Veterinary Bioscience: Metabolism

WEEK 2 – DETECTING HEPATOBILIARY DISEASE
PRACTICAL CLASS 2 – HISTOLOGY OF THE LIVER

TEACHING STAFF

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LOCATION

Live Online Zoom Session

INTENDED LEARNING OUTCOMES

By the end of this practical class, you should be able to:

- identify the main histological features of the liver, including hepatocytes, central veins and portal triads
- describe and identify the three components of the portal triad
- outline the extent of classical liver lobules in pig liver, and approximately outline the demarcations of these lobules in sections of liver from other species
- outline the demarcations of the portal lobule and liver acinus within liver tissue, and compare these structural units to the classical liver lobule
- identify the liver sinusoids and the cells lining them.

PRACTICAL OVERVIEW

SLIDES FOR THIS CLASS

Slides 39, 40 and 41

These slides can be viewed on-line by logging into SLICE. Direct links to each slide are provided below.

ADDITIONAL MATERIALS

Summary slides are available on the Canvas subject website.

SLIDE 39 (Haematoxylin and Eosin)

Link: http://www.best.edu.au/s/cqkfxq1x

This section, from a **sheep**, shows a **liver** in which classical lobules are not demarcated by any connective tissue septa. It is nonetheless possible to discern classical lobules by reference to the central lobular (hepatic) veins, the portal canals and their enclosed portal triads (hepatic artery, portal vein, bile duct), and the radial pattern of the liver cell cords.

Draw a low power diagram to illustrate the nature of at least three adjoining "classical" lobules. Mark in this drawing, in dotted outlines, the areas occupied by a "portal lobule" and an "acinus".

To illustrate the nature of liver tissue, **draw a medium power diagram** of each of the following:

a) a portal canal and its contained triad

b) a central lobular vein and the immediately adjacent cords of hepatocytes and their related sinusoids.

In which directions do blood and bile flow within the classical lobule?

Along what channels does bile flow within the lobule?

Why are these channels not visible in this section?

SLIDE 40 (Van Gieson)

Link: http://www.best.edu.au/s/a6vh7mwe

This section, from the **liver** of a **pig**, shows the collagenous septa which so clearly demarcate the liver lobules in this species.

What explanations can you offer for the apparent variability in the size and shape of the lobules in this section?

SLIDE 41 (Haematoxylin and Eosin)

Link: http://www.best.edu.au/s/n5t41bj6

This section is from the **liver** of a **rat** into which an intravenous injection of Indian ink was made some time before death.

The presence of some phagocytic cells, which are black due to their high content of engulfed ink (carbon) particles, is obvious in many of the sinusoids.

What is the name of these phagocytic cells?

What would be their function in life?

KEYWORDS

liver, gall bladder, hepatocyte, portal triad, bile duct, hepatic artery, portal vein, Kupffer cell, sinusoid, central vein, hepatic lobule, portal lobule, liver acinus, bile

FURTHER READING

Banks, *Applied Veterinary Histology,* 2nd ed. (1986)

Cunningham and Klein, *Textbook of Veterinary Physiology* (2006)

Dellmann and Eurell, *Textbook of Veterinary Histology,* 5th ed. (1998)

Guyton A.C., *Textbook of Medical Physiology,* 8th ed. (1991)

Rhoades and Pflanzer, *Human Physiology,* 3rd ed. (1998)

Sherwood, L., *Human Physiology from Cells to Systems,* 3rd ed. (1997)