

**Practical work N3:**  
**Microscopic Examination**  
**Vital staining**

Staining is an auxiliary technique used in microscopy to enhance contrast in the microscopic image. Vital staining is a technique in which a harmless dye is used to stain living tissue for microscopical observation. Is a type of dye that can be used on living cells or tissues without causing damage or death. These stains are used to observe the cellular and subcellular structures of living cells, and to monitor cell viability, proliferation, and function.

Vital stains include trypan blue, vital red, and Janus green, the latter being especially suitable for observing mitochondria.

Two types of vital staining:

- Supravital staining = living cells that have been removed from an organism (cell preparation or suspension).
- Intravital staining is done by injecting or otherwise introducing the stain into the body (in medicine diagnostic).
- In this practical work, we will stain cells with neutral red (vital stains): beer yeast (yeast cell) and onion bulb inner epidermis cells (plant cell).

Neutral red is a vital stain. It stains cells without quickly killing them where many biological stains kill living cells. Neutral red goes through an obvious color change, from red at about pH 6.8 to yellow at pH 8.0.

- We use a solution of 0.02% of neutral red in distilled water
- We use magnification x10/x40

**Notes!!**

Students are required to give a report which answers the following questions:

- Benefits of vital staining?
- Examples of vital stains / dyes ?
- Characteristics of neutral red stain ?
- Schematize microscopic observations ?