PATHOLOGY

☐ SHEET

■ SlIDE

Slide : 1- Introduction to pathology

Doctor: Dr.Mazen Al-Salhi

Introduction to Pathology

Dr. Mazin Al-Salihi

Course Info

▸ **Required Book**

  ▸ Robbins Basic Pathology, 9th Edition

  ▸ Chapters in this course 1,2,5

  ▸ Remaining chapters will be covered in systems Yr2-3

▸ **25 Lectures**

  ▸ 5 Introduction, Cell Injury, Cell Death, & Adaptation

  ▸ 6 Inflammation

  ▸ 4 Repair

  ▸ 10 Neoplasia

▸ **2 Exams**

  ▸ Midterm

  ▸ Final

| Lecture		Ch/Pg
1. Course Orientation & Introduction		
2. Homeostasis, Adaptation, & Cell Death	• Principles • Adaptive Responses (Hypertrophy, Hyperplasia, Atrophy, Metaplasia) • Cell Injury (reversible/irriversible) • Cell Death • Morphology of Cell Death	Ch1 Pg. 1-5 Pg. 8-11
3. Cell Injury & Death	• Causes • Principles & mechanisms (Mitochondria, Ca^{2+}, Free radicals & ROS, Membrane damage) • Mechanisms in practice (Hypoxia Ischemia, Reperfusion, Chemical)	Pg. 6-7 Pg. 11-18
4. Apoptosis	• Definition • Principles • Causes • Mechanisms (Mitochondrial, Death receptor) • Mechanisms in practice (Growth factor deprivation, DNA damage, Protein damage, role in immunity) • Necroptosis	Pg. 18-22
5.	• Autophagy • Intracellular accumulations • Pathologic calcification • Cellular aging	Pg. 22-28

What is Pathology?

The Tree of Medicine

▸ Pathology is the scientific basis for clinical medicine

▸ Pathology gives clinical purpose to basic scientific research

▸ Pathology is not limited to what a pathologist does!
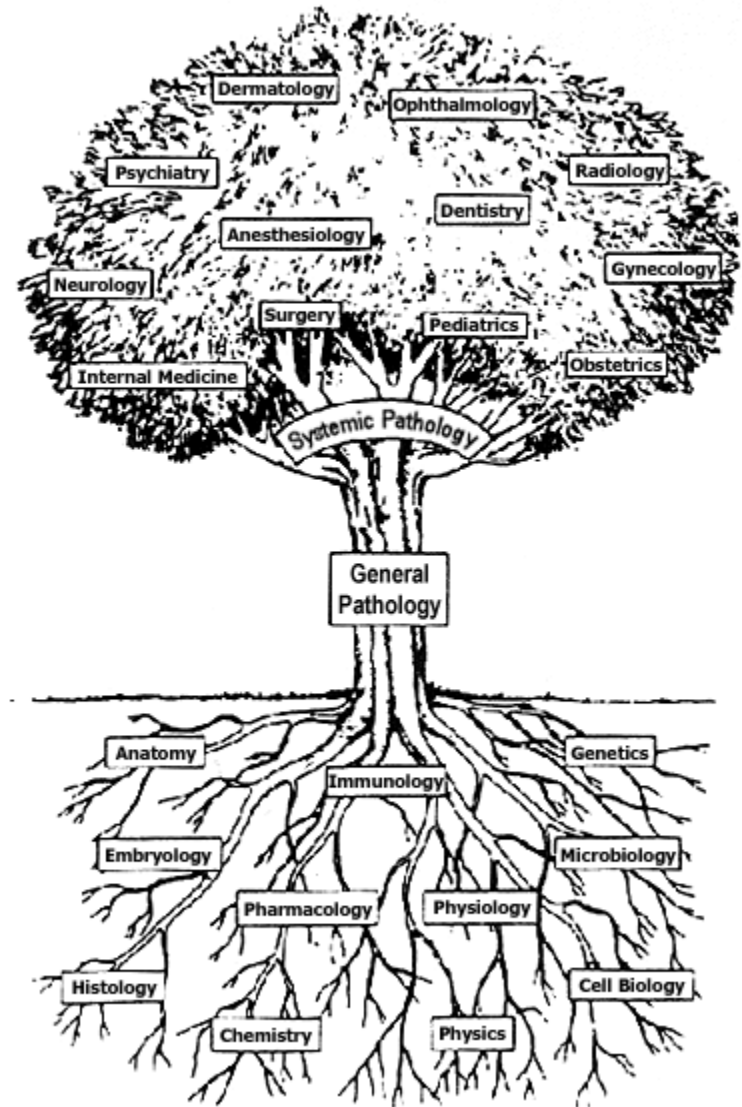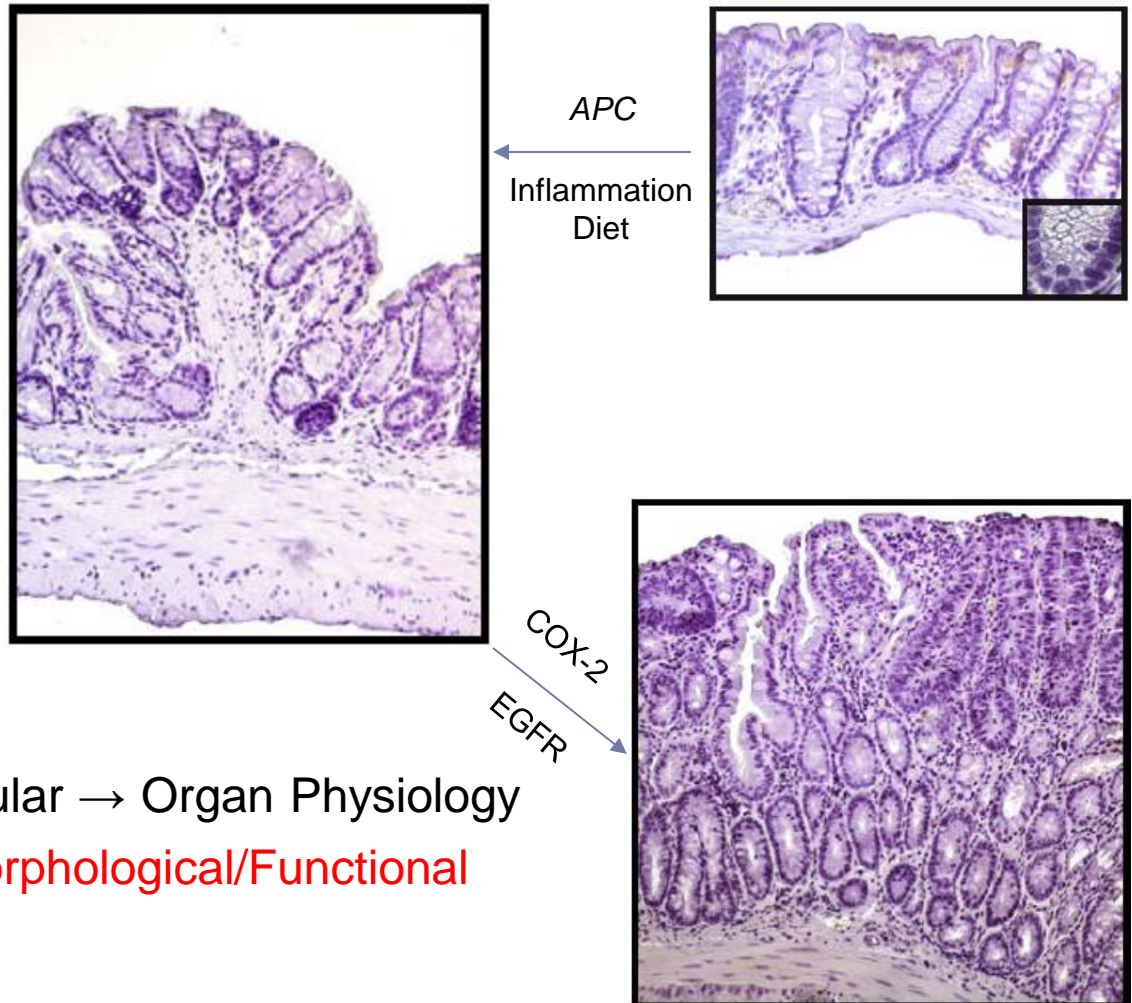
Nomenclature

▸ **Disease**

▸ Etiology

  ▸ Genetic
    • Hereditary
    • Acquired
  ▸ Environmental

▸ Pathogenesis

  ▸ Molecular → Cellular → Organ Physiology
    Morphological/Functional

APC

Inflammation
Diet

COX-2

EGFR

Knowledge we take for granted

CELLULAR PATHOLOGY

AS BASED UPON

PHYSIOLOGICAL AND PATHOLOGICAL HISTOLOGY.

———•◦•———

TWENTY LECTURES

DELIVERED IN THE

PATHOLOGICAL INSTITUTE OF BERLIN

DURING THE

MONTHS OF FEBRUARY, MARCH AND APRIL, 1858.

BY

RUDOLF VIRCHOW,

PUBLIC PROFESSOR IN ORDINARY OF PATHOLOGICAL ANATOMY, GENERAL PATHOLOGY AND THERAPEUTICS IN
THE UNIVERSITY OF BERLIN ; DIRECTOR OF THE PATHOLOGICAL INSTITUTE, AND PHYSICIAN TO
THE CHARITE HOSPITAL, ETC., ETC.

Virchow's Theory of Cellular Pathology

"The object chiefly aimed at in [my lectures], illustrated as they were by as an extensive a series of microscopical preparations as it was in my power to supply, was to furnish a clear and connected explanation of those facts upon which, according to my ideas, the theory of life must now be based, and out of which also the science of pathology has now to be constructed. They were more particularly intended as an attempt to offer in a better arranged form than had hitherto been done, a view of the cellular nature of all vital processes, both physiological and pathological ... so as distinctly to set forth what the people have long been dimly conscious of, namely, the unity of life in all organized beings."

(Virchow, 1858)

The Morphological Knowledge Database

The vast majority of patients who do not have a disease had an esophagus that looked like this
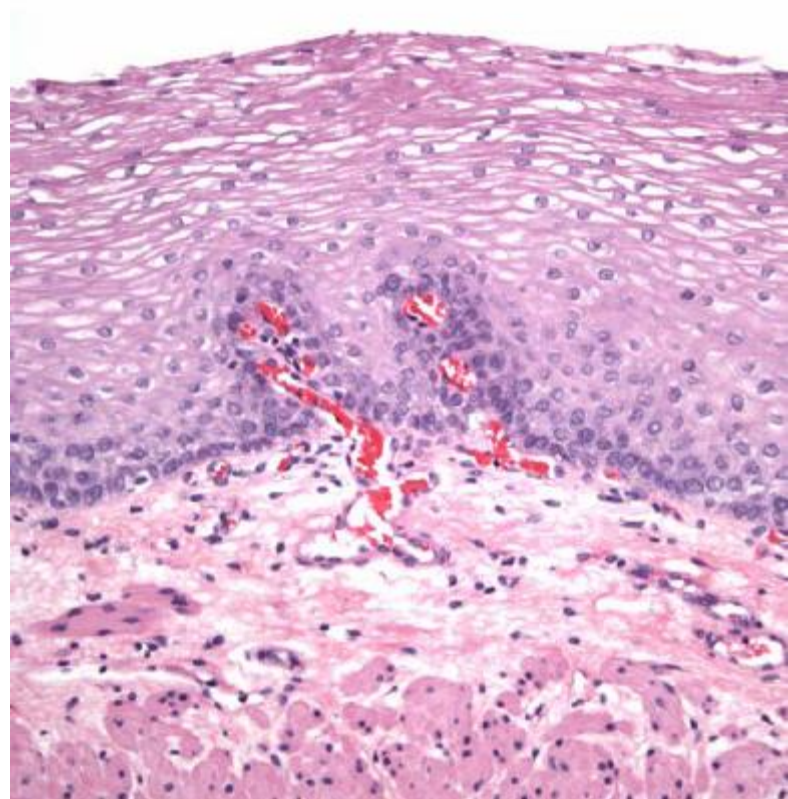
The Morphological Knowledge Database

The vast majority of patients who complained about heartburn had an esophagus that looked like this
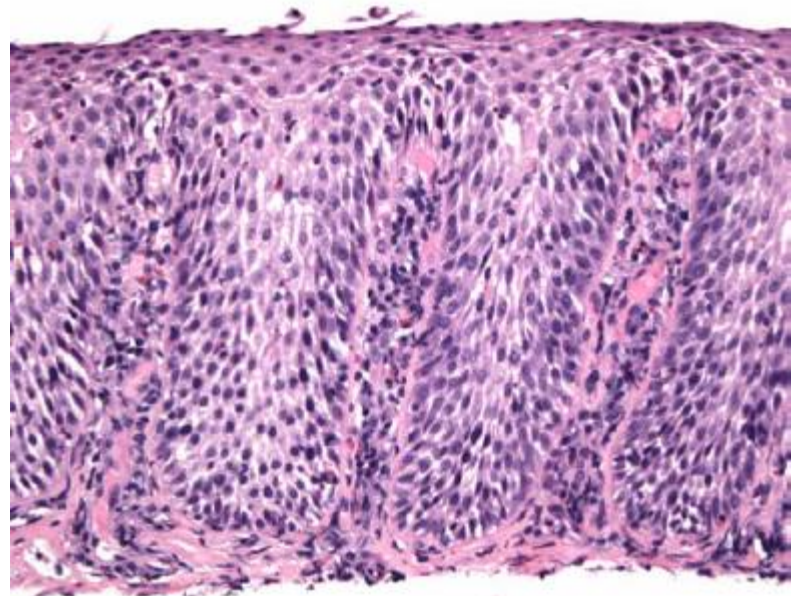
Therefore!

The Morphological Knowledge Database

The next patient with an
esophagus that looks
like this should have
no heartburn
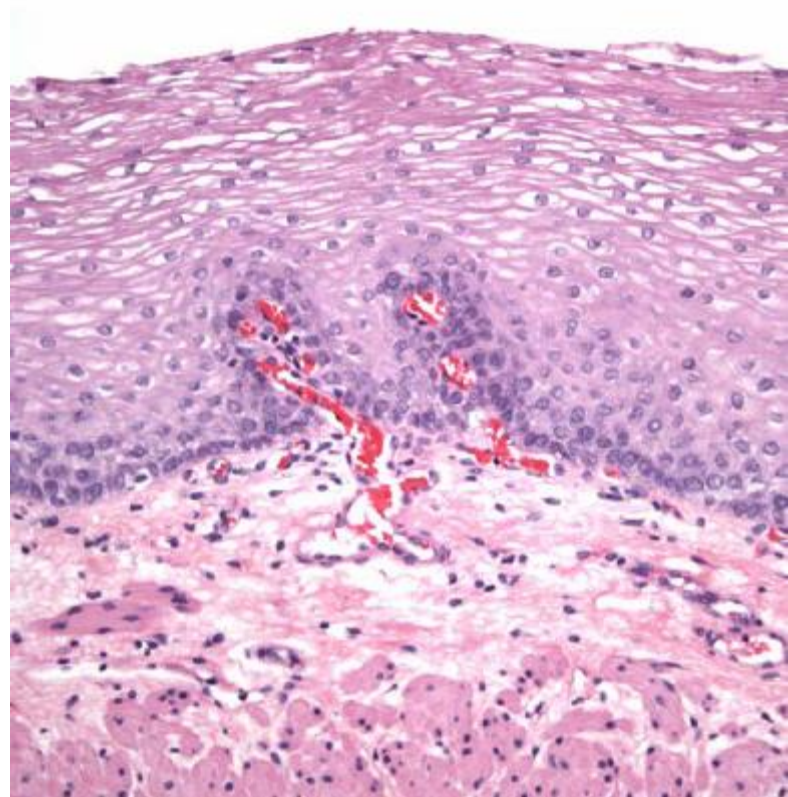
The Morphological Knowledge Database

The next patient with an esophagus that looks like this should have or had heartburn
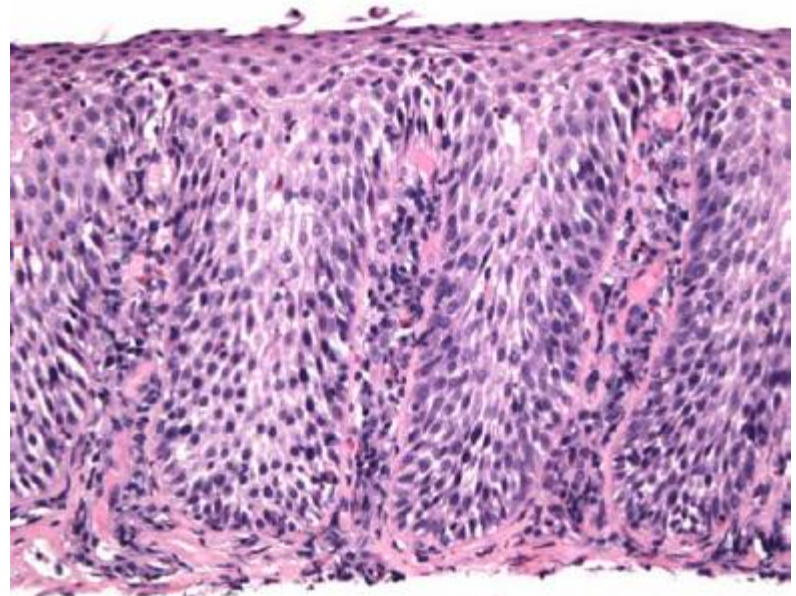
The Morphological Knowledge Database

▸ Along with a thorough history and clinical examination a pathological examination will result in:

▸ A diagnosis

▸ Degree of deviation from the physiological norm (grade)

▸ How far along we are in the disease process (stage)

Knowledge we are developing

The Molecular Knowledge Database
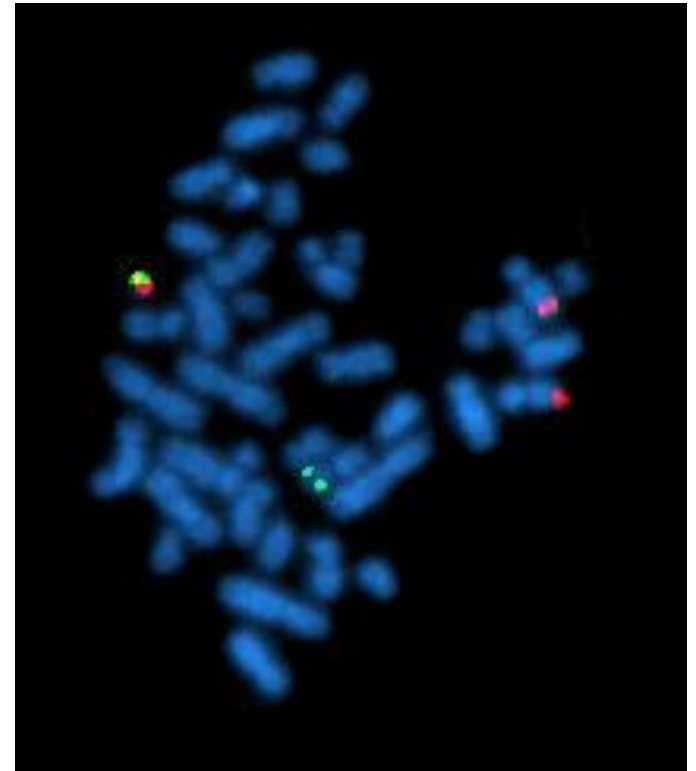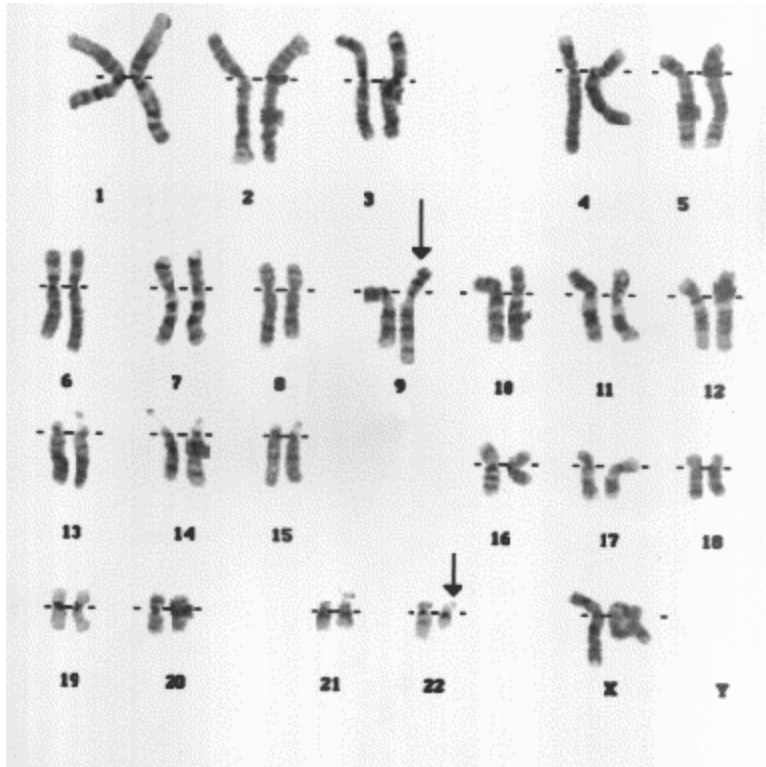
The Molecular Knowledge Database
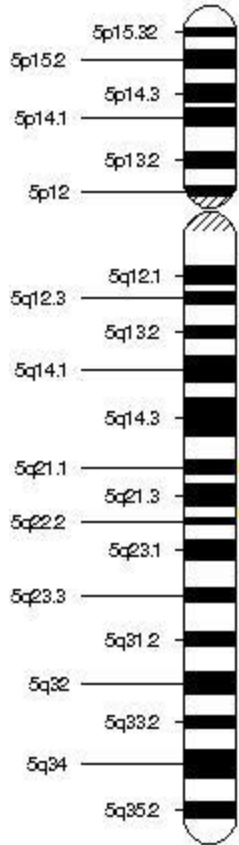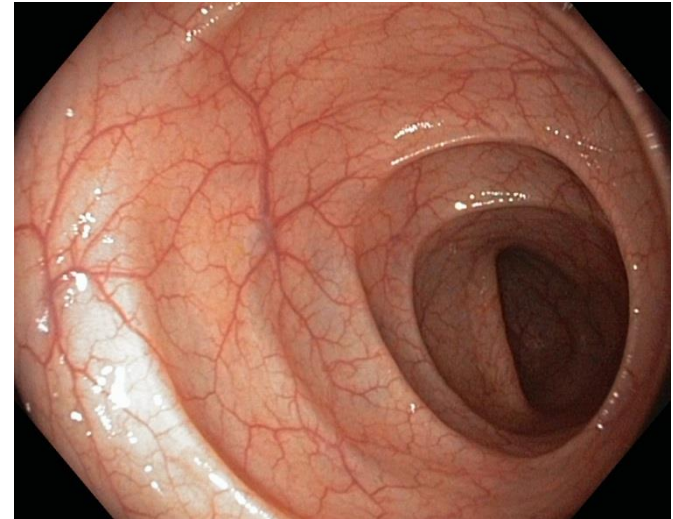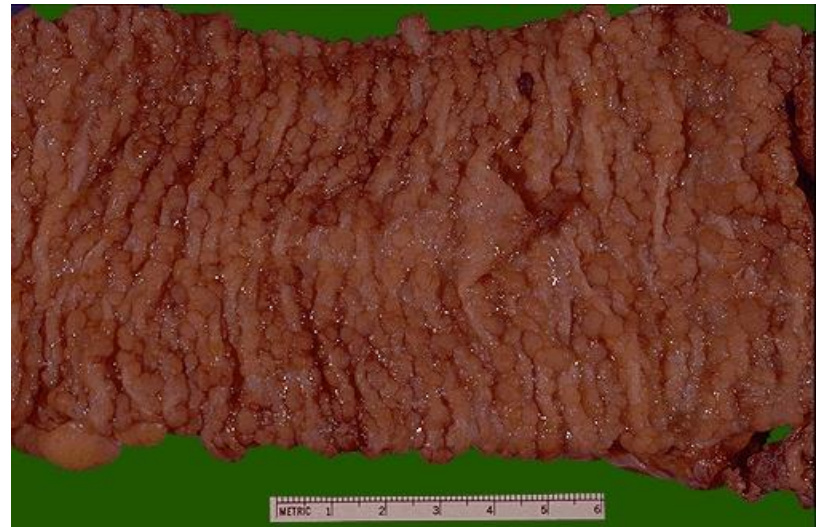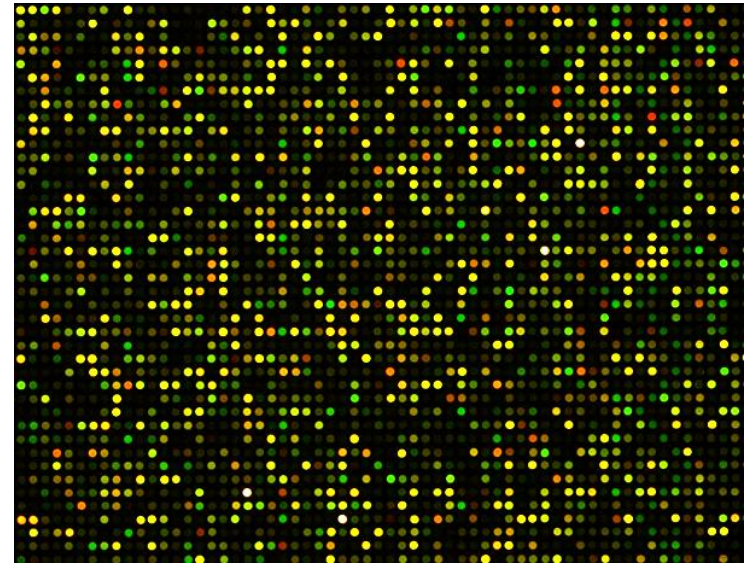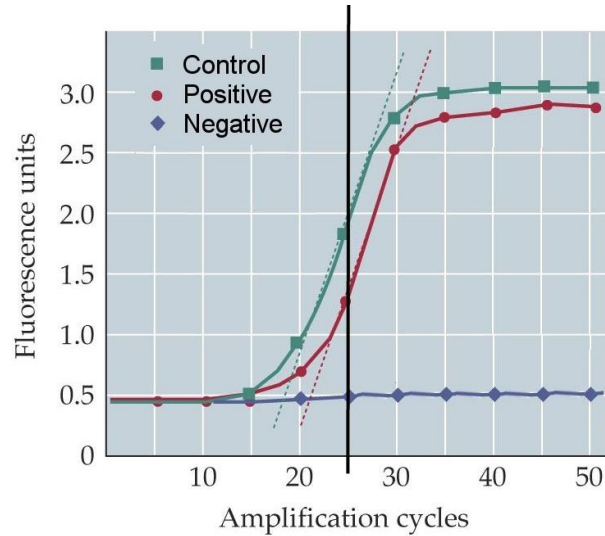
Molecular techniques making the move to the clinic

DNA
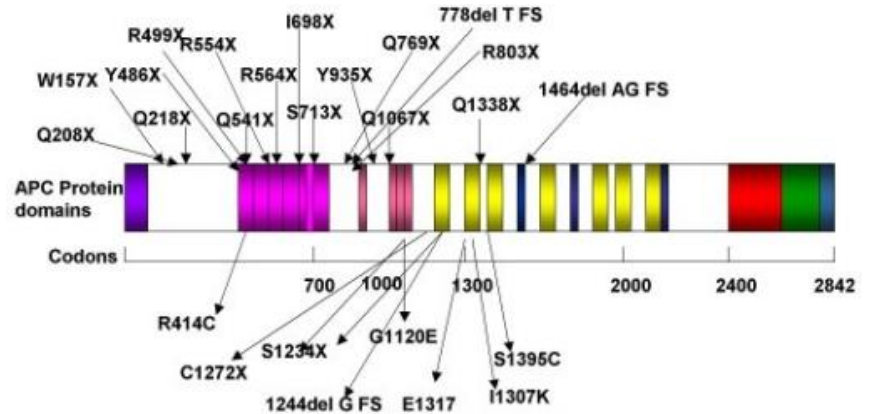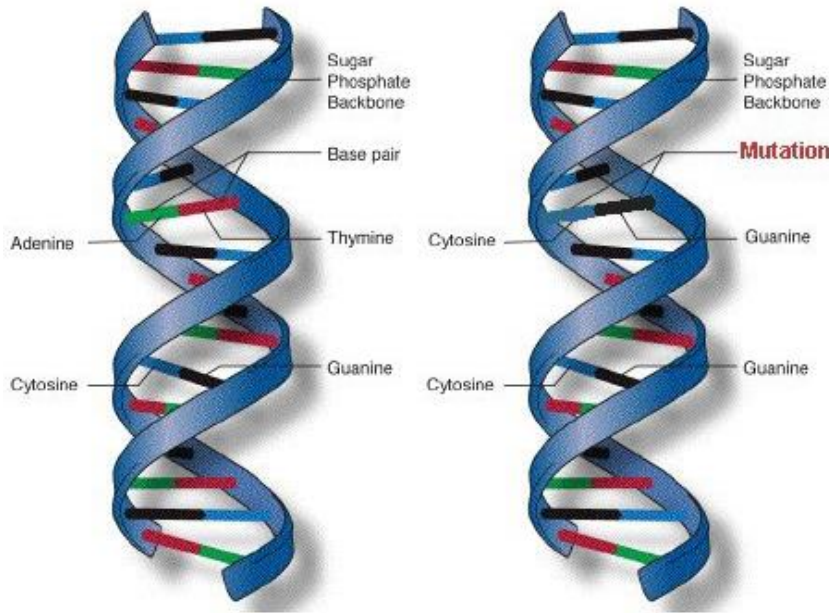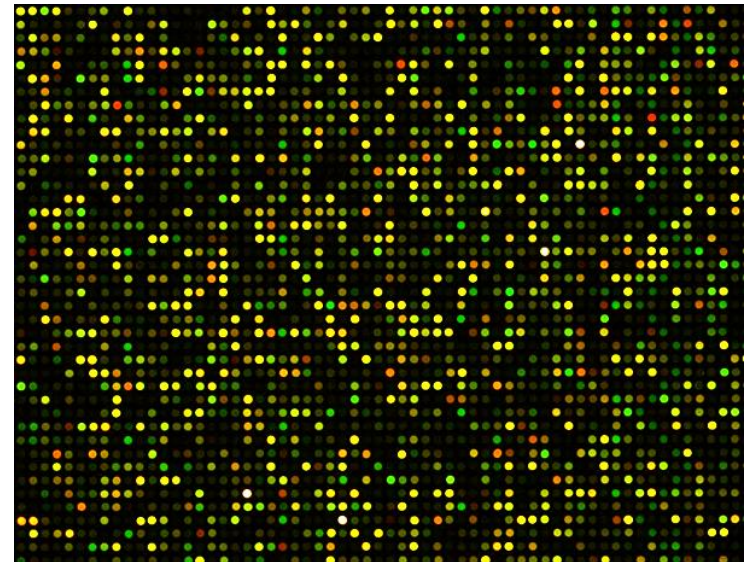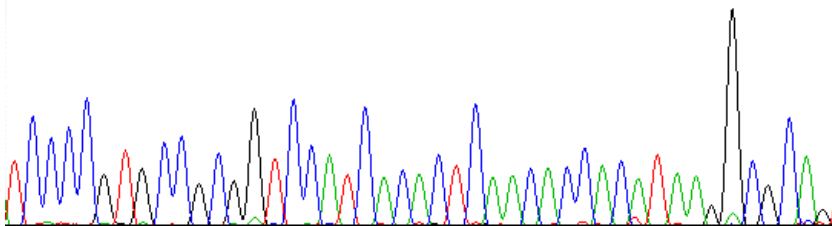
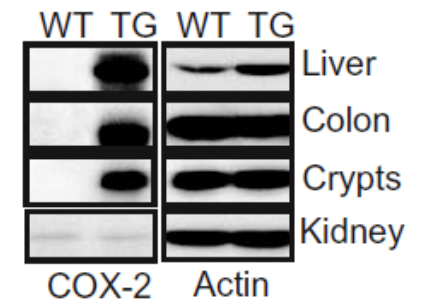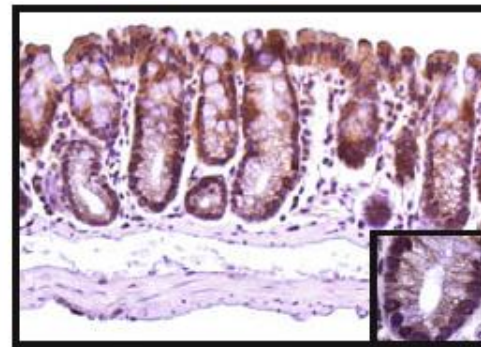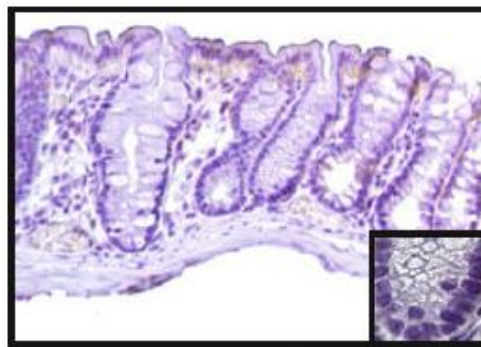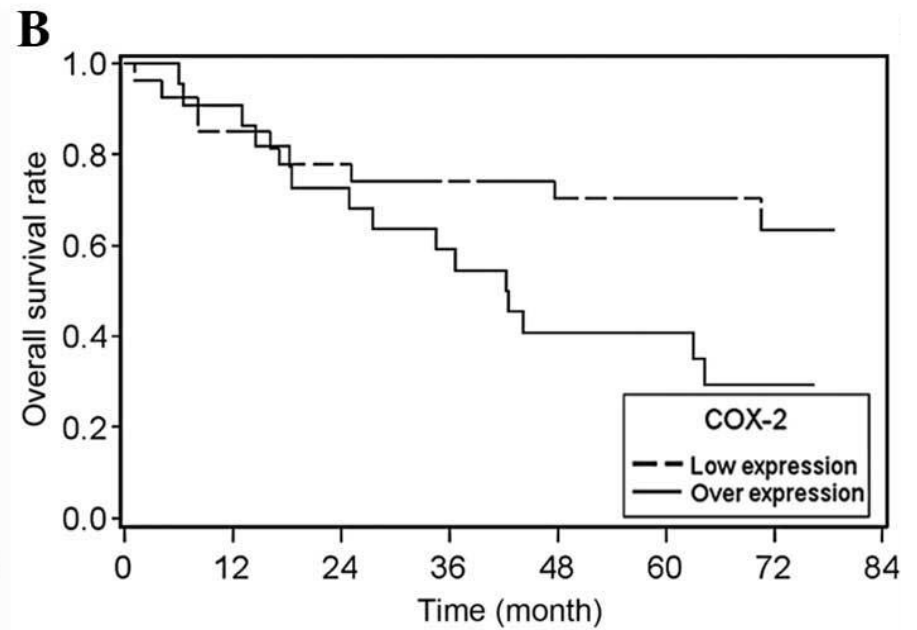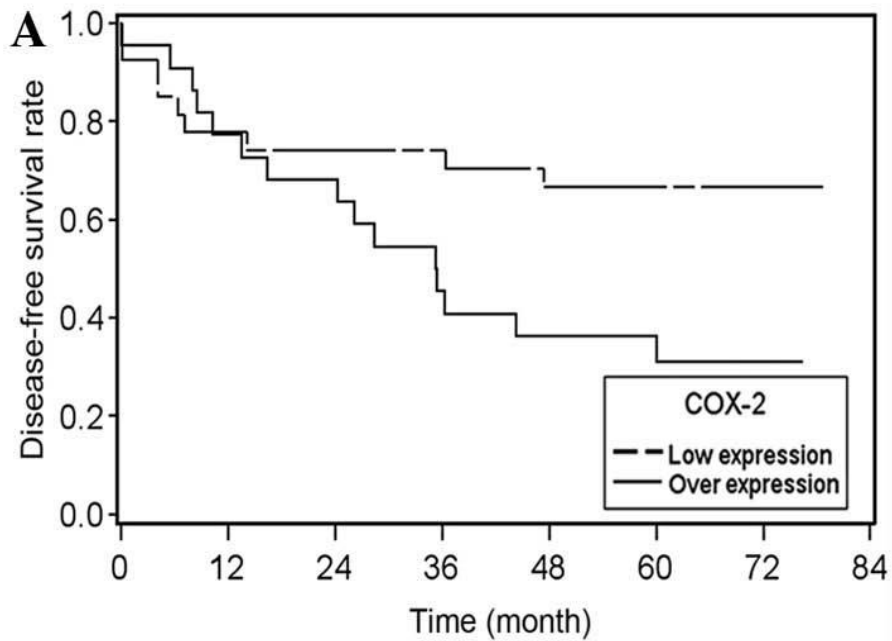# Molecular techniques making the move to the clinic

mRNA

Protein

Why do we need the underlying molecular process?

The Molecular Knowledge Database

Any monkey can follow a flowchart