





## HISTOPATHOLOGY UPDATE A guide to tissue processing

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This newsletter will highlight the steps taken in the histopathology laboratory in order to make a diagnosis. Histopathology (also known as surgical pathology) involves the diagnosis of disease using tissue samples.

## "YOUR SPECIMEN IS STILL BEING PROCESSED"

Doctors and patients who have had biopsies will often enquire about a result only to be told that "your specimen is still being processed". The whole tissue/organ received has to be processed in order to produce the stained glass slides required for pathologists to make a diagnosis.

The production of slides for histological evaluation is a sequential multi-step process which is summarised in Figure 1.



- **Specimen registration** involves capturing demographic and clinical details of the patient.
- **Specimen grossing** refers to the macroscopic examination of specimens. It is at this stage that specimens are sampled.
- **Tissue processing** is the chemical treatment of tissue which results in paraffin wax impregnation. This renders tissue firm enough to cut.
- Tissue embedding results in optimal orientation of processed tissue.
- Microtomy refers to the cutting ("sectioning") of tissue into sections that are 3 5 μm thick, which allows light to pass through. The tissue section is then floated out in a water bath and picked up on to a glass slide.
- Sections are then sent for **staining**.
- The slides are cover-slipped and **dispatched** to the histopathologist for evaluation and **diagnosis**. A formal report is compiled, edited and released.

Optimally processed tissue results in the production of high quality standard haematoxylin and eosin sections used in routine diagnosis. It preserves the quality of proteins within the tissue allowing for further immunohistochemical and molecular testing, if needed.

## **ILLUSTRATIVE EXAMPLE – specimen macroscopy**

The following images highlights the standardised macroscopic examination of a wide local excision sample of a breast tumour (Figure 2). Specimen dimensions and weight are recorded. The sample is cut from left to right. The tumour is measured including distance from the respective margins. The lymph nodes are dissected out, enumerated and sampled. Samples are then taken and placed in tissue cassettes (Figure 3). The tissue will be processed overnight. The processed tissue will then be orientated and cut/sectioned to produce slides.



Figure 2. Graphic representation of the macroscopic examination of a breast tumour.



Figure 3. Tissue samples placed in tissue cassettes.

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