

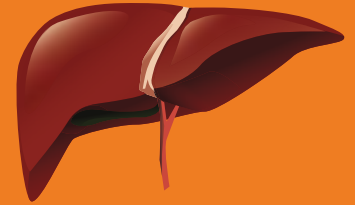
# "What Livers Do"

## 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



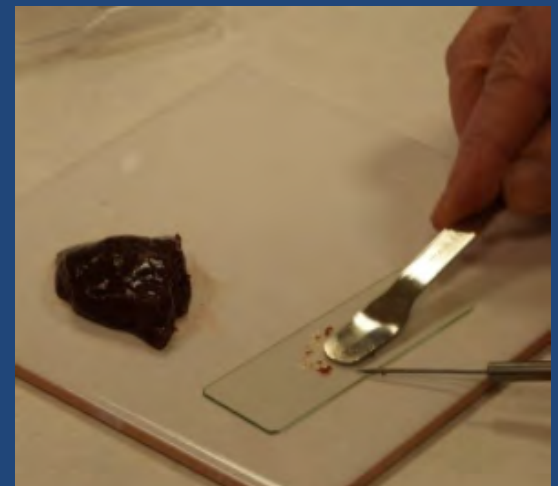
According to SSERC's "Materials of Living Origin" (page 12, Section 4) [1], the following safety protocols must be adhered to:


- 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.



# 1

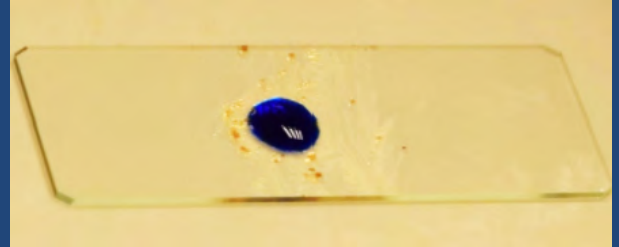
Scrape the cut surface of a small piece of fresh liver with a blunt instrument, e.g. a spatula. Transfer the scraped tissue to a clean microscope slide and smear over a small area in the middle of the slide creating a thin layer.



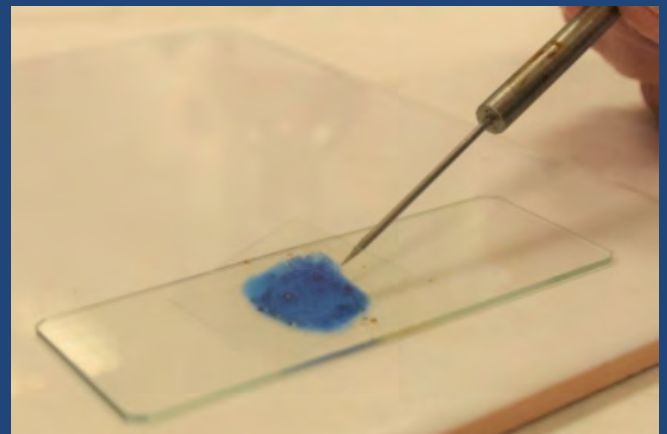


Methylene blue: stains the negatively charged molecules in the cell, including nucleic acid. This dye is toxic if ingested and causes irritation when in contact with skin or eyes.

**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.



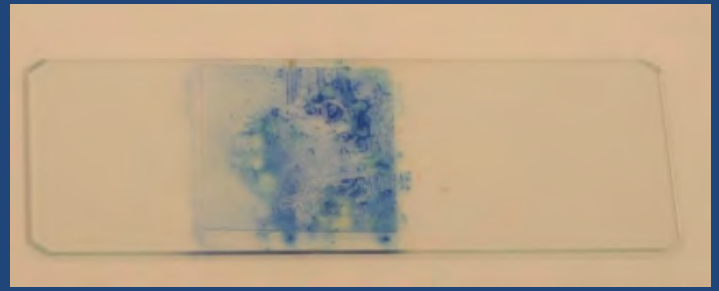
**4** Use the cocktail stick or mounted needle to carefully lower a coverslip over the stained tissue.



**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.

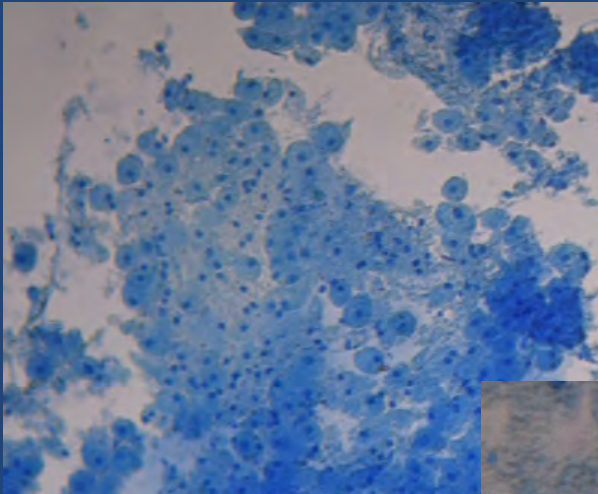
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Carefully clean any excess stain from the surface and around the coverslip. The slide is now ready for viewing under the microscope.

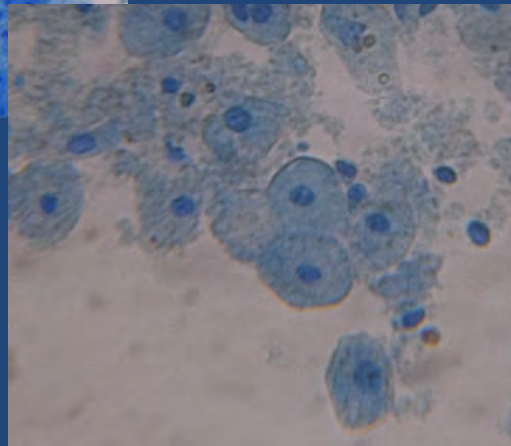


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Observe the liver cell preparation at x100 and x400 magnification.



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.

