

Introduction to pathology



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So what is pathology ?

Pathology comes from an Ancient Greek roots; literally to the study of *suffering*; *pathos*: "suffering" (disease) & *logia* "study of"



So it is.. The scientific study of disease!

“ *The study of the structural & functional changes in cells, tissues, & organs that underlies diseases* ”

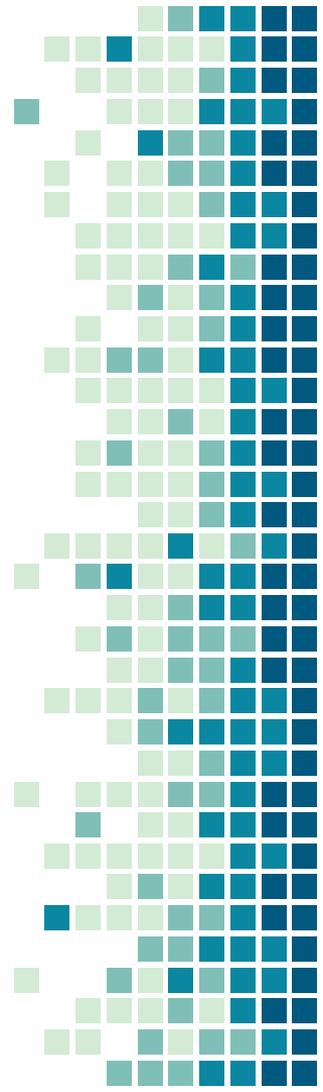




Rudolf Virchow

1821-1902

- + *Cellular pathology* → to emphasize that all diseases originate at the cellular level.
- + "the father of modern pathology"
- + NOW, cellular disturbances arise from alterations in molecules (genes, proteins, and others) that influence the survival and behavior of cells.
- + SO the foundation of modern pathology is understanding the cellular & molecular abnormalities that give rise to diseases.



**anatomy,
physiology,
biochemistry,
pharmacology,
microbiology,
community,
..etc**

Pathology



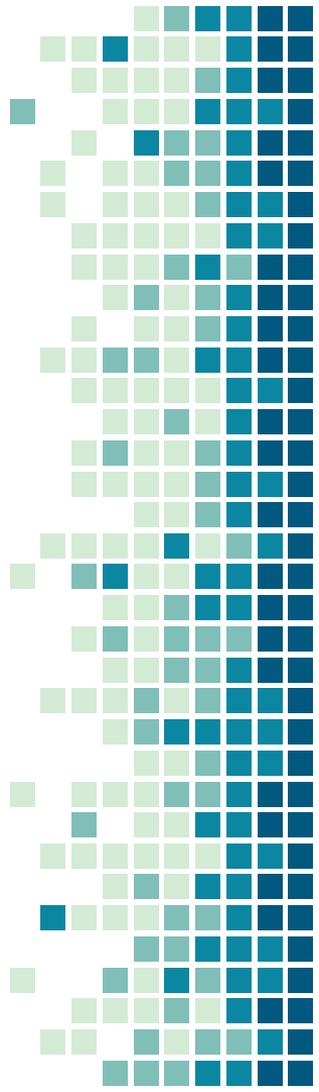
**medicine ,
surgery,
orthopedic,
gyne-obs,
pediatrics,
ENT,
Psychiatry,
Radiology**

Giovanni Battista Morgagni

1682 –1771



+ *Physician – anatomist*
+ *Introduced clinicopathologic methodology in the study of disease, by correlation of clinical findings (signs, symptoms) with findings at posmortem examination*



+ **General pathology:**

basic concepts that are shared among various disease in multiple organs/systems (Ex: Inflammation, cell injury and neoplasia)

+ **Systematic Pathology:**

discuss pathology of diseases of a specific organs/systems

Anatomical pathology

+Cytopathology

+Dermatopathology

+Forensic pathology

+Histopathology

+Neuropathology

+Pulmonary pathology

+Renal pathology

+Surgical pathology

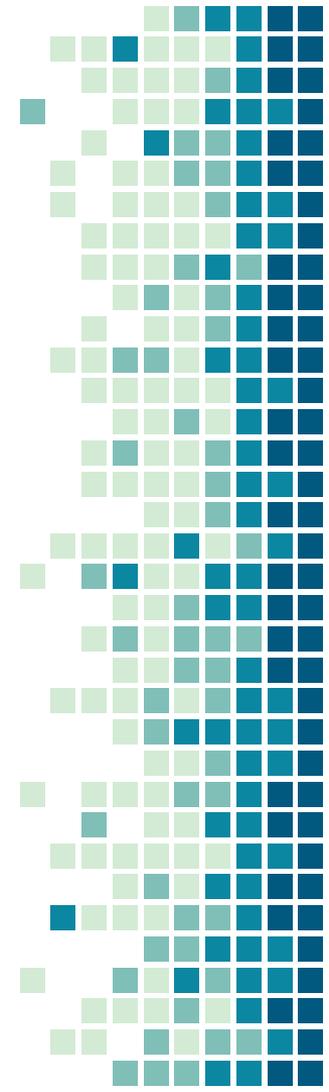
Clinical pathology

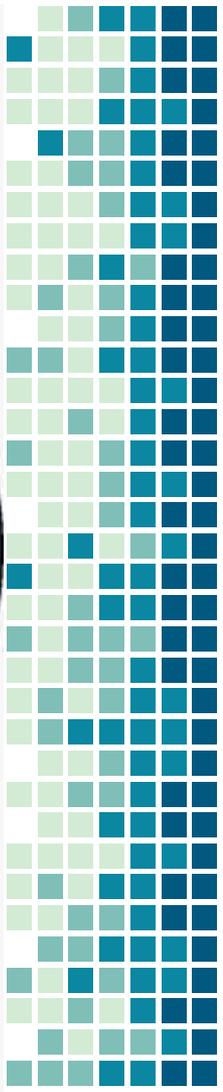
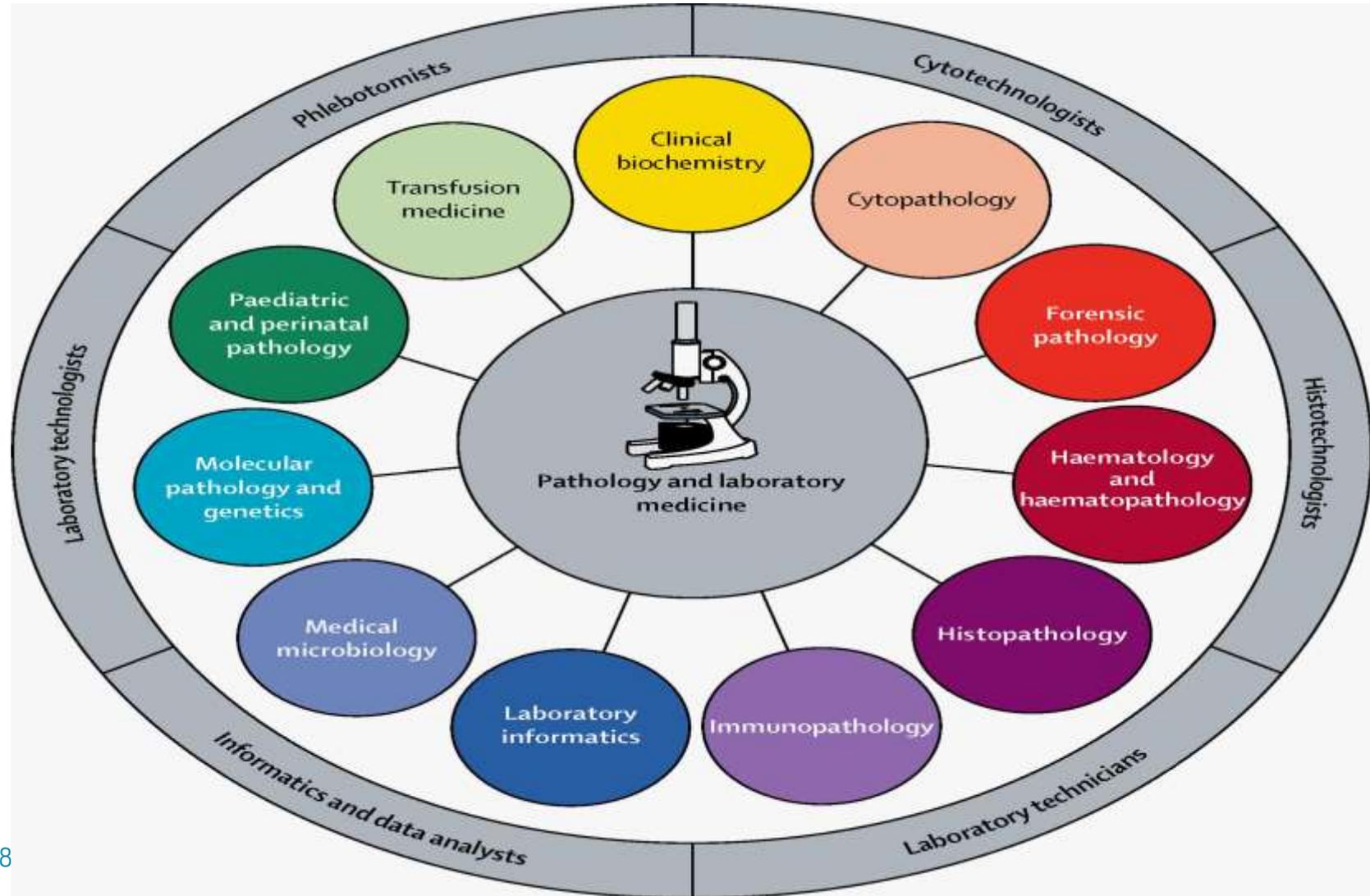
+Hematopathology

+Immunopathology

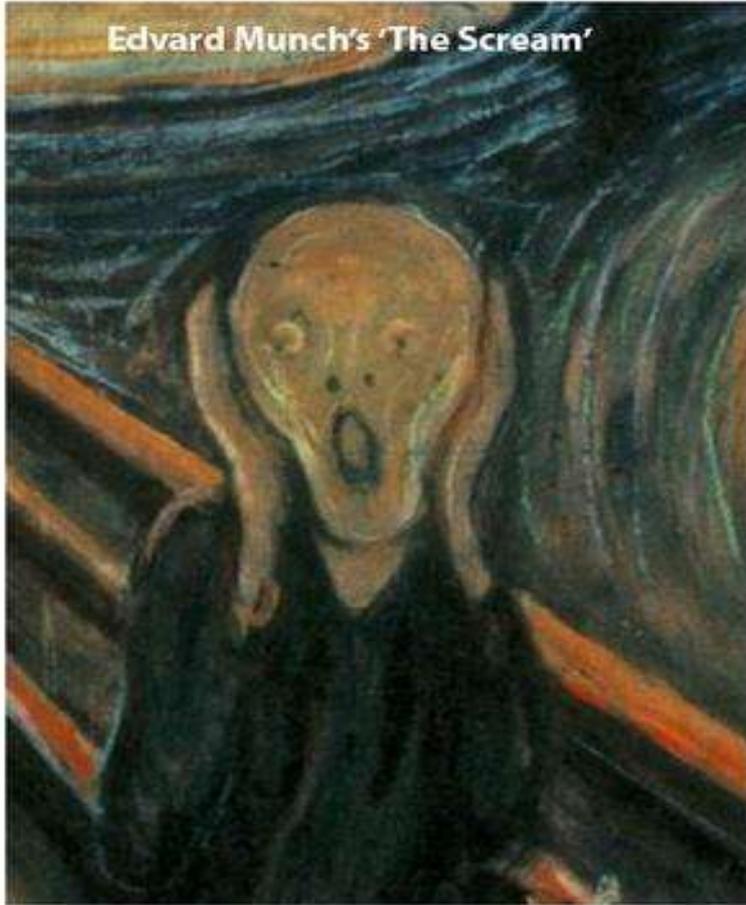
+Radiation pathology

Molecular pathology

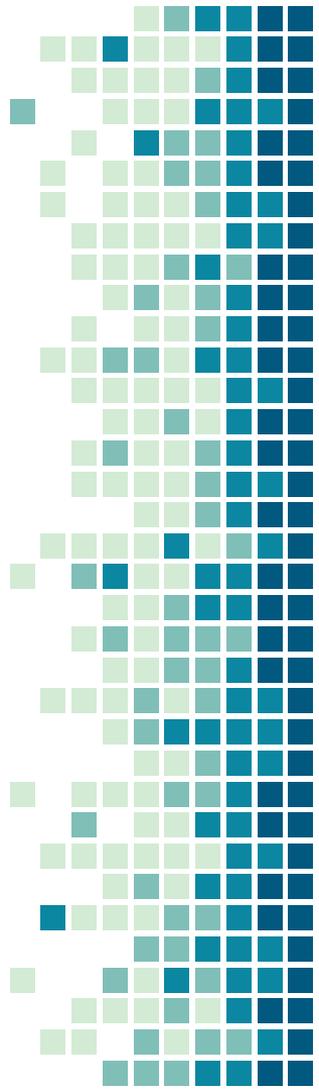




Edvard Munch's 'The Scream'

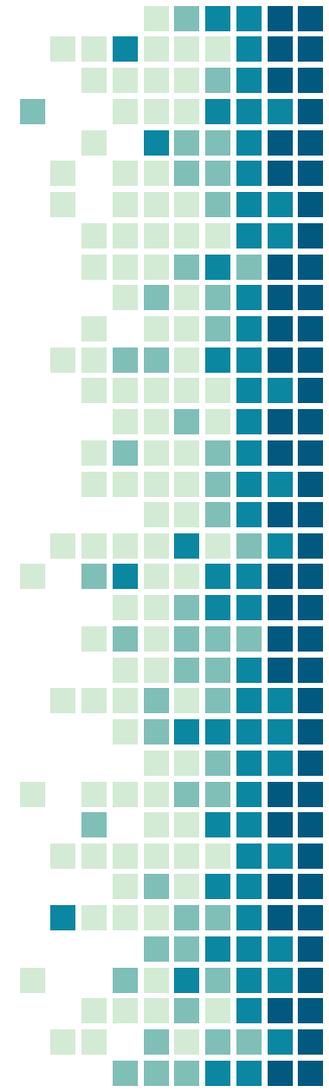


Histology's 'Placental villi'



the study of disease Includes:

- ❖ The study of causes that leads to these changes >> **WHY** <<
- ❖ Sequence of events that leads from structural and functional abnormalities to clinical manifestations >> **HOW** <<
- ❖ The basic structural and functional changes associated with disease >> **Morphology**<<



“ Etiology ..The “why”

+underlying causes and modifying factors that are responsible for the initiation and progression of disease.

+ genetic and environmental factors

Pathogenesis ..The "HOW"

+the mechanism through which **Etiology** causes the **development & progression** of disease,

+the cellular & molecular changes that give rise to the specific **functional & structural abnormalities** that characterize the disease.

💡💡 *Etiology and pathogenesis of disease are essential for understanding disease ++ also is the basis for developing **rational** treatments and effective preventive measures. Thus, **pathology provides the scientific foundation for the practice of medicine. EBM***

💧💧 *Morphology is structural alteration of cell and tissue as a result of the pathogenesis:*

+ ***gross*** : naked eye

+ ***microscopic***

+ *Pathologists also use a variety of molecular, and other techniques to define the biochemical, structural, and functional changes that occur in cells, tissues, and organs in response to injury.*

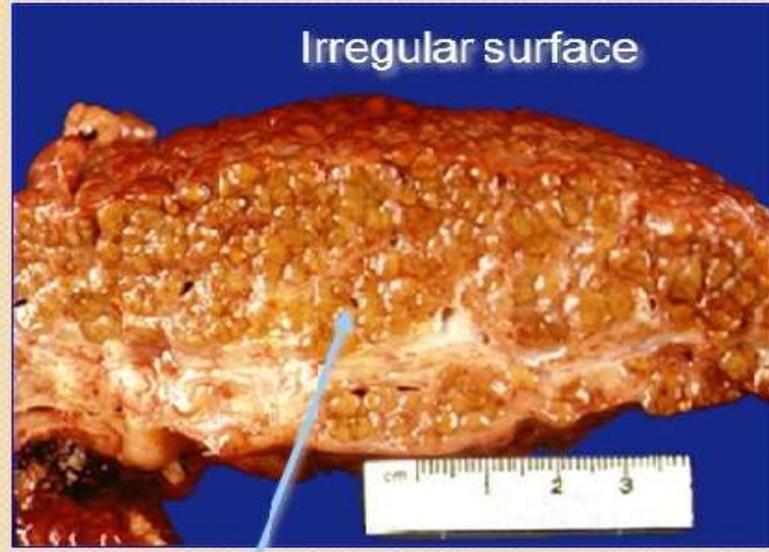


Morphology, Gross (Naked eye)

Normal



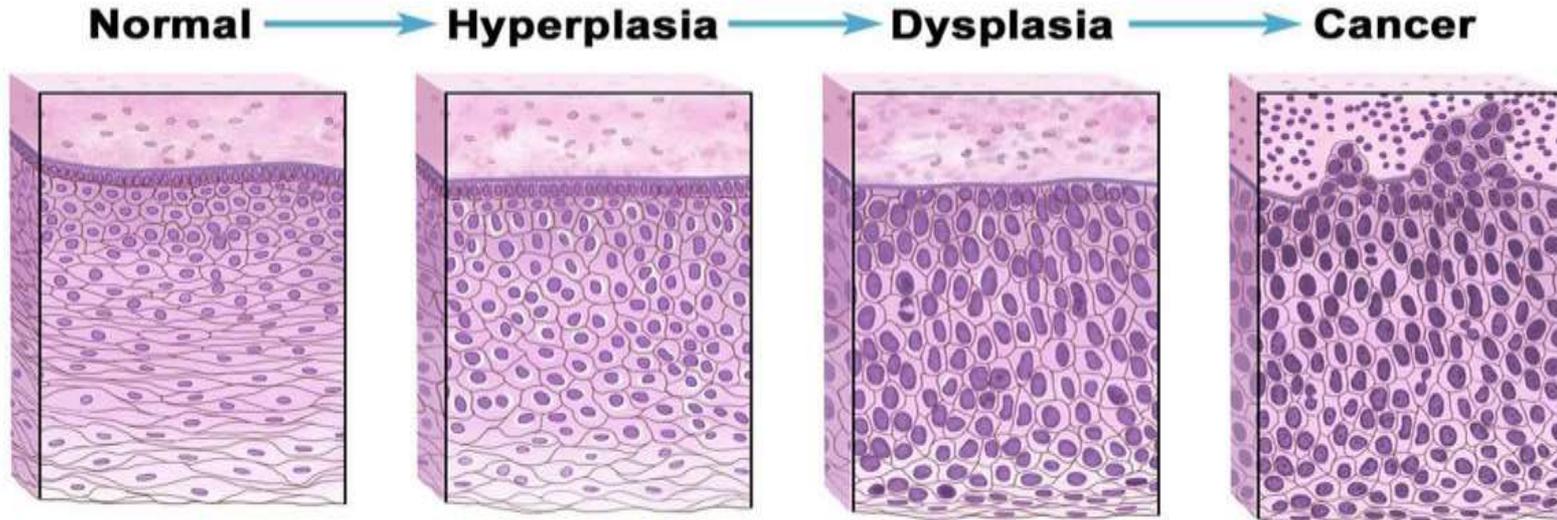
Cirrhosis



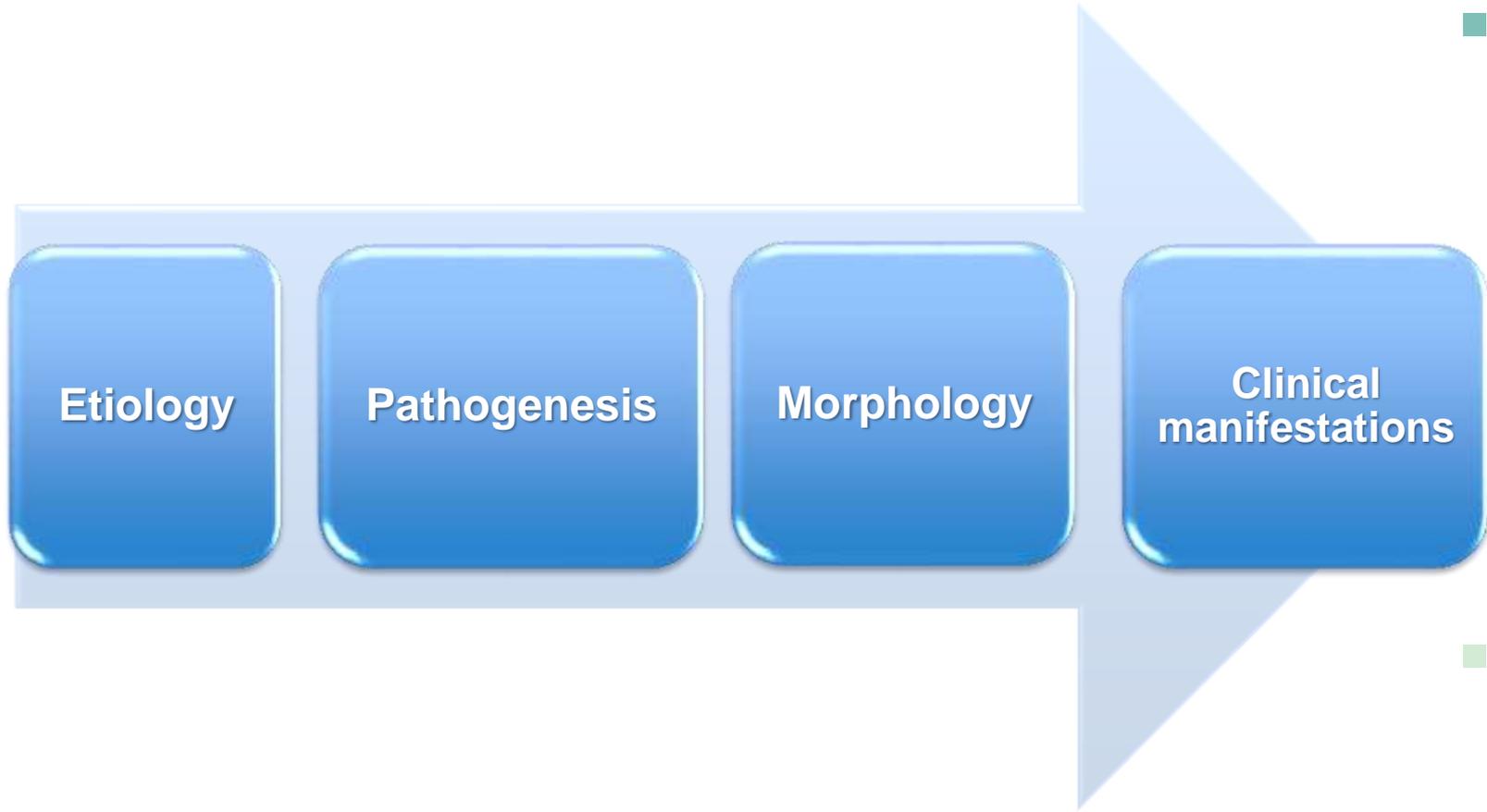
Irregular surface

Nodules

Morphology, microscopic



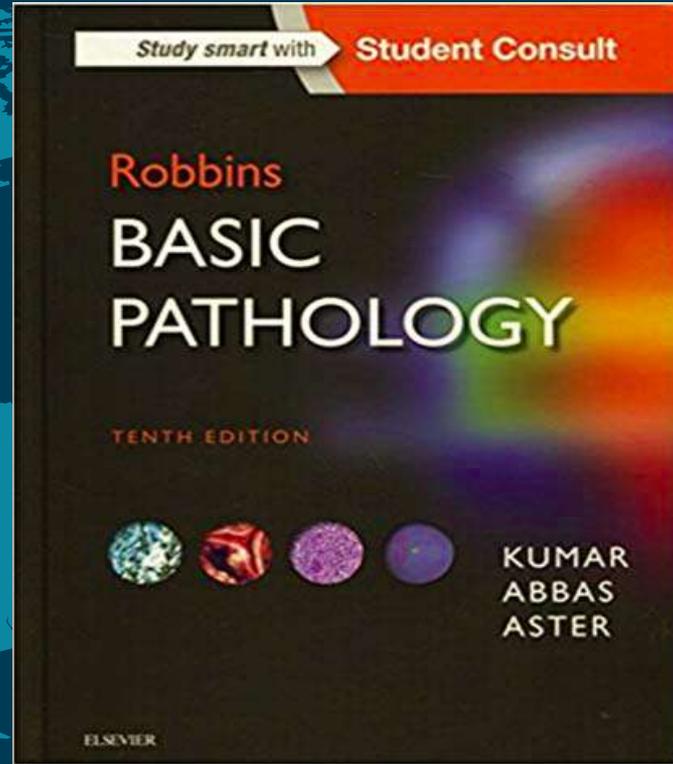
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“



The book .. 😊



So what do pathologist do?



1st: The Sample .. What do we get?

Resections

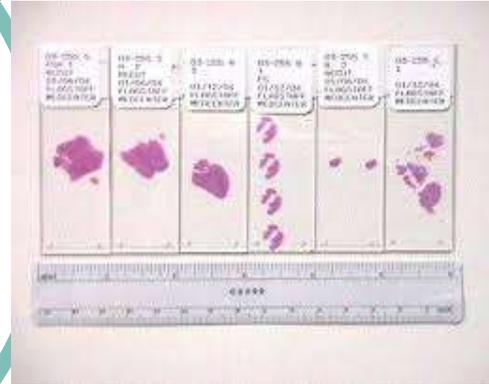


Biopsy, like :

- Bone marrow aspiration and biopsy
- Cardiac biopsy
- Core biopsy
- Endometrial biopsy, D&C
- Endoscopic biopsy
- Bronchoscopic biopsy
- Excisional and incisional biopsy
- Fine-needle aspiration biopsy
- Lymph node biopsy
- CT guided Needle biopsy
- Punch biopsy
- Shave biopsy

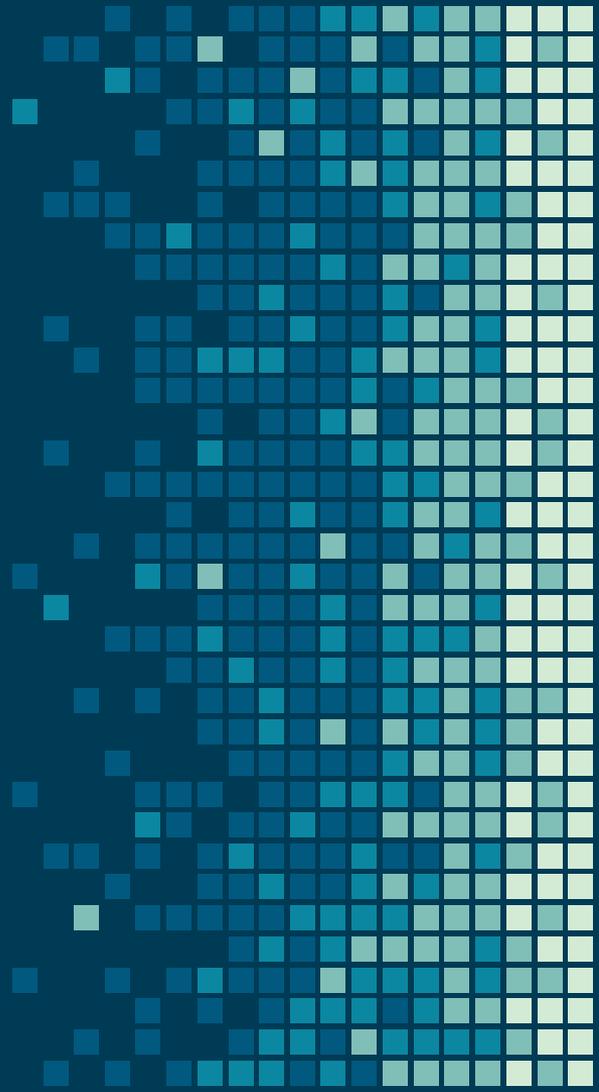


Pathology Lapratory





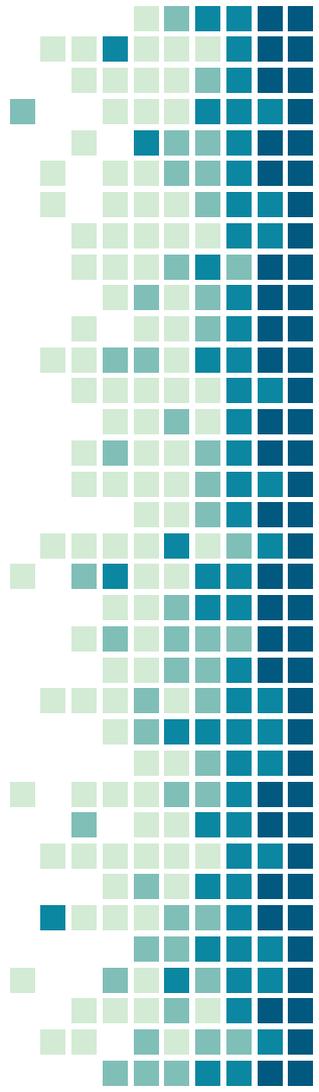
Grossing



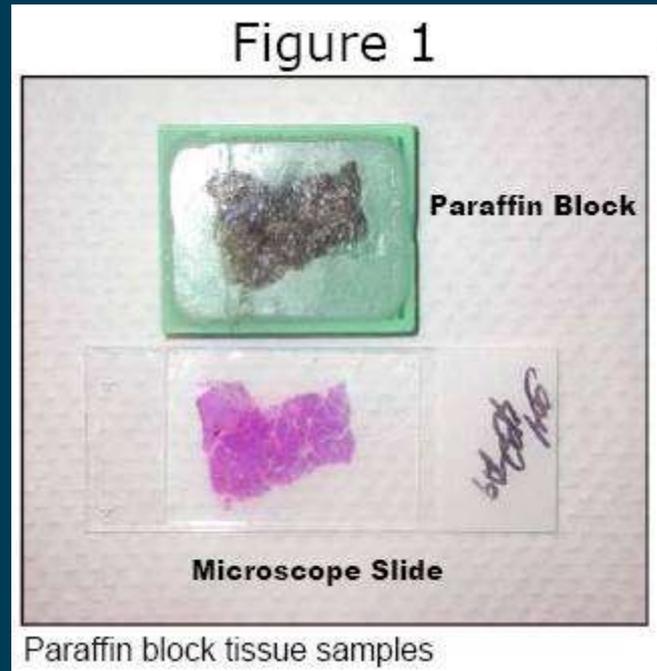
Processing into
a paraffin block



Microtome



Staining H&E 😊





Diagnosis

