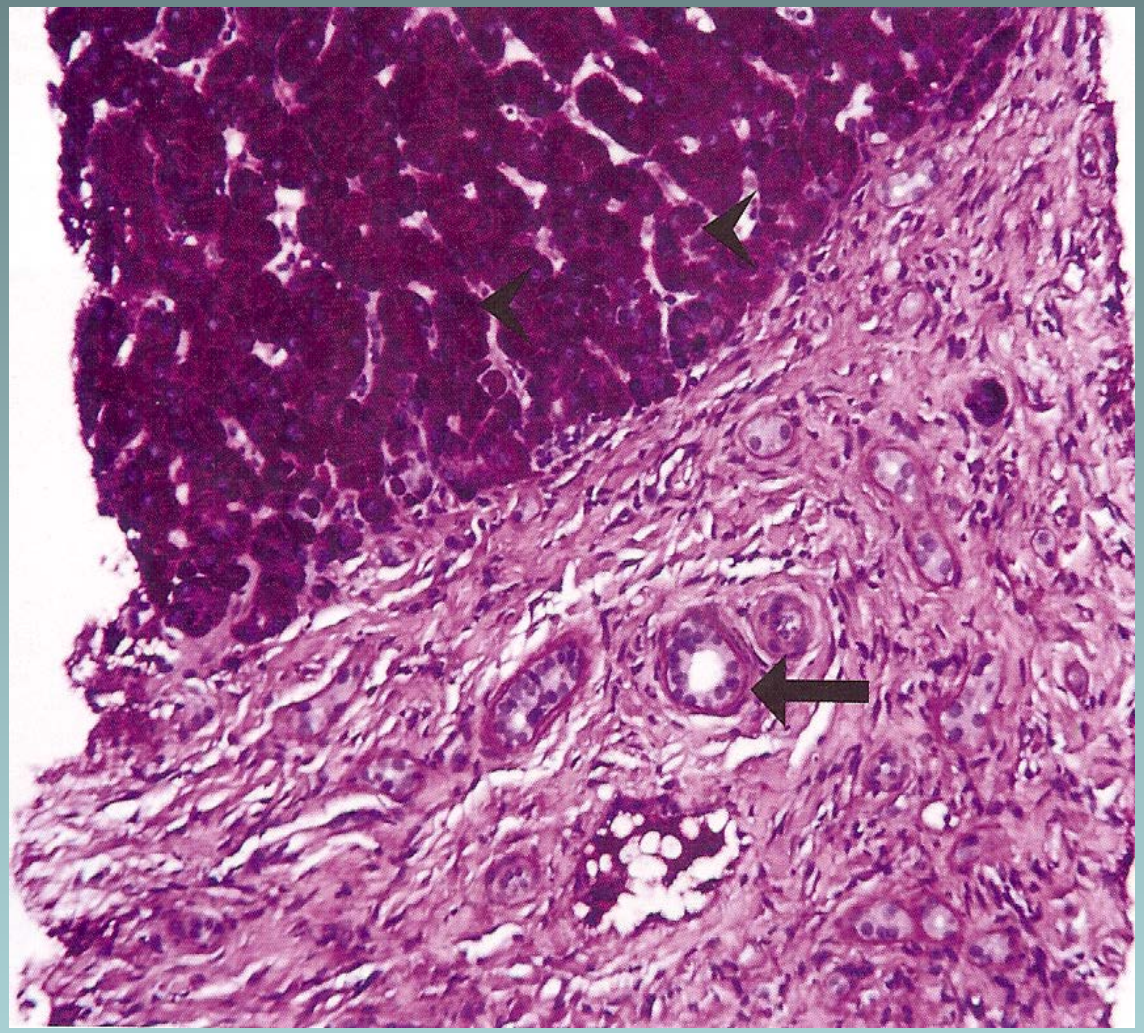


Figure 9. PAS stain shows intense staining of hepatocytes (arrowheads) and basement membranes of bile ducts (arrow). Glycogen, neutral polysaccharides and basement membranes are stained bright pink.

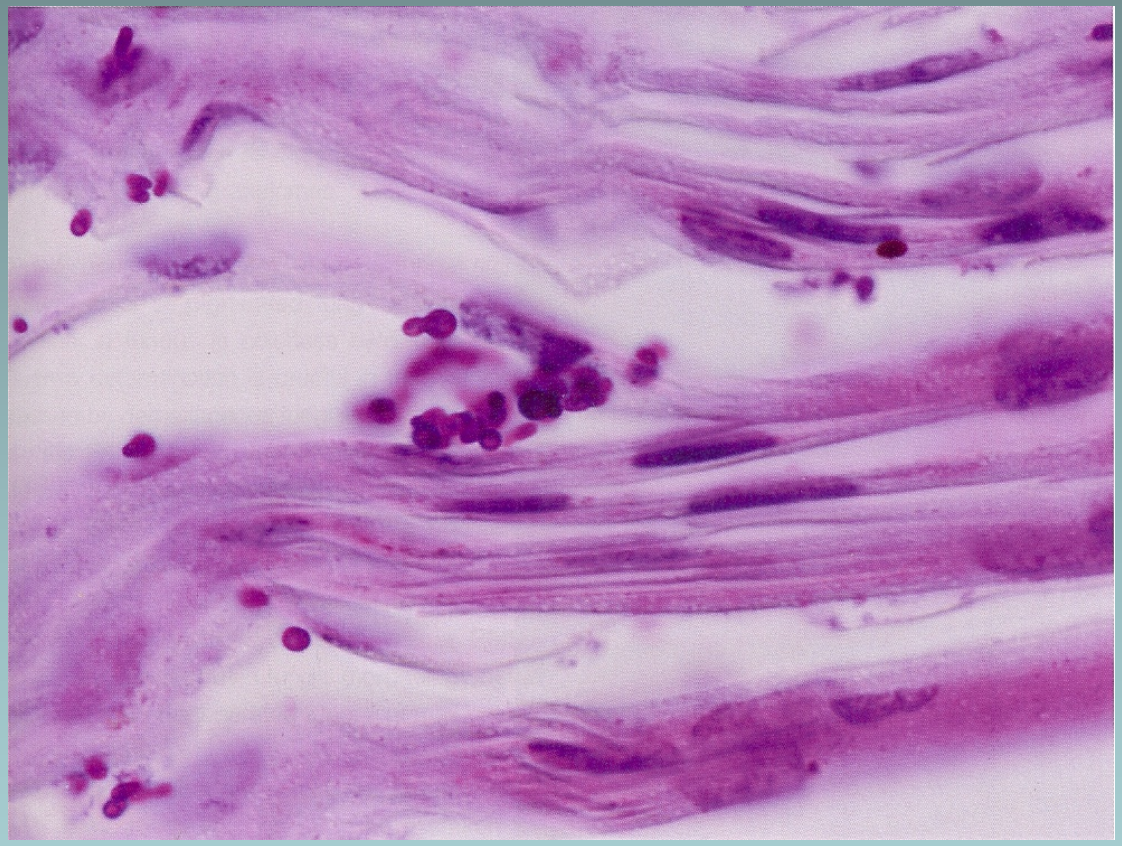


Figure 8. PAS staining of Malassezia.

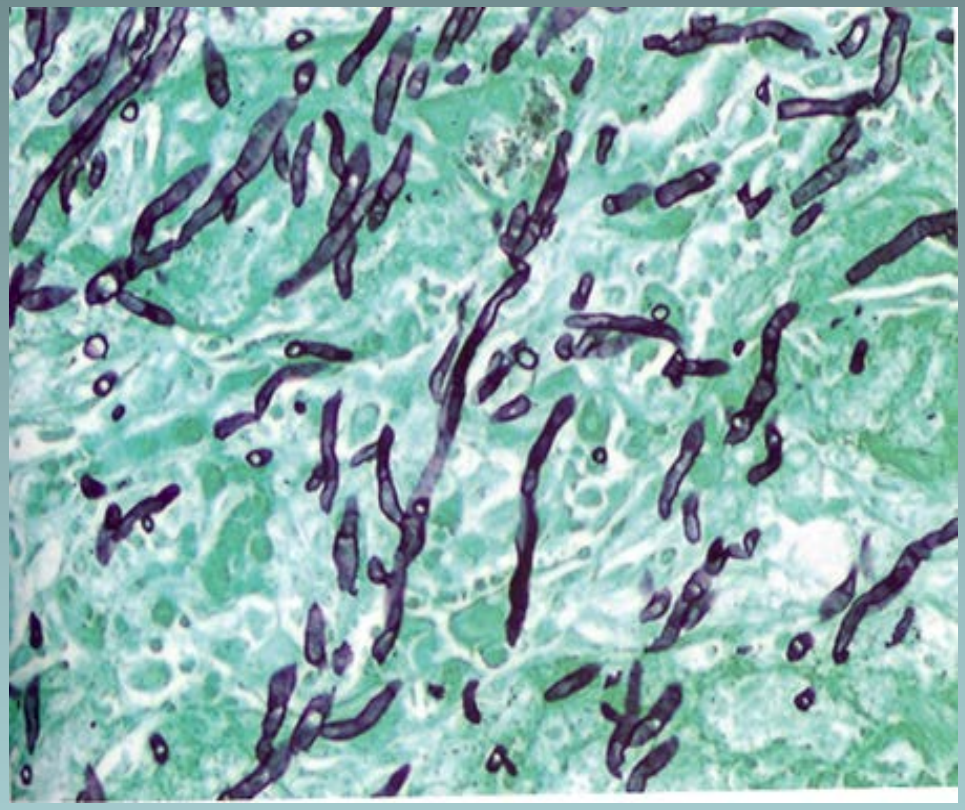
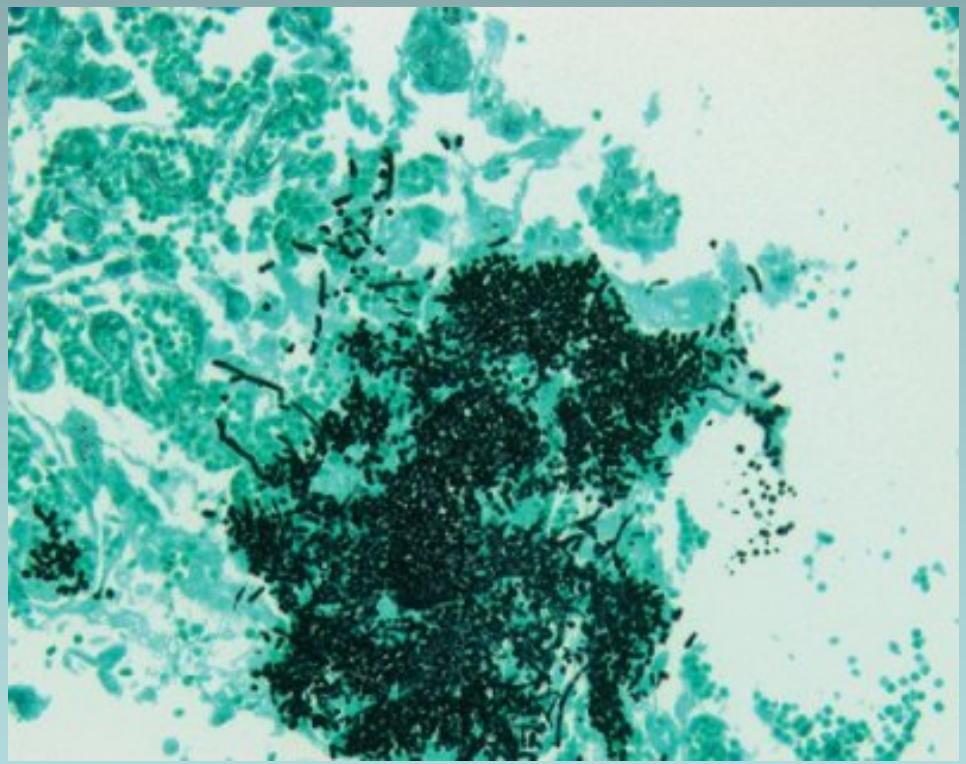


Figure 8. Grocott's Methenamine Silver (GMS) staining of fungi.

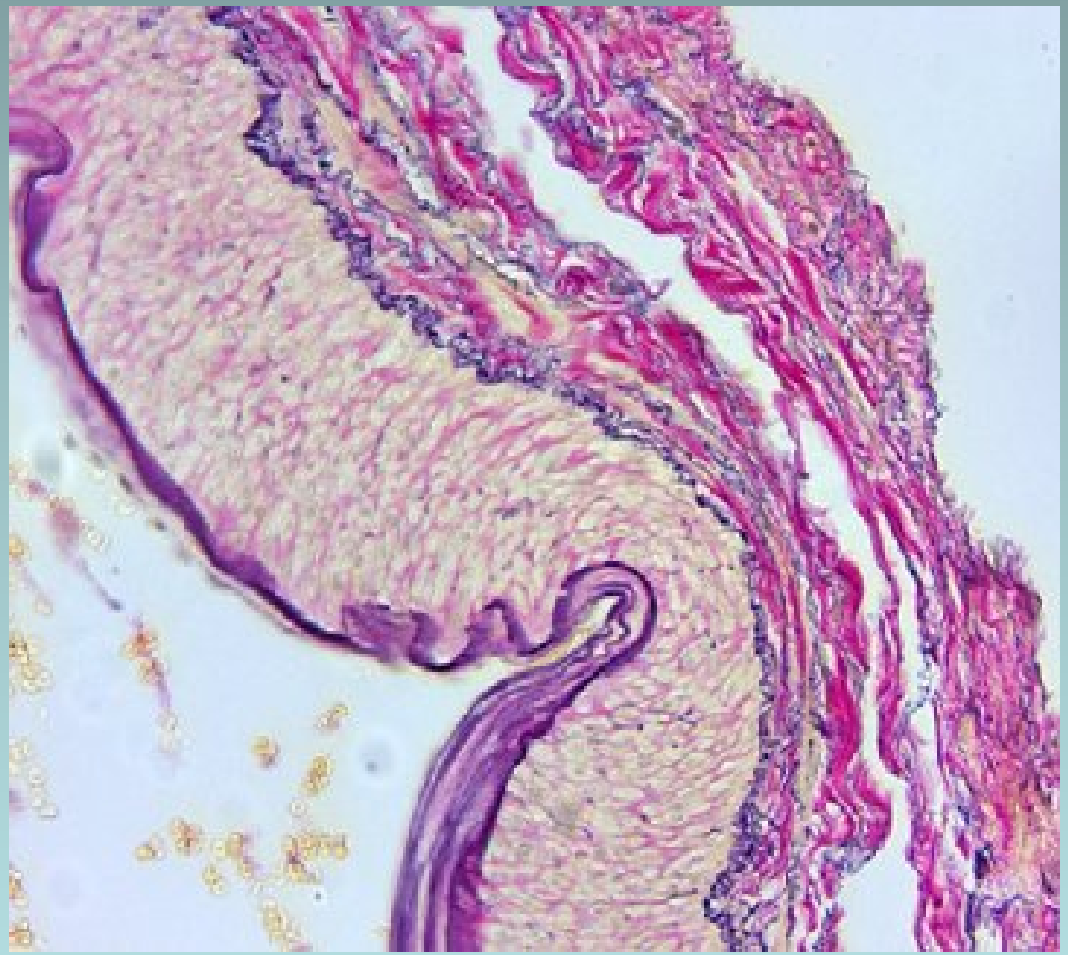
The GMS Staining Kit is used to demonstrate polysaccharides in the cell walls of fungi and other organisms. This stain is primarily used to distinguish pathogenic fungi such as Aspergillus and Blastomyces and other opportunistic organisms such as Pneumocystis carinii



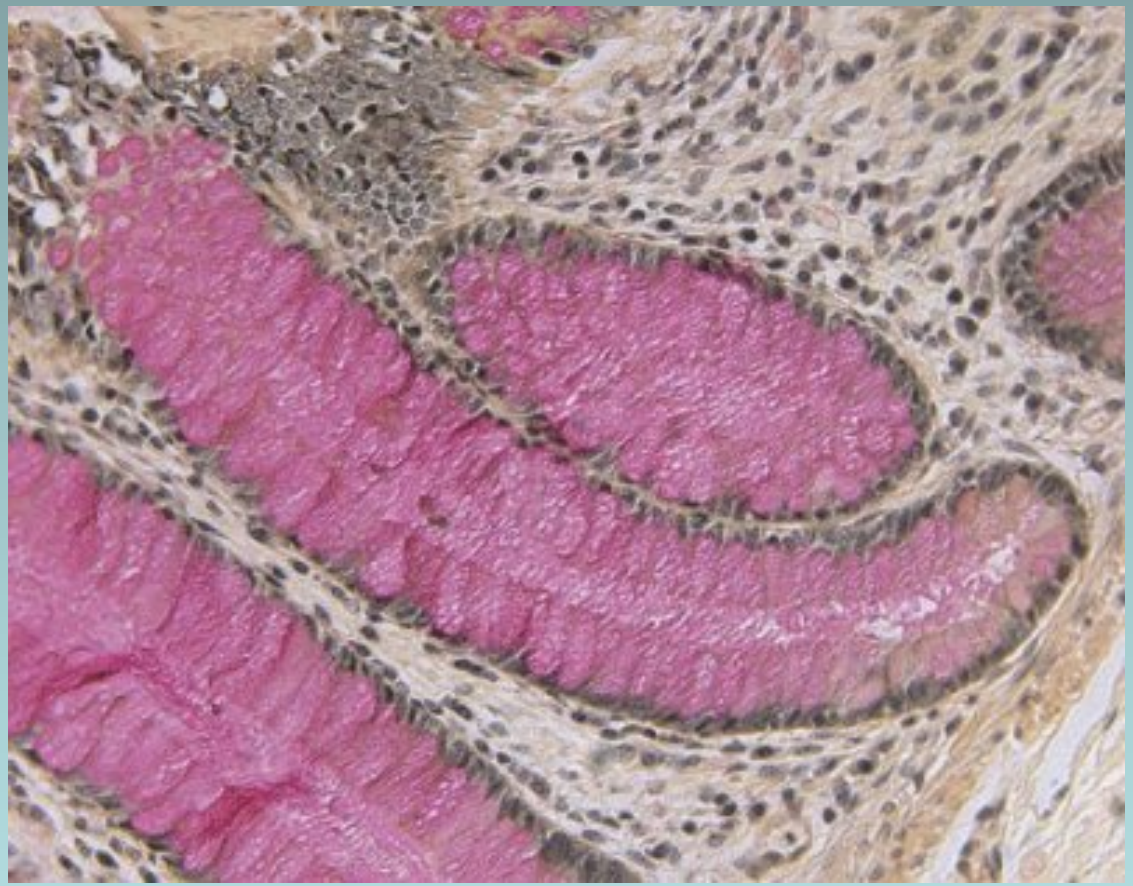
Giemsa Stain

The Giemsa is used to differentiate leukocytes in bone marrow and other hematopoietic tissue (lymph nodes) as well as some microorganisms (Helicobacter pylori).

The Elastic Staining Kit is used to demonstrate elastic fibers in tissue sections



The Mucicarmine Staining Kit is used to detect acid mucopolysaccharides (mucin).



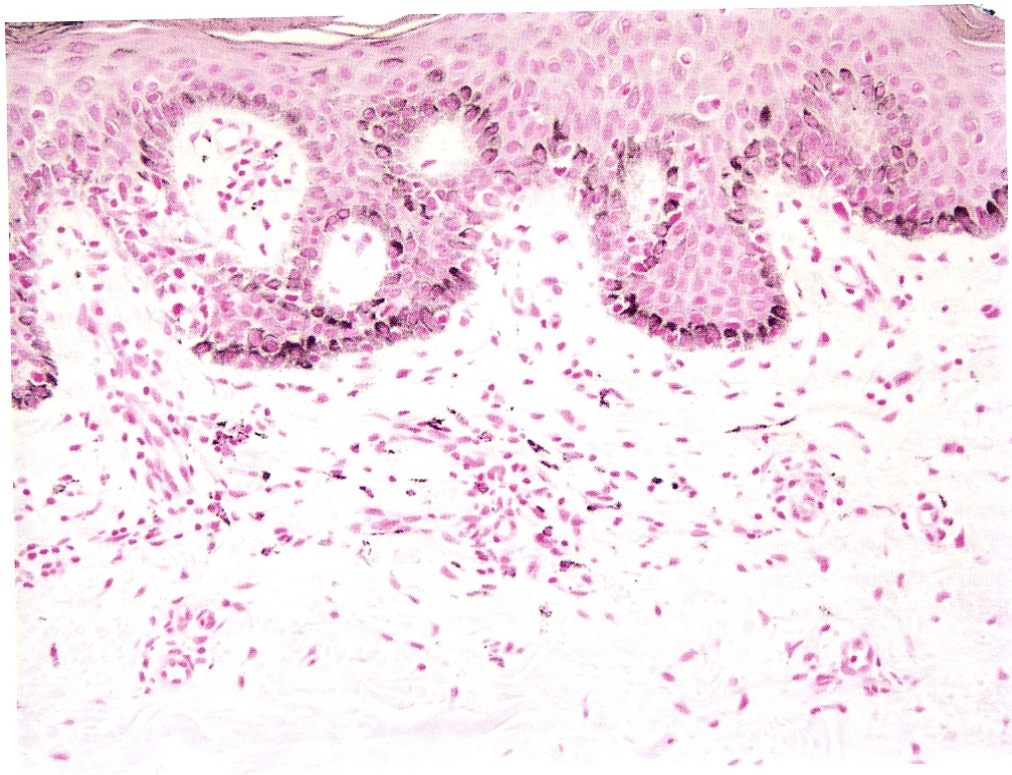


Figure 4. Fontana-Masson stain highlighting melanin in epidermal keratinocytes, melanocytes, and dermal melanophages.

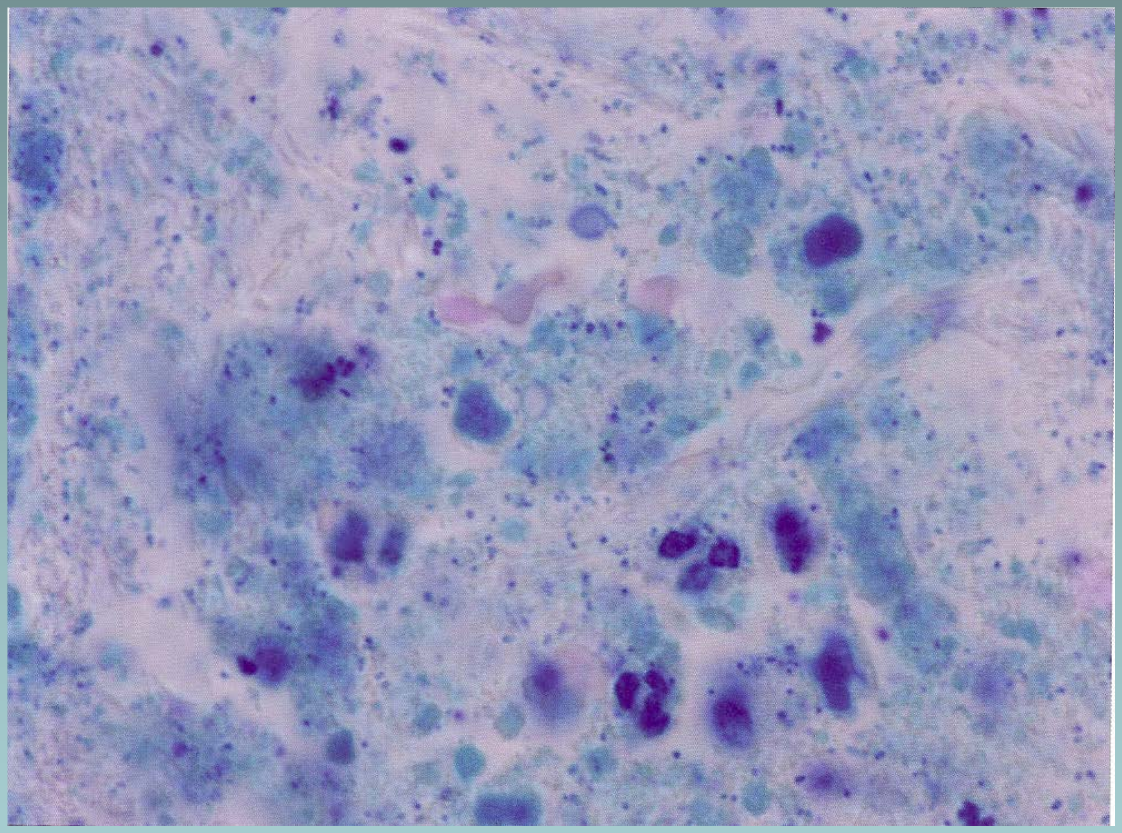
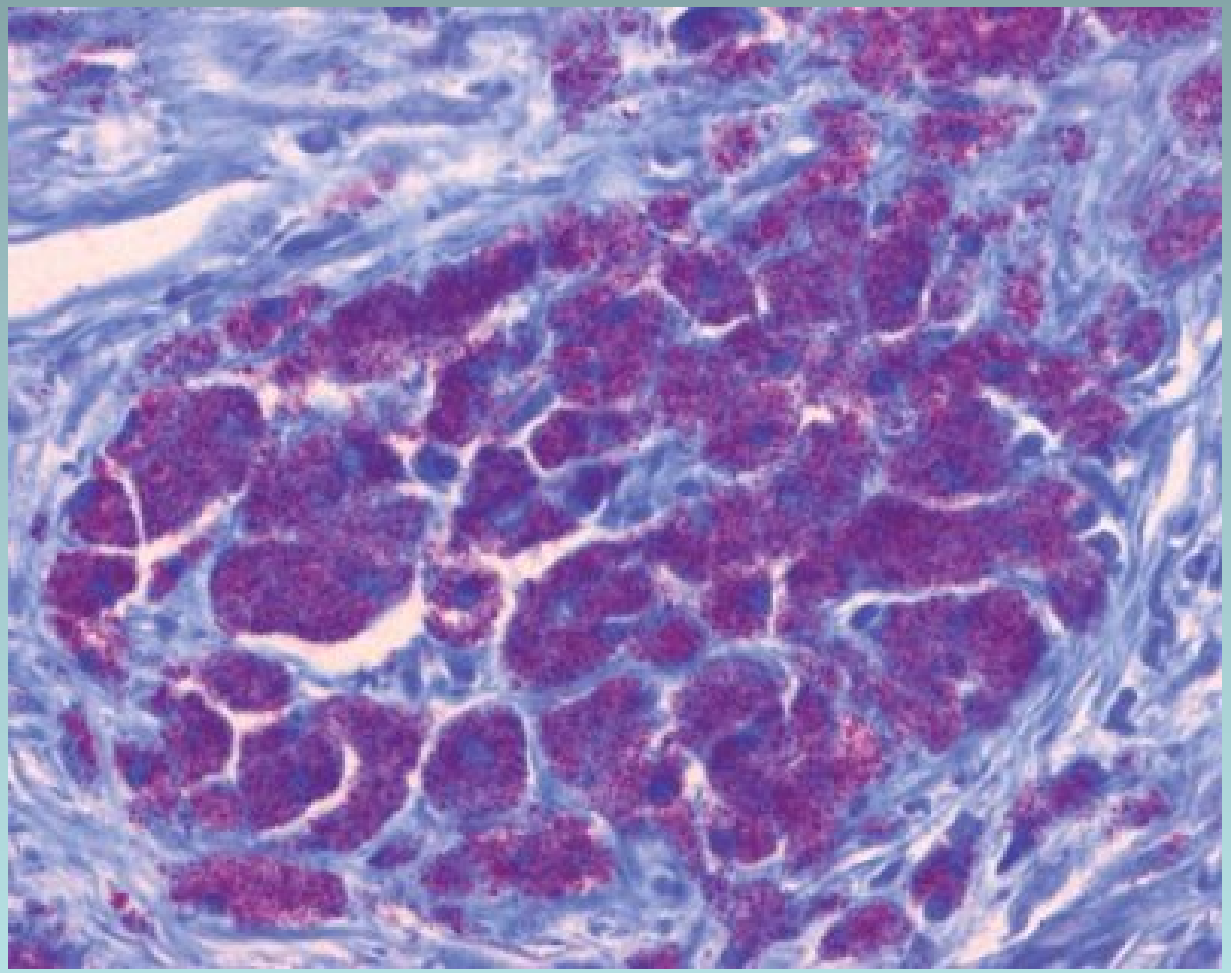


Figure 10. AFB staining of *Histoplasma*.

The AFB III Staining Kit is used to selectively demonstrate *Mycobacterium* and other acid fast organisms.



צביעה לחומרים הנאגרים ברקמות

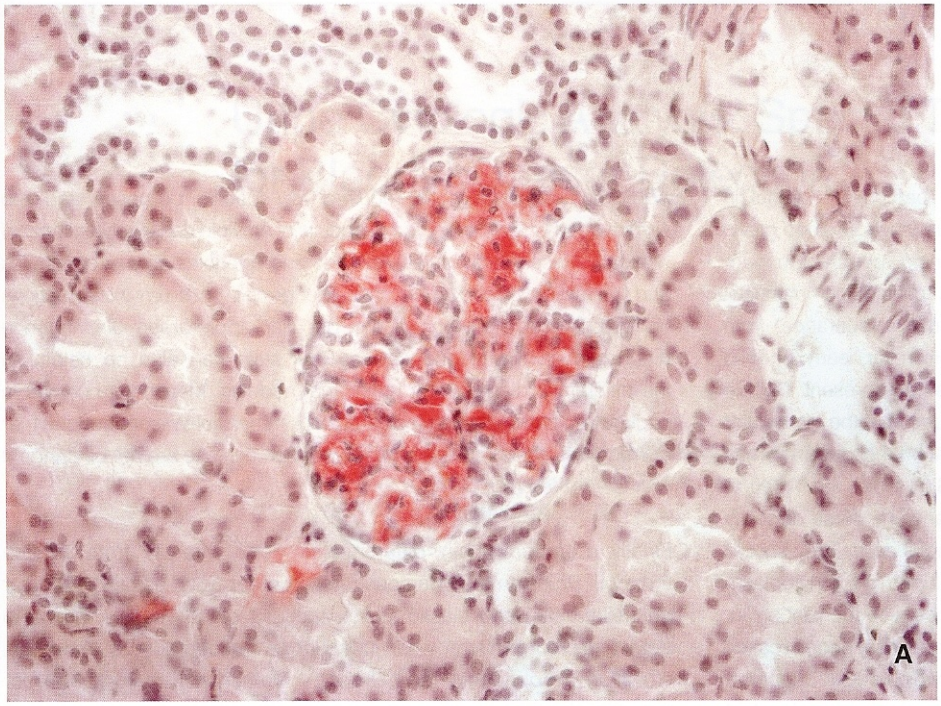


Figure 7a. Congo red stain. Amyloidosis: amyloid deposits stain red with Congo red.

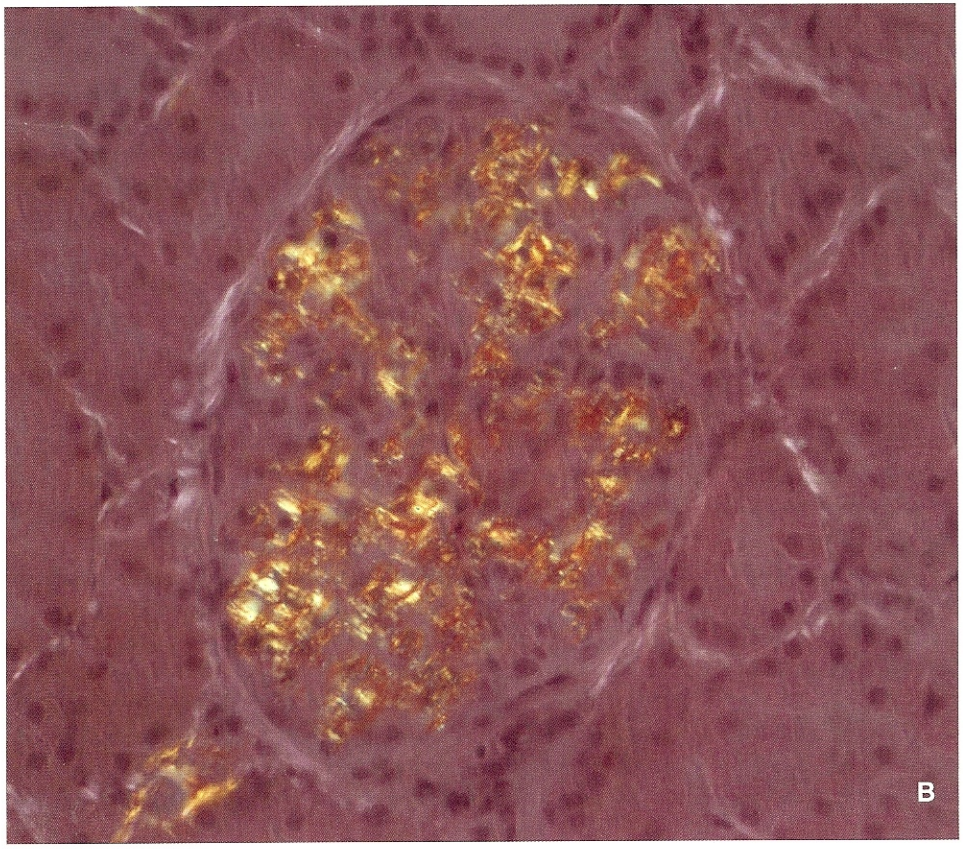


Figure 7b. Congo red stain. Amyloidosis: demonstrate the characteristic apple-green birefringence under polarized light.

Liver special stains

- Trichrom Stain
- Reticulin Stain
- Iron Stain
- Pas diastas
- Orcein Stain

Trichrom Stain

To assess the fibrosis in the liver stage and progression of disease:

- Hepatitis B and C
- Fatty liver disease
- Alcoholic liver disease
- Chronic biliary diseases
- Fibrous tissue including bridging fibrous septa leading to the and stage- cirrhosis

Masson's trichrome

Distinguishing cells from surrounding connective tissue

keratin -red and muscle

collagen and bone-blue or green

cytoplasm - light red or pink

cell nuclei - dark brown to black

Figure 2. Trichrome stain showing cirrhotic liver. As it is evident, the normal architecture of the liver is destroyed in this disease and the liver shows nodules surrounded by fibrous bands.

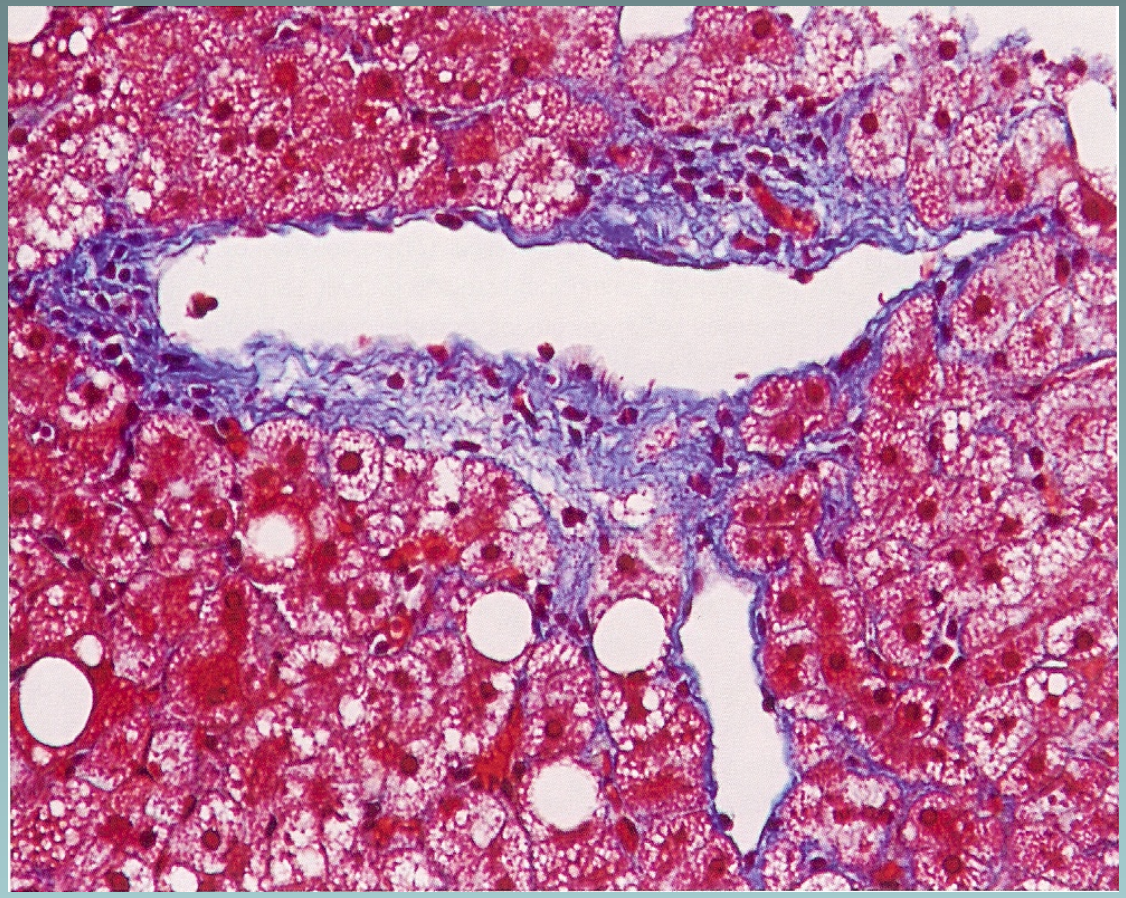


Figure 1. Trichrome stained liver showing fibrous tissue. The fibrous tissue is stained blue while the cytoplasm of hepatocytes are stained red. The nuclei can be seen as dark red to black structures within cells; Collagen is the fibrous tissue are stained Blue (with aniline blue) or very light green (by aniline light green).

Reticulin Stain

- Reticulin fibers are thin fibers composed of collagen lll which form a delicate stromal network
- The stain provide information about the architecture of the liver
- When hepatocytes are damaged and undergo necrosis , the reticulin fibers surrounding them

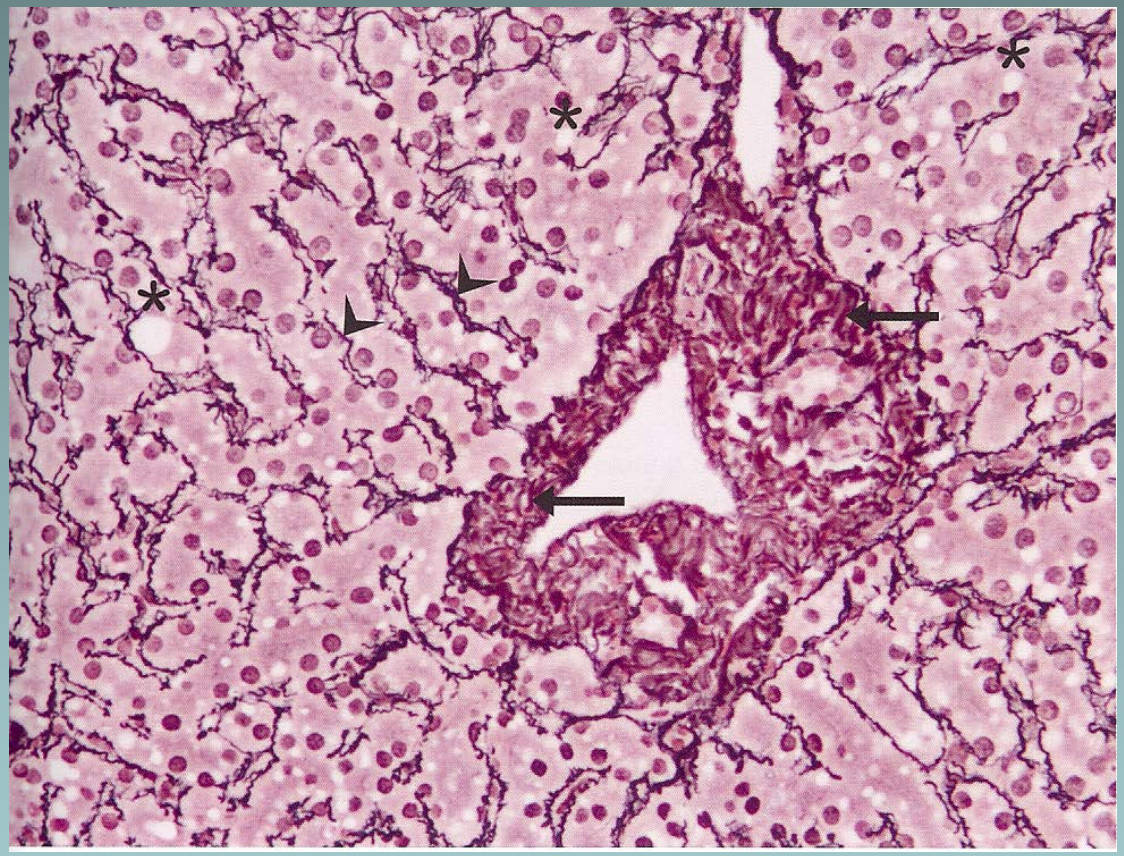


Figure 3. Dark black staining of the reticulin fibers (arrowheads) with reticulin stain. Collagen fibers are stained brown (arrows), nuclei red and the background in grey, or light pink if overtoned. The other white circular structures near the reticulin fibers are fat globules (asterix*).

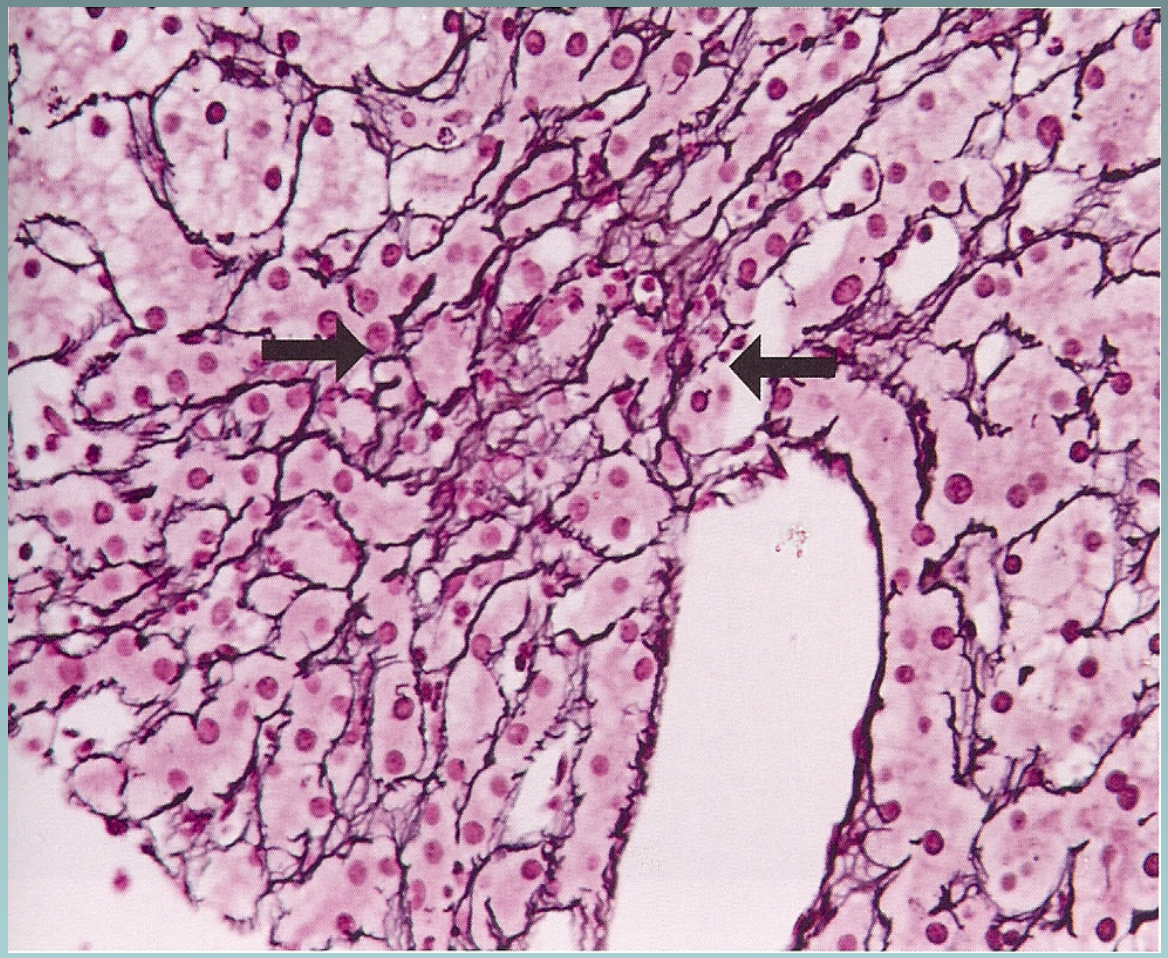


Figure 4. Reticulin stain shows an area of collapse of reticulin fibers (between arrows) corresponding to an area of cell loss.

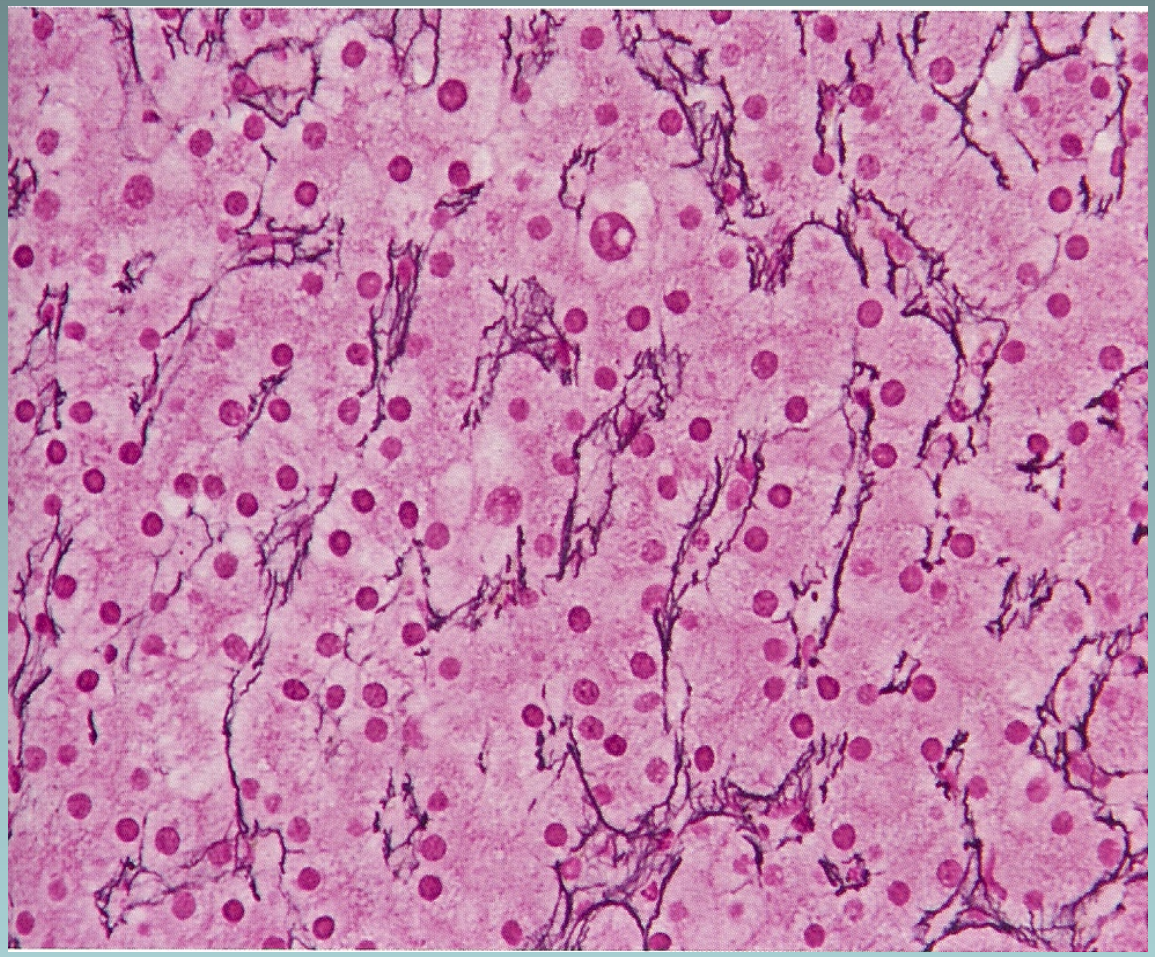
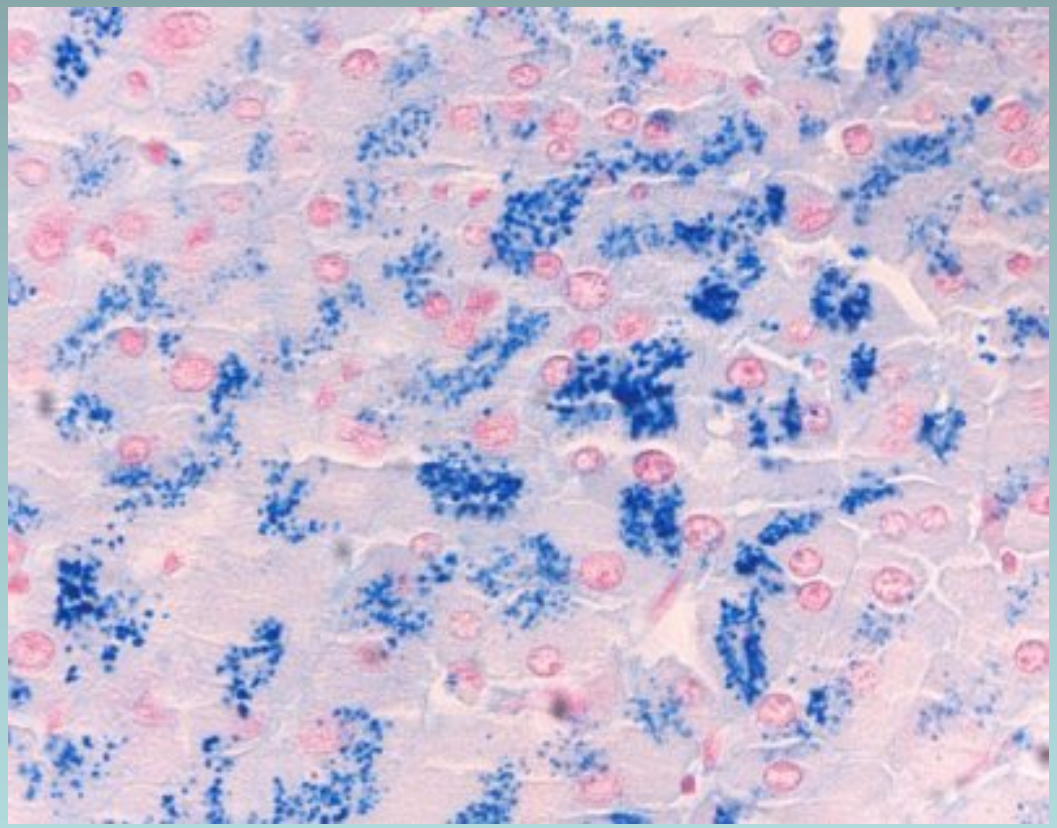


Figure 5. Reticulin stain shows hepatic plates which are more than 1-cell thick indicating regeneration of hepatocytes.

The Iron Stain used to detect ferric iron in bone marrow, tissue with hemochromatosis and hemosiderosis



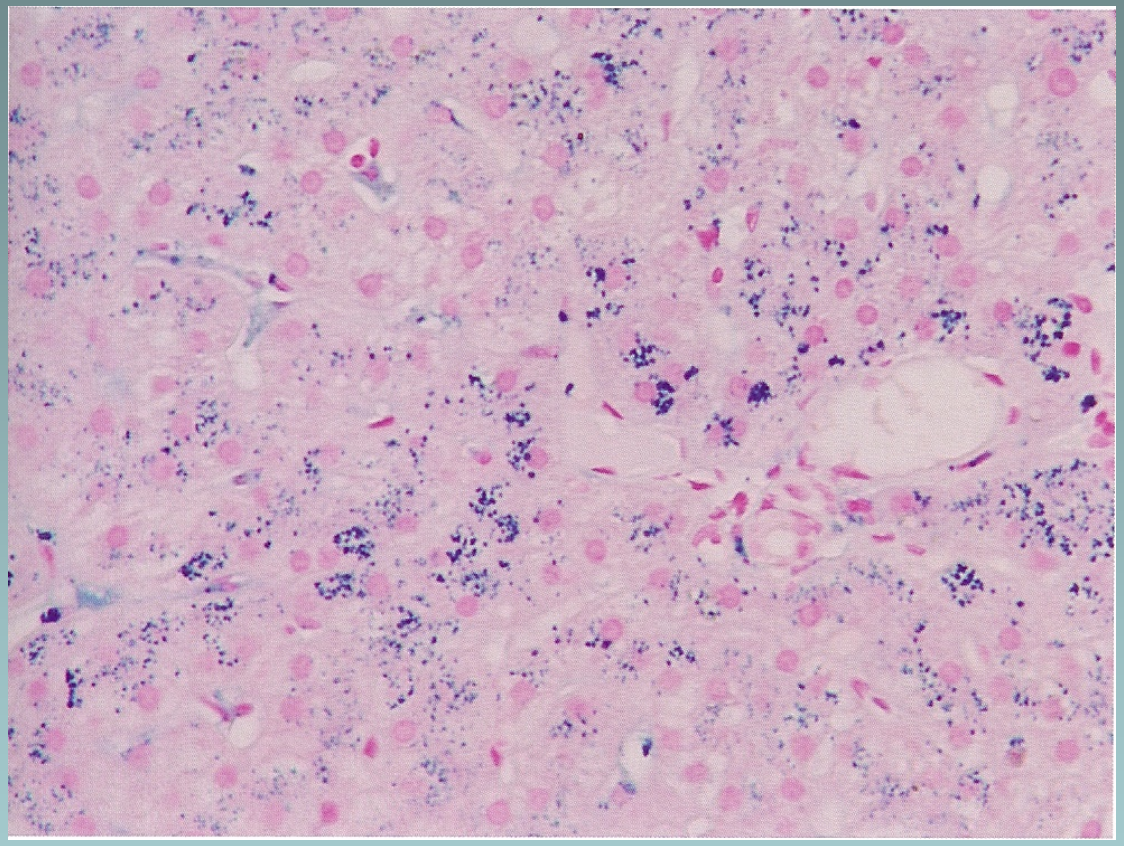
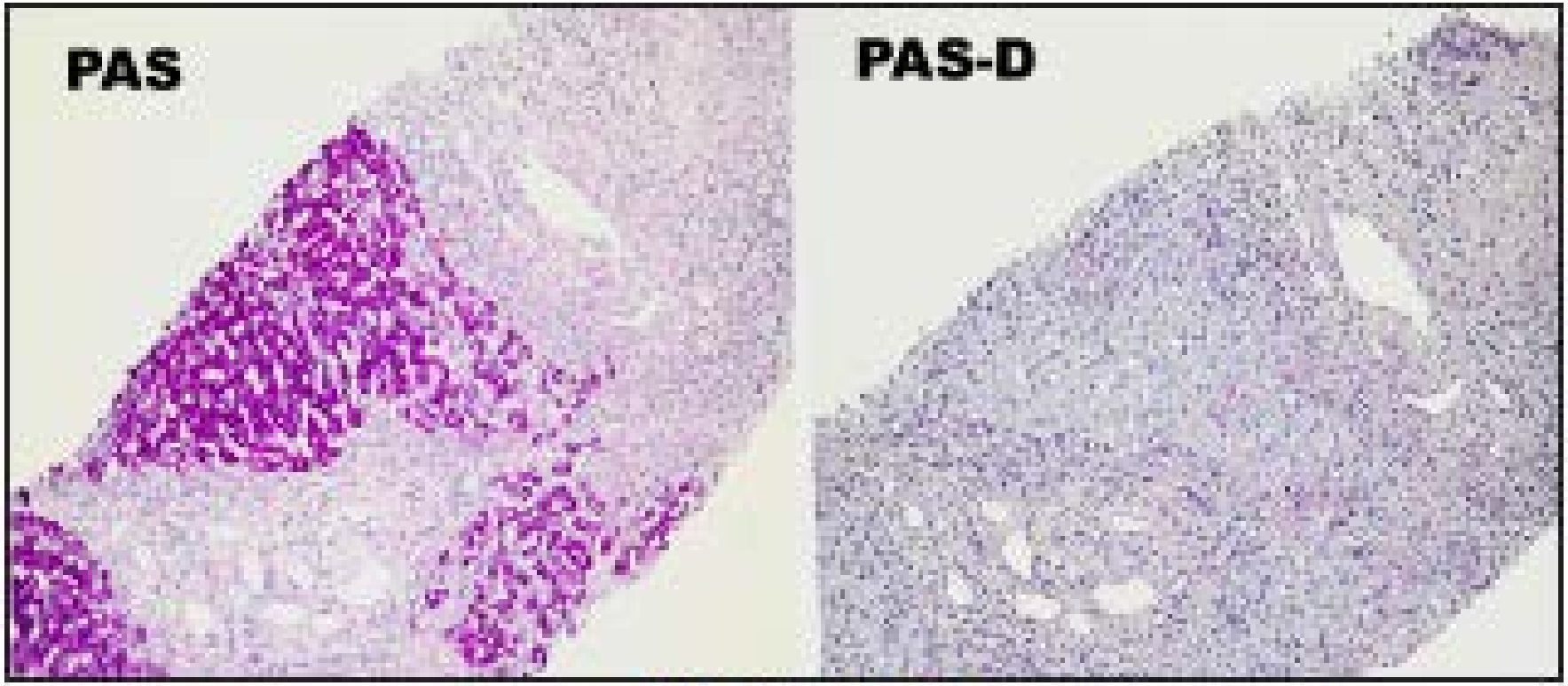


Figure 6. Perl's iron stain shows accumulation of dark blue granules of hemosiderin within hepatocytes. This pattern of iron deposition occurs in genetic hemochromatosis. The coarse blue granules are hemosidern, and the bluish blush is Ferritin.



PAS Figure 1

Bone marrow

- Trichrom Stain
- Reticulin Stain
- Iron Stain

Kidney special stains

- Pas
- Met
- Trichrom Stain

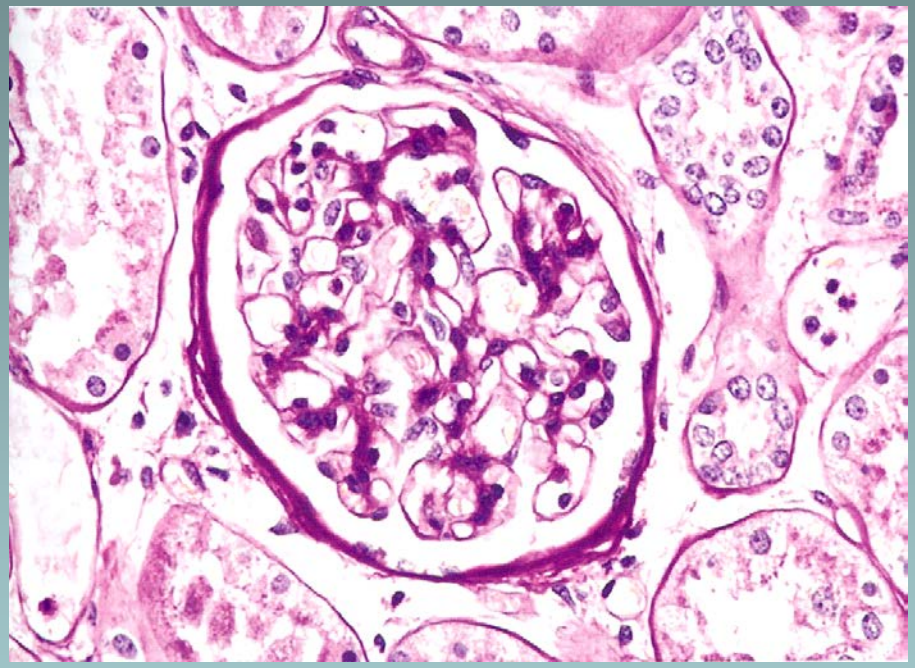
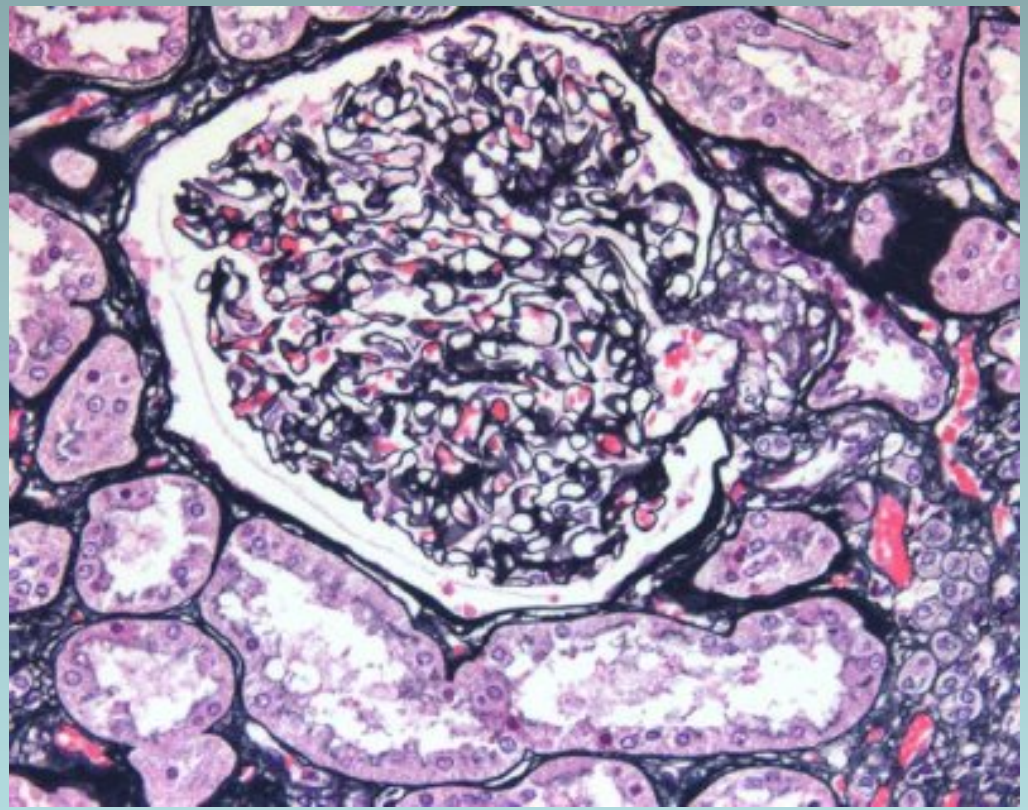


Figure 25. Kidney stained with PAS, Dako Code AR165.

JONE'S METHENAMINE SILVER

For demonstrating the basement membrane of the glomerulus in the kidney

The Jones H&E Staining Kit is used to demonstrate capillary basement membranes and is primarily used to distinguish pathological abnormalities in kidney diseases.



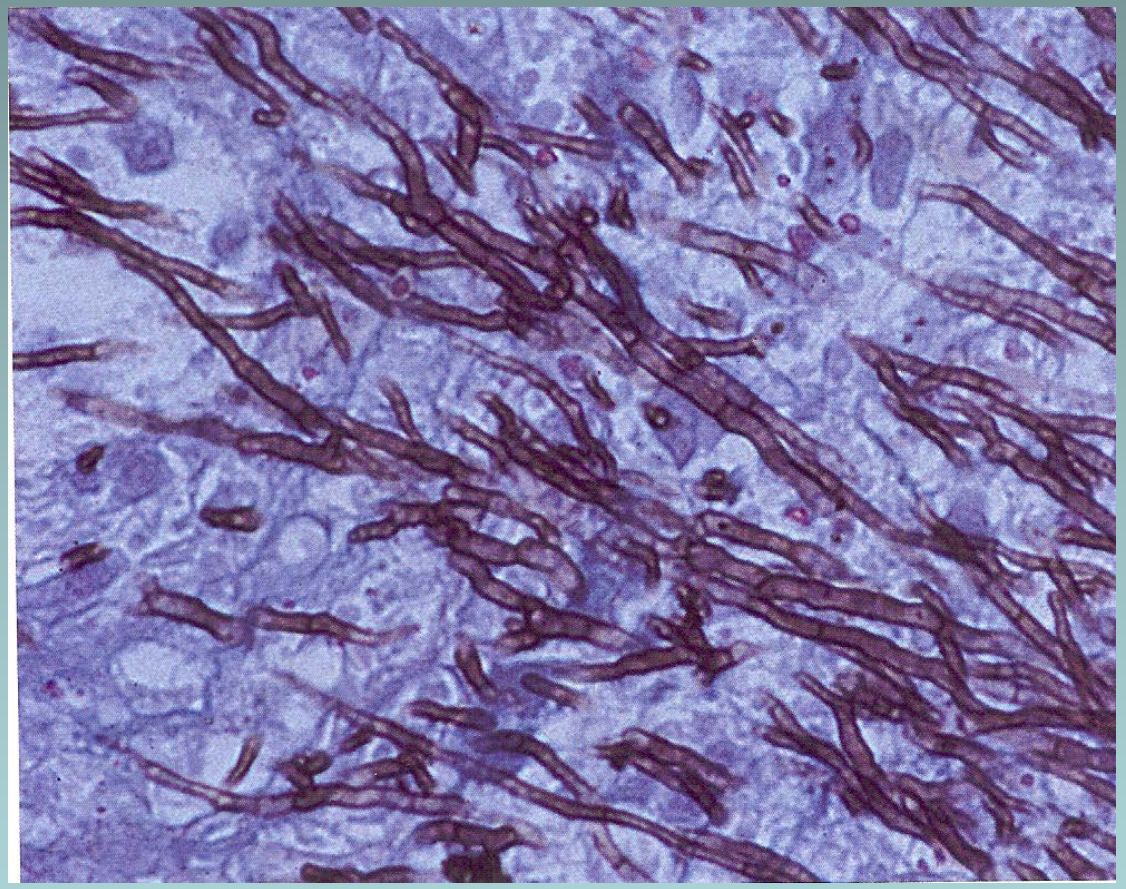


Figure 2. GMS staining of Aspergillus.