

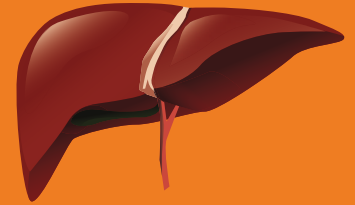
"What Livers Do"

Exploring the diversity of animal cells - alternatives to cheek cells

SCN 3.13a: Using a microscope, I have developed my understanding of the structure and variety of cells and of their functions.

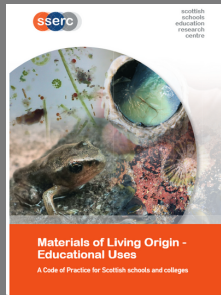
Materials

- Light microscope
- Microscope slide
- Coverslip
- Spatula
- Cocktail stick / mounted needle
- White tile
- Small piece of fresh liver.
- 0.1% (w/v) Methylene blue stain
- Discard jar with 1% hypochlorite or *Virkon*.
- Paper towels



According to SSERC's "Materials of Living Origin" (page 12, Section 4) [1], the following safety protocols must be adhered to:


- Exposed cuts and grazes should be covered with waterproof dressings before handling any animal material. Hands must be washed thoroughly afterwards.
- Used slides/coverslips must be immersed immediately in a small volume of freshly prepared chlorine-based disinfectant or *Virkon*.
- The disinfected slides and coverslips should be washed thoroughly and dried before re-use.
- Liver can be bagged and disposed of in normal refuse.



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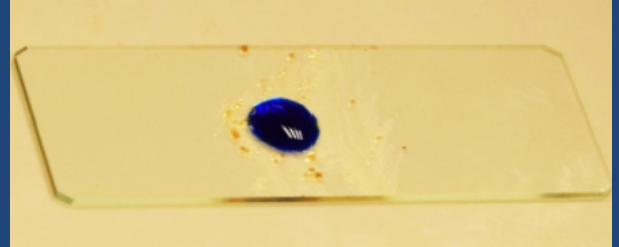
Scrape the cut surface of a small piece of fresh liver with a blunt instrument, e.g. a spatula. Transfer the scraped tissue to a clean microscope slide and smear over a small area in the middle of the slide creating a thin layer.



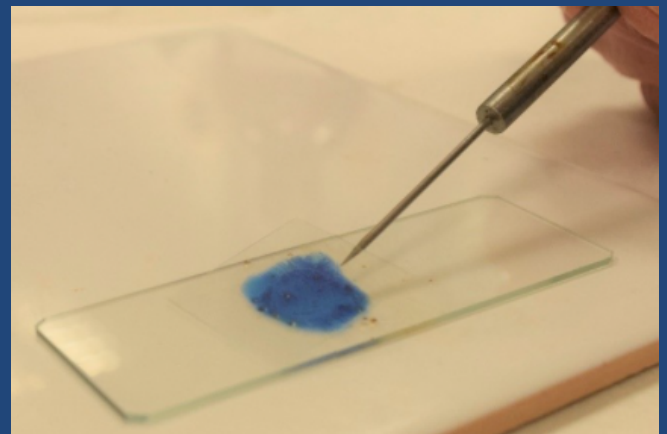


Methylene blue: stains the negatively charged molecules in the cell, including nucleic acid. This dye is toxic if ingested and causes irritation when in contact with skin or eyes.

2 Remove any obvious lumps using a cocktail stick or a mounted needle. Add a small drop of 0.1% methylene blue.



3 Mix the stain with the smeared liver tissue and leave for one minute.



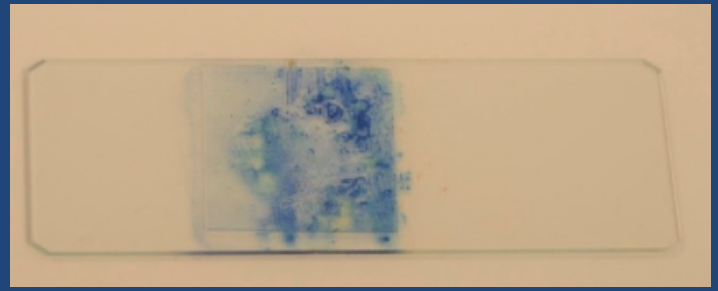
4 Use the cocktail stick or mounted needle to carefully lower a coverslip over the stained tissue.



5 Fold a paper towel 2-3 times and place over the coverslip. Apply gentle pressure. This helps to spread the cells into a single layer and removes excess stain.

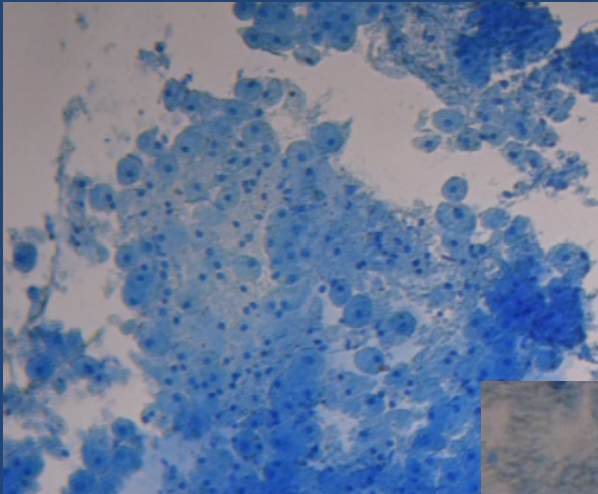
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Carefully clean any excess stain from the surface and around the coverslip. The slide is now ready for viewing under the microscope.

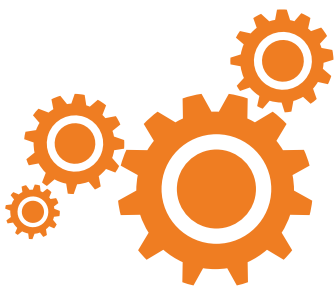
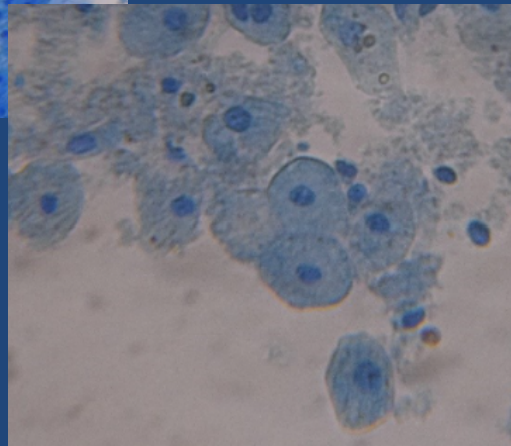


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Observe the liver cell preparation at x100 and x400 magnification.



Lamb liver cells at x100 (above) and x400 (right) magnification.



Microscopes in the World of Work

Histopathology involves studying the microscopic structure and function of tissues and tissue systems. Click on the Job icon below to read about the day-to-day working life of a histopathologist.



References

- [1] [SSERC bulletin 272](#) - Studying animal cells at BGE using liver cells.
- [2] [Materials of Living Origin](#) - Educational Uses A Code of Practice for Scottish Schools and Colleges (SSERC, 2018).
- [3] [CLEAPSS](#) - Staining and observing liver cells.

