

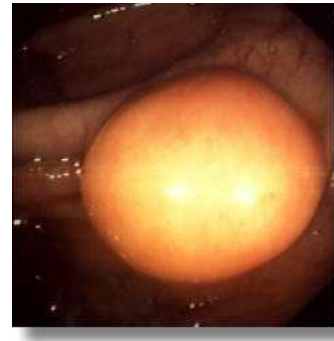
**Mustansiriyah University**  
**College of science**  
**Biology Dept.**  
**Zoology**  
**4<sup>th</sup> class**

**Laboratory Technique { *Histological Technique* }**

**(2)**

# SPECIMEN ACCESSIONING

- NUMBER
- REQUEST FORM
- **GROSS EXAMINATION**
- COLOUR
- CONSISTENCY
- TEXTURE



# SPECIMEN LABELLING

- Should be insoluble
- Should not contaminate
- Should not penetrate
- Should not react
- Clearly identifiable
- Eg: India ink, silver nitrate.



# PROCESSING

## Specimen categories

- Tissues (with history)
- Bone (with x- ray)
- Autopsy (consent form)
- Body fluids
- CSF



# PROCESSING

Tissues are saved in different cassettes having different color

- Yellow (liver, renal)
- Green (routine)
- White (bones)
- Grey (skin)
- Pink (lymph nodes)



# DEFINITION

The tissue must undergo preparatory treatment before being sectioned, to saturation of specimen with an embedding medium to provide support and suitable consistency for microtome **is**  
**tissue processing.**

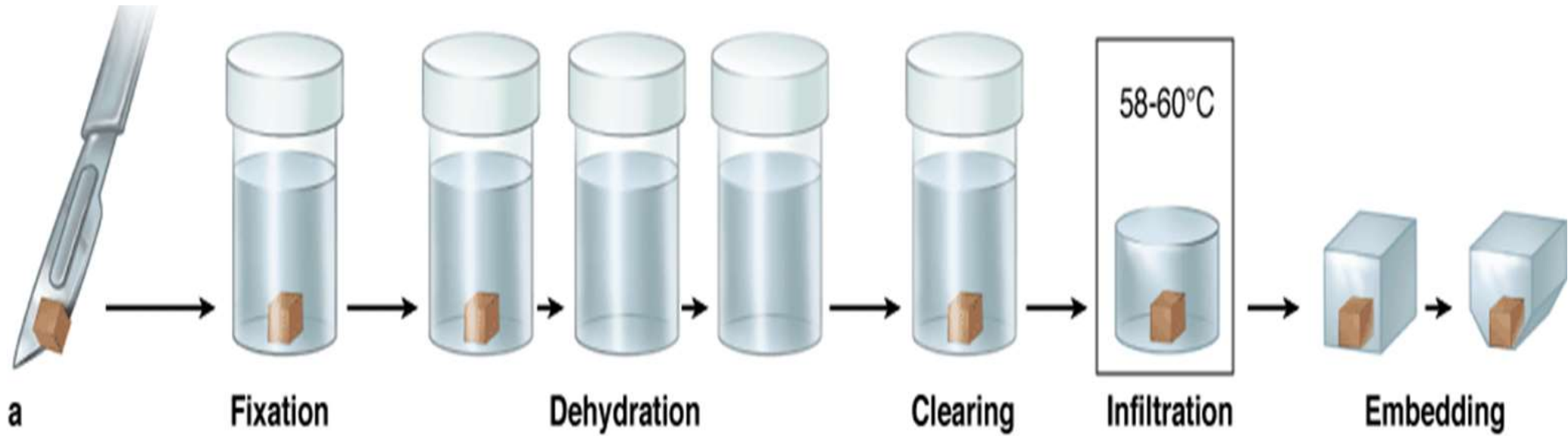


# Techniques

These techniques are:

1. Fixation
2. Dehydration
3. Cleaning
4. Embedding
5. Cutting
6. Staining

# Steps



Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>

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## Step [1] / Fixation

This is the process by which the constituents of cells and tissue are fixed in a physical and chemical state so that they will withstand subsequent treatment with various reagents with minimum loss of architecture .

# Mechanism of action of fixatives

Most fixatives act by denaturing or precipitating proteins which then form a sponge or meshwork, tending to hold the other constituents.

Following factors are important for good fixation:

- Fresh tissue
- Correct choice of fixatives
- No fixative will penetrate a piece of tissue thicker than 1 cm.

# Properties of an Ideal Fixative

1. Prevents autolysis and bacterial decomposition.
2. Preserves tissue in their natural state and fix all components.
3. Make the cellular components insoluble to reagent used in tissue processing.
4. Avoid excessive hardness of tissue.
5. Allows enhanced staining of tissue.
6. Should be non-toxic and non-allergic for user.
7. Should not be very expensive.

# Temperature

- The fixation can be carried out at room temperature.
- Tissue should not be frozen once it has been placed in the fixative solution, for a peculiar ice crystals distortion will result.

## Speed of fixation

- The speed of fixation of most fixative is almost 1 mm/hour.
- Therefore, a fixation time of several hours is needed for most specimens.

# Factor affecting fixation

1. Size and thickness of piece of tissue.
2. Tissue covered by large amount of mucous fix slowly.
3. Tissue covered by blood or organ containing very large amount of blood also fix slowly.
4. Fatty and lipomatous tissue fix slowly.
5. Fixation is accelerated by agitation.
6. Fixation is accelerated by maintaining temperature around 60°C.

# Classification of Fixatives

1. Tissue fixatives
2. Cytological fixatives
3. Histochemical fixatives

There are many tissue fixatives i.e

1. Buffered formalin.
2. Buffered glutaraldehyde.
3. Zenker's formal saline.
4. Bowen's fluid.