

**Tishk International University**  
**Science Faculty**  
**Medical Analysis Department**



## **Pathology**

### **Introduction to Pathology**

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# Introduction to Pathology

- Learning Resources
- Define pathology
- Branches of Pathology
- Define disease
- Classification of diseases
- Describe characteristics of disease
- Autopsy
- Summary

# Introduction to Pathology

- **Learning Resources:**

- ***Textbook:***

- Robbins Basic Pathology.
  - (Required Text Book)

- ***Internet:***

- Internet pathology laboratory ([webpath.med.Utah.edu](http://webpath.med.Utah.edu))

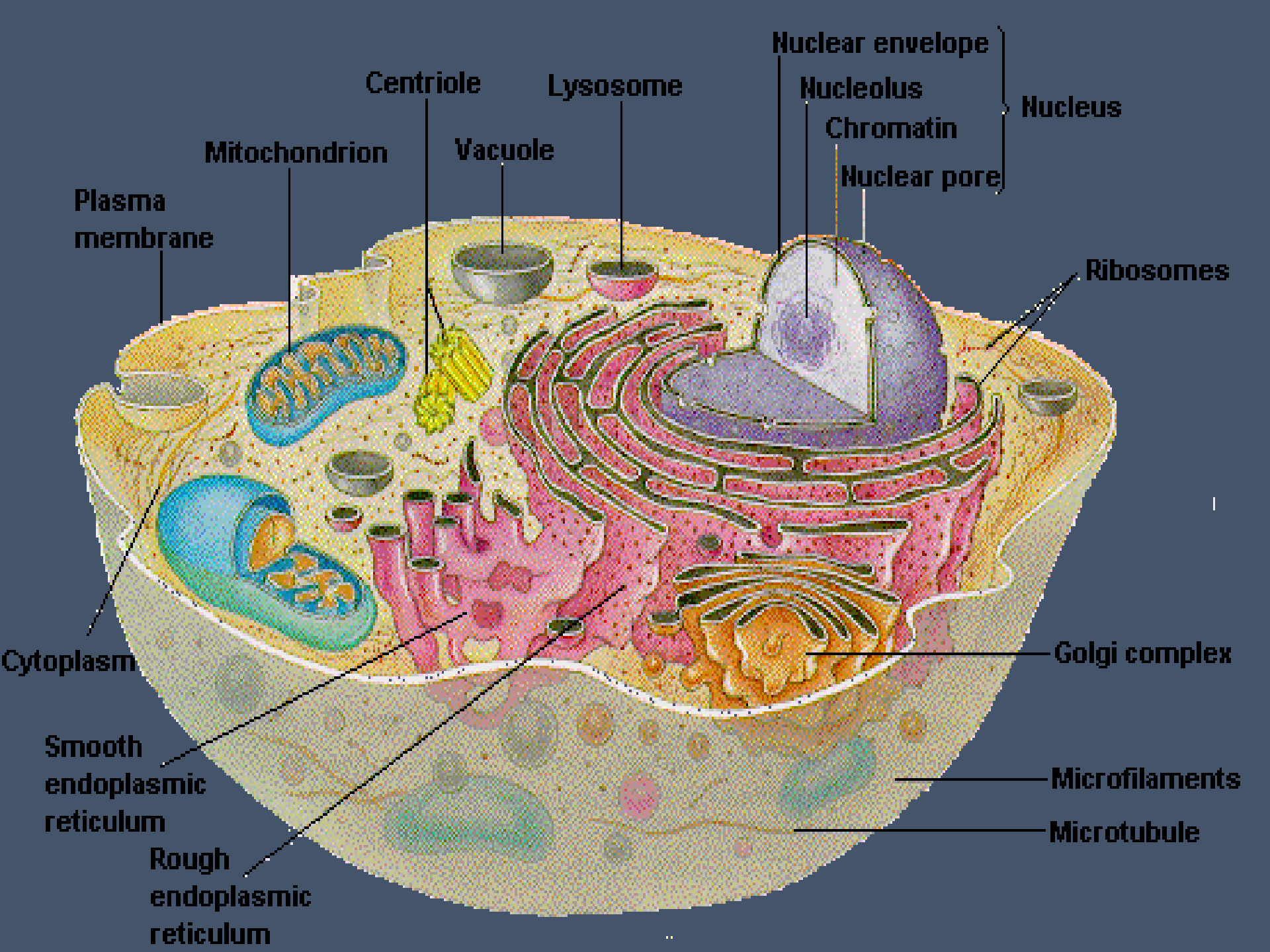
- You all have studied and understood the broad contents of following subjects
  - – Anatomy
  - – Histology
  - – Biochemistry
  - – Physiology
  - – • Beginning this year....you need to add “Pathology” ...

# Definition of pathology

It is the “Scientific study of disease” .

"scientific study of the molecular, cellular, tissue, or organ system response to injurious agents."

Pathology serves as a **"bridge"** or **"link"** between the preclinical sciences (**anatomy, physiology, .....etc.**) and the courses in clinical medicine.



Nuclear envelope  
Nucleolus  
Chromatin  
Nuclear pore  
Nucleus

Centriole  
Lysosome

Mitochondrion  
Vacuole

Plasma membrane

Ribosomes

Cytoplasm

Golgi complex

Smooth endoplasmic reticulum

Microfilaments

Rough endoplasmic reticulum

Microtubule

# Branches of Pathology

- **General Pathology**
- **Systemic Pathology**

# Learning Pathology:

- General Pathology

It explores and explains the development of basic pathologic mechanisms:

- Cell injury.
- Inflammation, repair and regeneration,
- Haemodynamic (circulatory) disorders.
- Neoplasia.
- Immunopathology
- Genetic disorders
- Infection



# Systemic Pathology

- The pathologic mechanisms discussed in the General Pathology are related to various organ systems:
  - **Cardiovascular System (CVS)**
  - **Respiratory System**
  - **Alimentary System (GIT)**
  - **Hepatobiliary System and Pancreas**
  - **Urinary System**
  - **Male & Female Genital Tract Systems**
  - **Central nervous system (CNS)**
  - **Musculoskeletal system**
  - **Dermatopathology (SKIN)**

# What is the Disease?

- **It is the** “State in which an individual exhibits an anatomical, physiological, or biochemical deviation from the normal”

- **Disease may be defined as :**

*an abnormal alteration of structure or function in any part of the body.*

# Classification of Diseases:

- **Developmental** – genetic, congenital.
- **Acquired:**
  - \***Inflammatory** – Trauma, infections, immune, etc.
  - \***Neoplastic** – tumors
  - \***Degenerative** – ageing.
  - \***Metabolic.**
  - \***Iatrogenic: Drug induced.**

# What should we Know About A Disease

- Definition.
- Epidemiology – Where & When.
- Etiology – What is the cause?
- Pathogenesis - Evolution of dis.
- Morphology - Structural Changes
- Functional consequences
- Management
- Prognosis
- Prevention

Pathology

# Pathology focuses on 4 aspects of disease:

- **ETIOLOGY:** Cause of disease.

- **PATHOGENESIS:**

Mechanisms of development of disease.

- **MORPHOLOGY:**

The structural alterations induced in cell and tissues.

- **FUNCTIONAL CONSEQUENCES:**

Functional results of the morphologic changes, as observed clinically.

# ***Etiology***

**“Study of the cause of a disease”**

Knowledge of ***etiology*** remains the backbone of:

- Disease *diagnosis*
- Understanding *the nature of diseases*
- *Treatment* of diseases.

# *Etiology: What is the cause?*

## ➤ *Environmental agents:*

- Physical
- Chemical
- Nutritional
- Infections
- Immunological
- Psychological

## ➤ *Genetic Factors:*

## **Multifactorial:**

**As Diabetes,  
Hypertension  
Cancer**

# *pathogenesis*

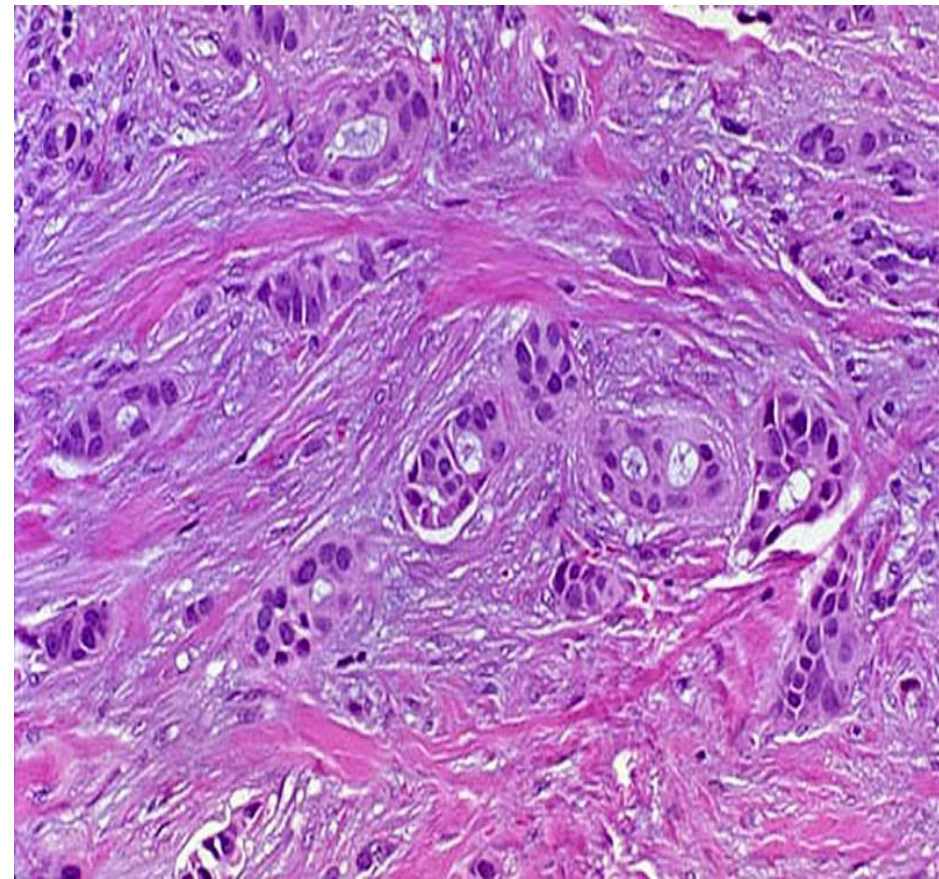
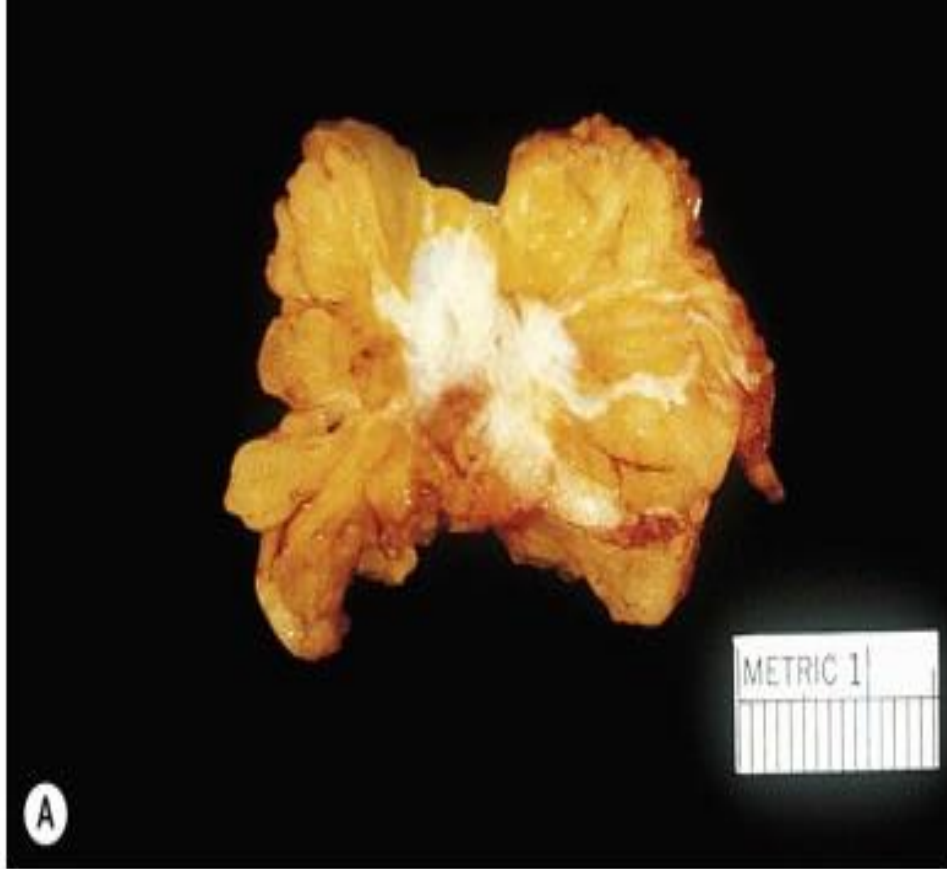
The sequence events in the response of the cells or tissues to the etiologic agent, from the initial stimulus to the ultimate expression of the disease, "from the time it is initiated to its final conclusion in recovery or death"

*The core of the science of pathology — the study the pathogenesis of the disease.*



# Morphology: Structural Changes

- **Structural changes in disease.**
- **Gross & Microscopic.**



**Breast cancer, A- Gross picture**

**B- Microscopic picture**

- **Autopsy:**

Gross examination of the cadaver by systematic dissection in order to evaluate any abnormal changes (**lesions**) that may be present.

- **Biopsy:**

Removal and examination of tissue obtained from the living body.

So then, what is the importance of Pathology?

Every disease has a pathologic basis

# SUMMARY

- Pathology is study of diseases by scientific methods.
- Cores of pathology are etiology, pathogenesis, morphologic changes & clinical features.
- Etiology of many major diseases are multifactorial.

**I hear, I forget**  
**I see, I remember**  
**I do, I understand**

Chinese Proverb..

**THANK YOU SO MUCH  
FOR YOUR  
ATTENDANCE**