

Please use the PDF lecture notes (Book) for the course. The PowerPoint is only the outline, and the questions or the test will be based on the book.

Histological preparations (ZOO 262)

Course Designation	Zoo-262	262 حين	رقم المقرر ورمزه
Course Name	Histological preparations	تحضيرات مجهرية	اسم المقرر
No. of Credits	2 (1 + 1)	2 ساعات (1 + 1)	عدد الوحدات الدراسية المعتمدة
Prerequisites	None	لا يوجد	متطلب سابق
Co-requisite Course	None	لا يوجد	متطلب مصاحب

Midterm1 Exam: Thursday (Week 5) 20-2-2020 @ 1-2 pm (15%)

Lectures 1 to 4

Midterm2 Exam: Thursday (Week 9) 19-3-2020 @ 1-2 pm (15%)

Lectures 5 to 7

Cumulative final exam: (40%)

lectures 1 to 11

Histological preparations (ZOO 262)

	Activities	Grade
1	First midterm exam	15
2	Second midterm exam	15
3	Practical	30
4	Final Examination	40
	Total	100

**Absence for 25% of course hours (approximately 9 hrs.)
including lab hours, student will be deprived from the course**

Introduction to histological preparations

Page 1 and 7
Dr. Nouf Alyami

Introduction

- Histology is the branch of anatomy that focuses on the study of tissues of animals and plants. The term tissue refers typically to a collection of cells.
- The word “histology” stems from the Greek word “histos,” meaning web or tissue, and “logia,” meaning branch of learning.
- In brief, histological processing involves obtaining fresh tissue, preserving it (i.e., fixing it) in order to allow it to remain in as life-like a state as possible.

Three main types of specimen are received by the pathology laboratory:

- 1- Larger specimens include whole organs or parts thereof, which are removed during surgical operations.
- 2- Pieces of tissue rather than whole organs are removed as biopsies, which often require smaller surgical procedures.
- 3- Fluid and very small pieces of tissue (individual cells rather than groups of cells, e.g. within fluid from around the lung) can be obtained via a fine needle aspiration (FNA).

Techniques

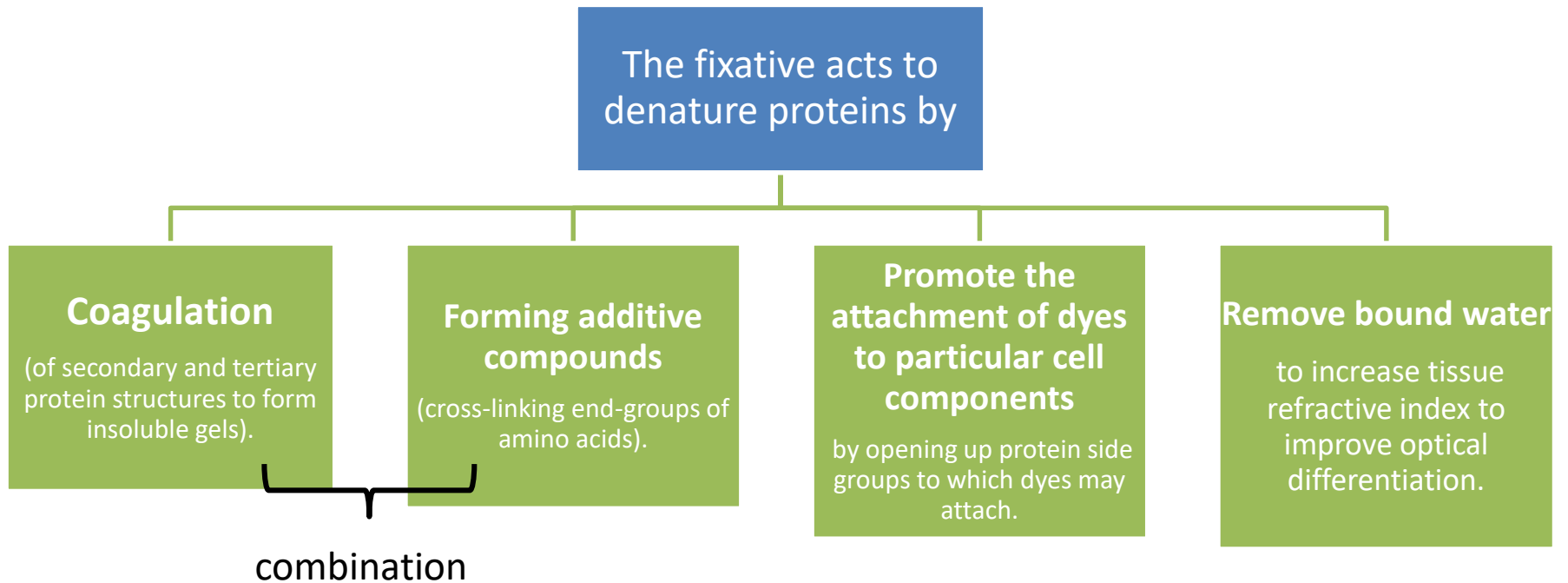
Preparing the tissue:

- It is necessary to gather first the informed consent of the patient, with his/her consent.
- An important first step of the process is tissue acquisition. The tissue should be kept moist while dissecting and trimming. The tissue should be trimmed 1–2 cm in width/length (but not be more than 5 mm thick).

Fixation

- It is important to maintain cells in as life-like a state as possible and to prevent post-mortem changes as a result of putrefaction (by bacteria or fungi) and autolysis (by its own enzymes).

Fixation



Prolonged fixation

Fixation Types

Aldehydes

Include formaldehyde (formalin, when in its liquid form), paraformaldehyde, and glutaraldehyde.

Buffer

A buffer is a solution containing either a weak acid and its salt or a weak base and its salt, which is resistant to changes in Ph.

Examples:

phosphate buffer

Used for?

Buffers are used to maintain a stable pH in a solution, as they can neutralize small quantities of additional acid or base.

How it works?

buffer solution made by dissolving sodium acetate into acetic acid.

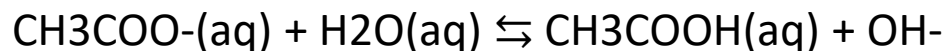
- **10% NEUTRAL BUFFERED FORMALIN**
- **PURPOSE:** The fixative is a good routine fixative. This solution is hypotonic in buffer ions and has a pH of 6.8
- **REAGENTS:**
 - Sodium phosphate, monobasic 4.0 gm
 - Sodium phosphate, dibasic 6.5 gm
 - Formaldehyde, 37% 100.0 ml
 - Distilled water 900.0 ml

How buffer works

(sodium acetate)

NaCH_3COO dissolved in H_2O \longrightarrow $\text{Na}^+(\text{aq})$ and CH_3COO^-

sodium acetate dissociates in solution to yield the conjugate base, acetate ions of CH_3COO^- .



Cause the solution to be slightly Base

If a strong acid is added to this solution, the acetate ion neutralizes it:

