

Division of Laboratory Medicine

Cellular Pathology

Histopathology - special stains

Clinical Information

Histopathology is the processing of tissue samples such as biopsies from a piece of tissue on to a glass microscope slide.

Extra testing - special stains

Special stains are a Histology technique used to see different parts of tissue and cells. Special stains help to see the make-up of tissues. This helps in the recognition of different parts of the tissue, such as proteins, lipids (fats), carbohydrates, nucleic acids, or minerals. Special stains help the pathologist to diagnose the patient.

Special stains examples

Periodic Acid-Schiff (PAS): Detects carbohydrates, such as glycogen or mucins, which are dyed purple. This is also used to detect fungi (**Picture 1**).

Gram: Used to find different types of bacteria (germs/bugs/infection) in tissue samples. Identifying the type helps doctors to choose the right treatment.

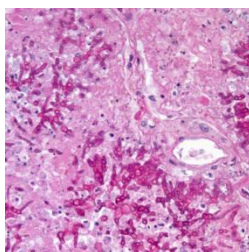
The dye splits bacteria into two main groups:

Gram-positive and gram negative bacteria. Gram positive are dyed purple colour. Cause skin infections. Examples are *Staphylococcus* or *Streptococcus*. Gram-negative bacteria: dyed pink or red colour.

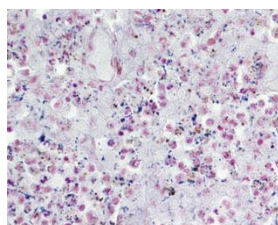
Cause urinary tract (UTI) and gastrointestinal infections (stomach bugs, food poisoning). Examples are *Escherichia coli* or *Pseudomonas* species. (**Picture 2**)

Masson's Trichrome: used to differentiate between connective tissue, muscle, and cytoplasm. This staining method is used to help diagnose fibrosis (scarring), and connective tissue disorders. (**Picture 3**)

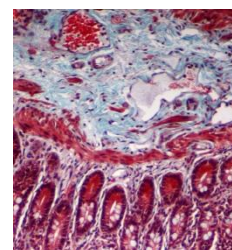
Picture 1 - PAS Fungi



Picture 2 - Gram showing gram positive bacteria



Picture 3 - Masson Trichrome



Tissue retention: Special stains slides are kept for 15 years before being disposed as part of patient record. This is in line with current RCPATH and HTA guidelines.

(Last updated August 2025)