

HISTORY OF ANATOMY

Lect. Dr. Orhan Önder
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01

Survey

02

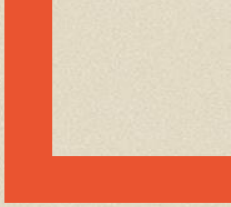
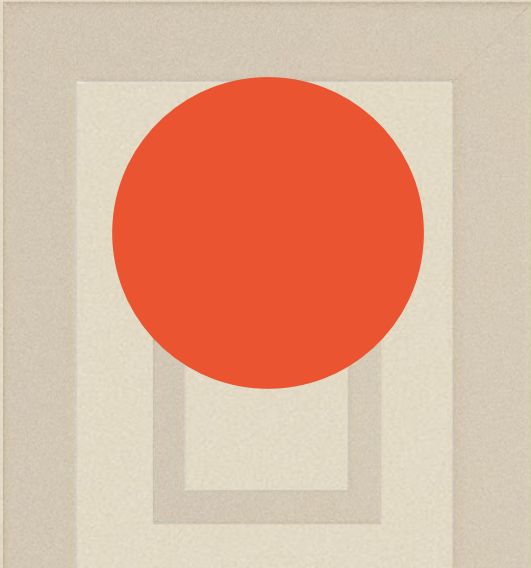
What is Anatomy

03

**Milestones and
stars of the
history of
anatomy**

04

Final Remarks

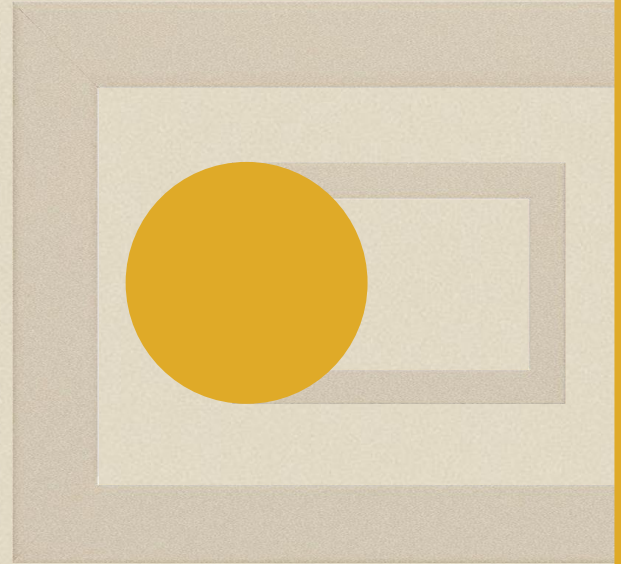




SCAN ME

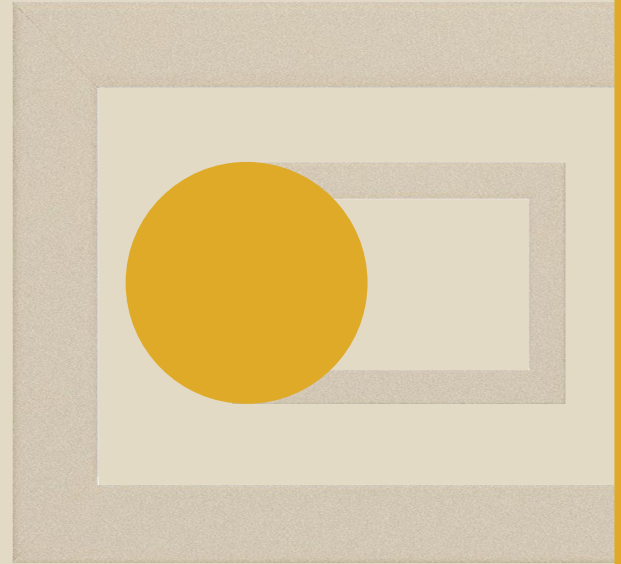
What is Anatomy

a field in the biological sciences concerned with the identification and description of the body structures of living things

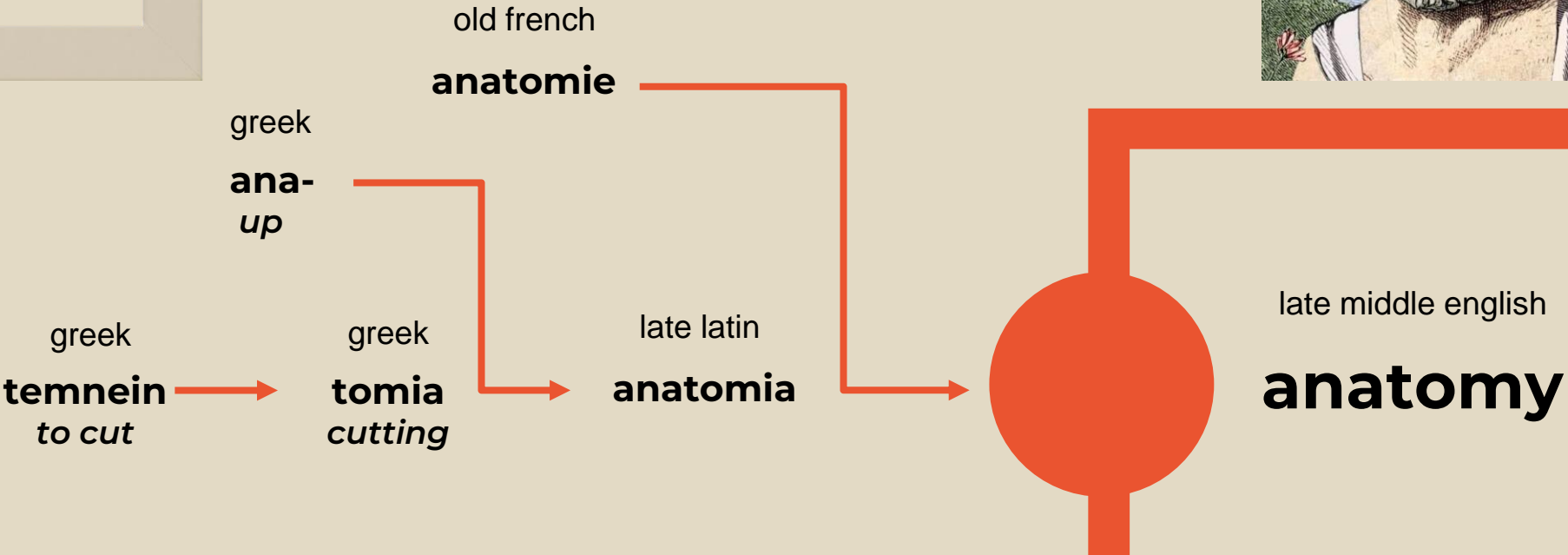
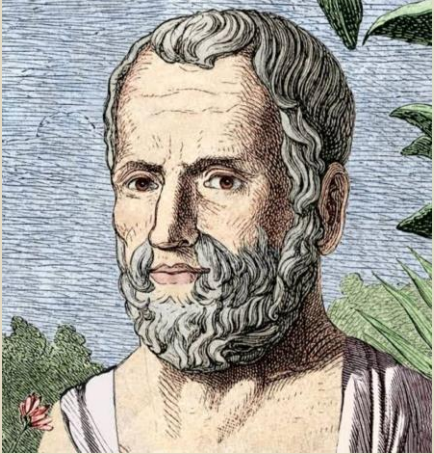


Gross vs. Microscopic

- Gross anatomy involves the study of major body structures by dissection and observation and in its narrowest sense is concerned only with the human body.
- “Gross anatomy” customarily refers to the study of those body structures large enough to be examined without the help of magnifying devices, while microscopic anatomy is concerned with the study of structural units small enough to be seen only with a light microscope



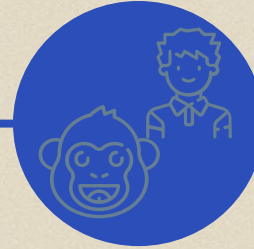
The earliest record of its use was made by the Greeks, and Theophrastus called dissection “anatomy,” from *ana temnein*, meaning “to cut up.”



Methods of obtaining knowledge



Dissection of Animals
and Humans



Vivisection of
Animals and
Humans



Modern methods

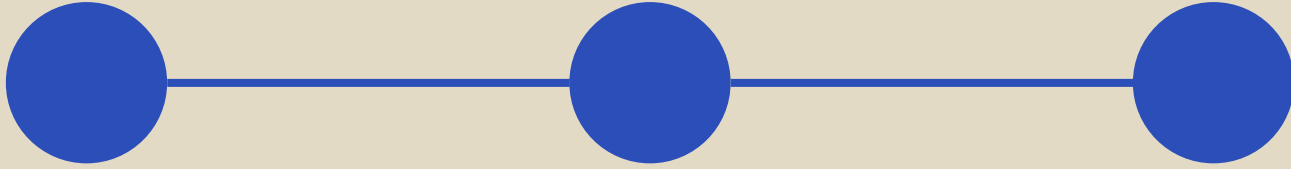


*“hence we have to refer to those of
other animals, the natural structure
of whose parts those of man
resemble, and examine them”*

—ARISTOTLE



TIMELINE

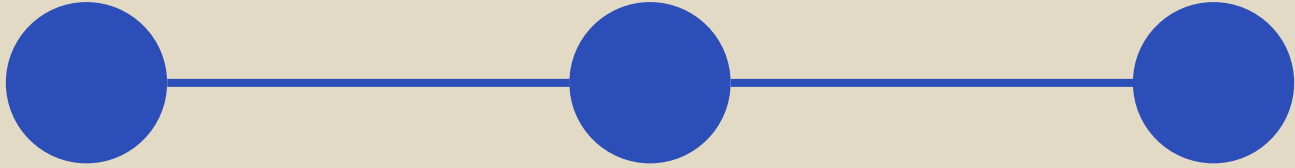


Ancient Egypt

Greek Era

Roman Period

TIMELINE



Medieval Ages

Reneissance

**17th - 20th
centuries**

Ancient Egypt

1800-1600 BC

- **Edwin-Smith papyrus:** cases of injuries with oldest known surgical intervention descriptions; shows heart and its vessels, spleen, liver, kidneys, bladder
- **Ebers papyrus:** treatment on the heart; "source of blood supply, vessels attached for every member of the body"



Ancient Egypt

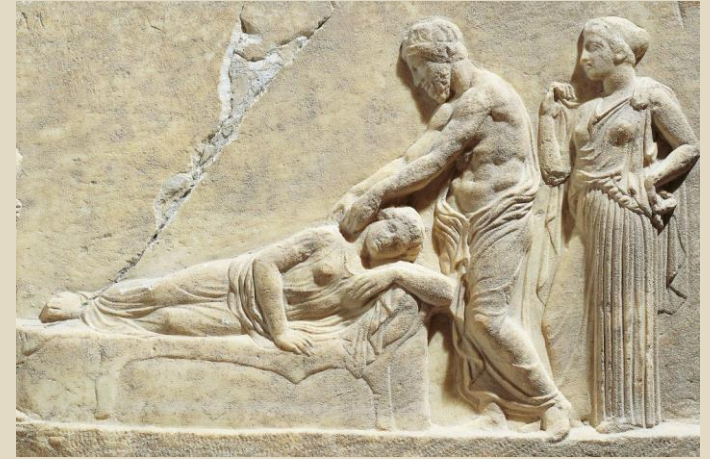
1800-1600 BC

- Mummification
- Dates back to 3500 BC
- After removing the brain and the internal organs, washed and infused body left in watered sodium carbonate or potassium nitrate first and then waxed



Ancient Greek medicine

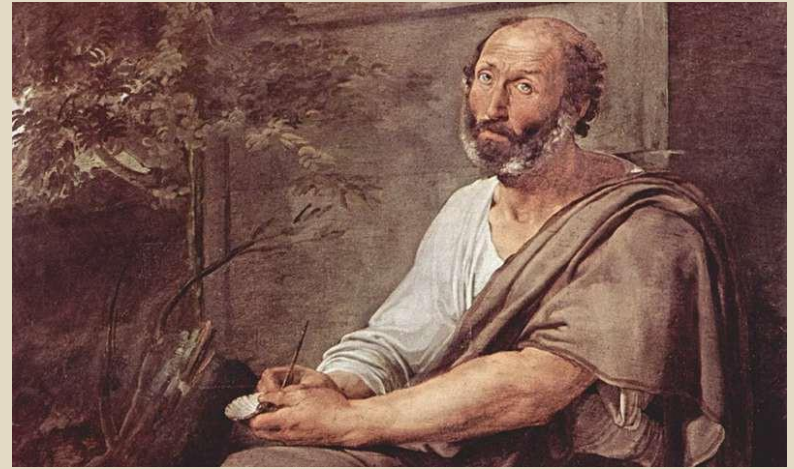
Alcmaeon, BC 500



- thought that the sensory organs were connected to the brain by channels (***poroi***) and may have discovered the ***poroi*** connecting the eyes to the brain (i.e. the optic nerve) by excising the eyeball of an animal
- Medical and clinical texts from different physicians in "***Hippocratic Corpus***"

Ancient Greek medicine

Aristotle, BC 384-322



- "History of Animals", "Parts of Animals", named around 500 different animal species by dissection
- Accepted by many as the founder of comparative anatomy work
- He founded the anatomical discipline on precise descriptive and scientific ground

Ancient Greek medicine

**Herophilos (about 325 BC),
Alexandria (born in Kadıköy)**

- Performed *vivi-sections* (dissections of living humans) and dissections of human cadavers, "*On Dissections*"
- Circulatory system work: defined arterial and venous circulation
- Central nervous system work: regarded brain as the center of it; described cerebrum, cerebellum, fourth ventricle
- Terms like *retina* and *duodenum* were established by him, also discovered the Fallopian tubes



Ancient Greek medicine

**Erasistratos, 304-250 BC, Alexandria,
student of Herophilos**

- Performed autopsies to identify reasons of death
- Tried to define reasons of weight loss in humans, which led him to define digestion and tissues as a combination of arteries, veins and nerves
- Distinguished sensory from motor nerves
- Distinguished pulmonary and systemic blood circulation



Ancient Roman medicine

Galen (of Pergamon), 129 – ca. 216

- His views dominated Western medical science for more than 1,300 years
- Theorized on many medical subjects like anatomy, physiology, pathology, symptomatology and treatment



Ancient Roman medicine

Galen (of Pergamon), 129 – ca. 216

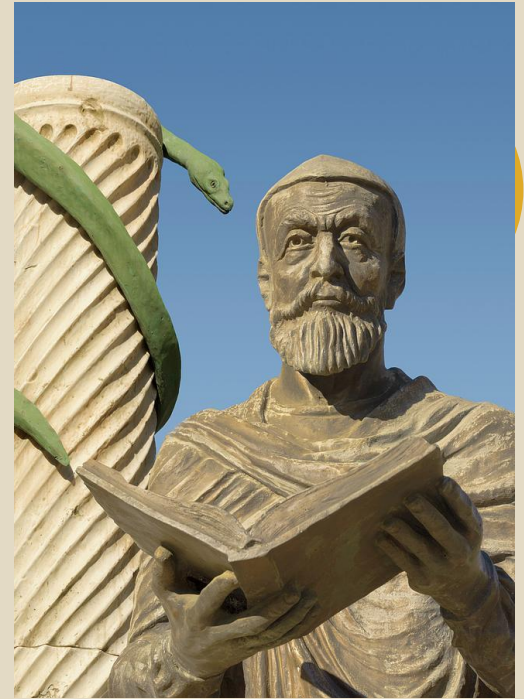
- Treated gladiators as surgeon during early career, emigrated to Rome in 160s
- Anatomical dissections on alive and dead animals, since Roman law prohibited dissection on human cadavers



Ancient Roman medicine

Galen (of Pergamon), 129 – ca. 216

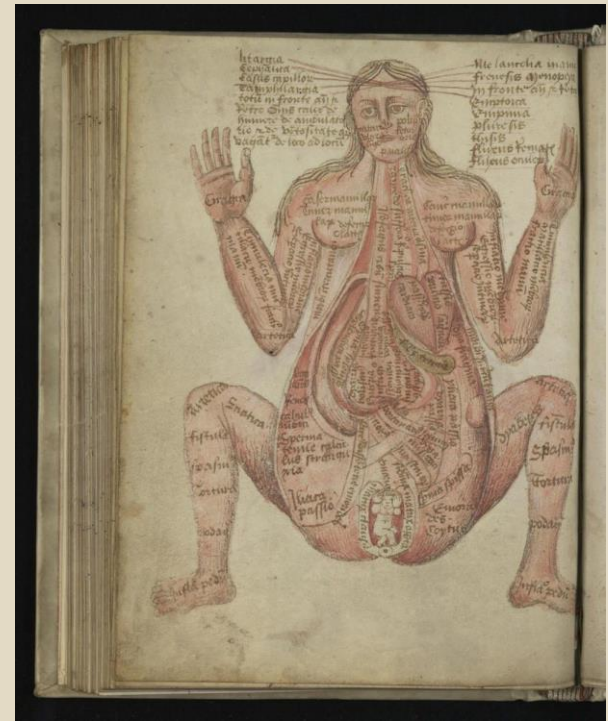
- First physician to show the differences between venous and arterial blood, but thought that they were completely separate from each other
- Interpreted his findings on respiration and circulation in a wrong and complicated way
- Still remained as an unchallenged authority in his lifetime, and his work established a legacy that continued for over a thousand years



Ancient Roman medicine

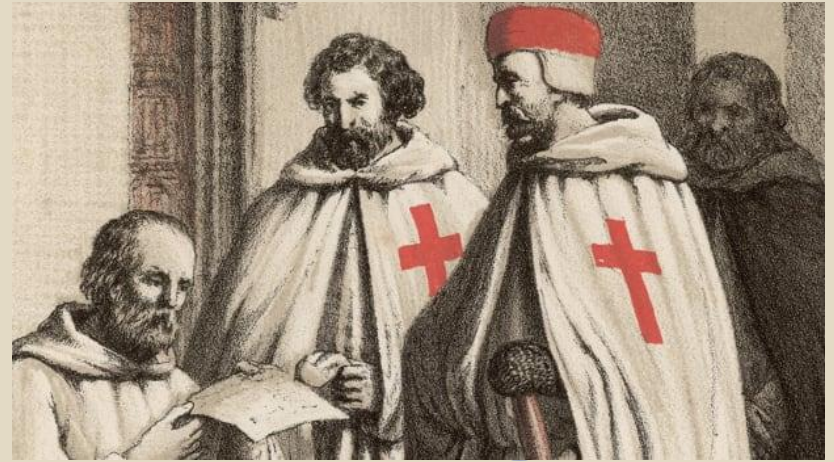
Galen (of Pergamon), 129 – ca. 216

- Described human spinal cord and the vertebral column
- Explained the difference between motor and sensory nerves
- Defined the nerves coming out of spinal cord, the effect of injury on spinal cord at different levels



Medieval ages

- Fall of Roman empire, science became stagnant in Europe
- In Islamic civilizations the Greek and Roman Works have been translated and propagated.
- Sabit bin Kurra and Ishaq bin Huneyn translated 129 of Galen's works into Arabic
- Founding of universities in Europe – Padua, Bologna, Cambridge, Oxford, Paris

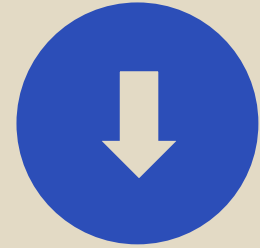


Renaissance

Age of Discovery/Exploration

- 15th – 16th centuries in Europe - transition from the Middle Ages to modernity
- Rediscovery of classical Greek philosophy
- New thinking became manifest in art, architecture, politics, science and literature

theocentric

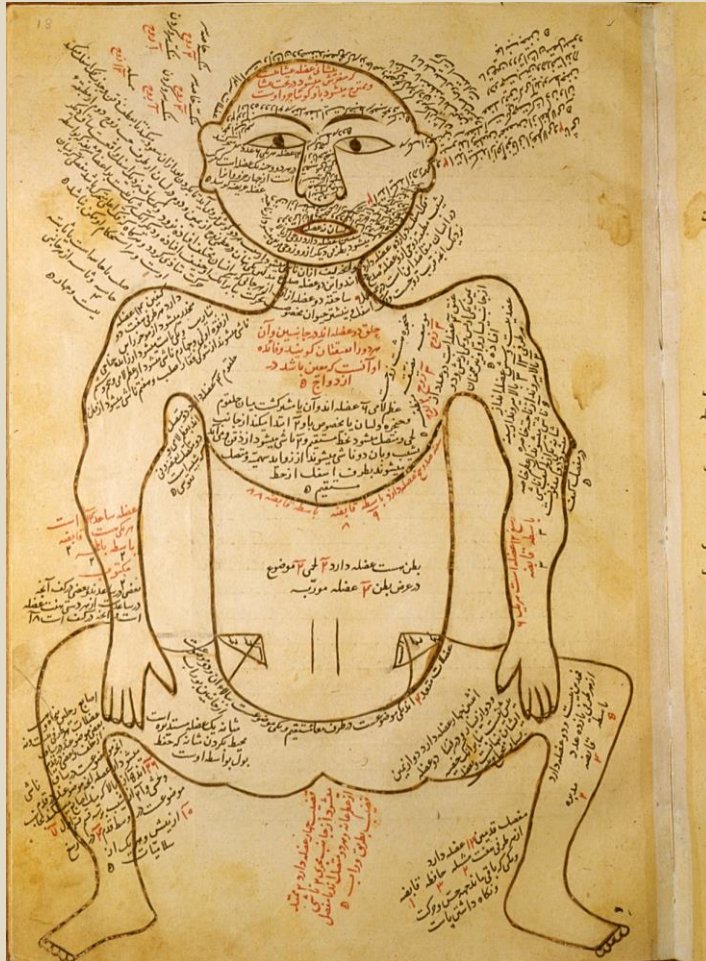
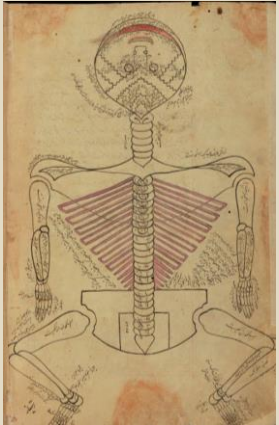


anthropocentric



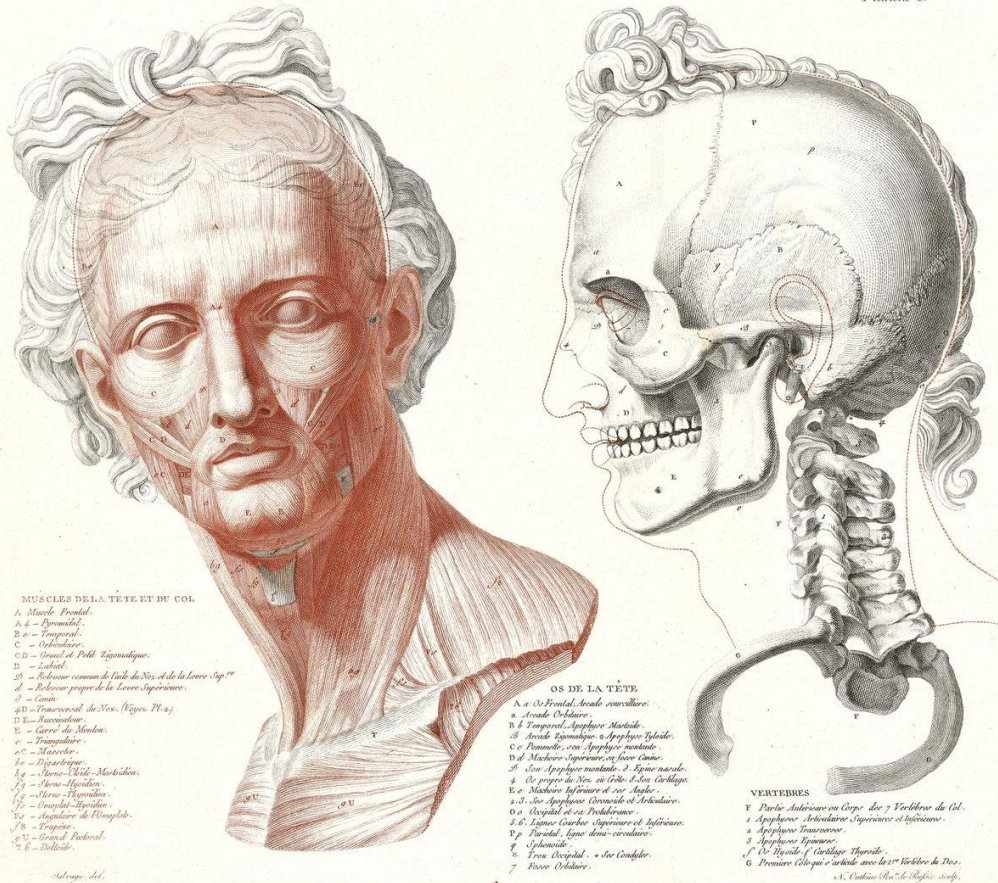
neo-galenists

Perspective



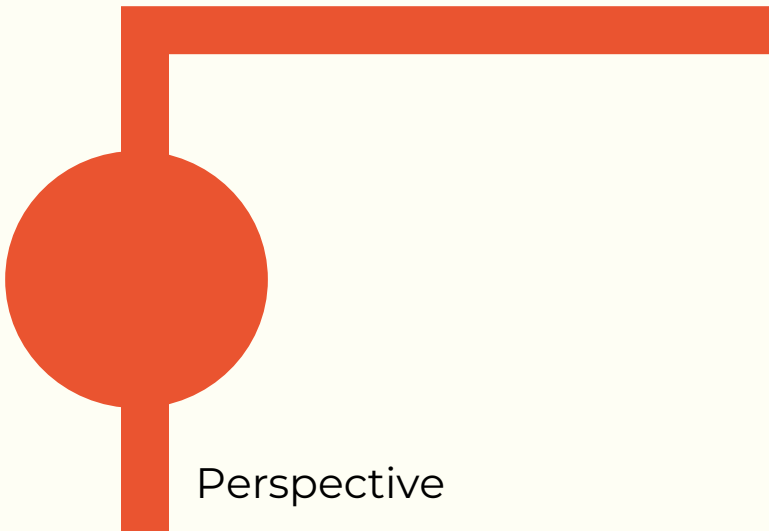
- The discussed the anatomy of the vital and respiratory organs, and then the anatomy of the organs of nourishment, perception, and finally, reproduction
- the first color atlas ever created.

Mansur's Anatomy (tashrih-i Mansoor)



An anatomical rendering of the head of the Apollo Belvedere by Jean-Galbert Salvage, 1812.

GETTY RESEARCH INSTITUTE, LOS ANGELES

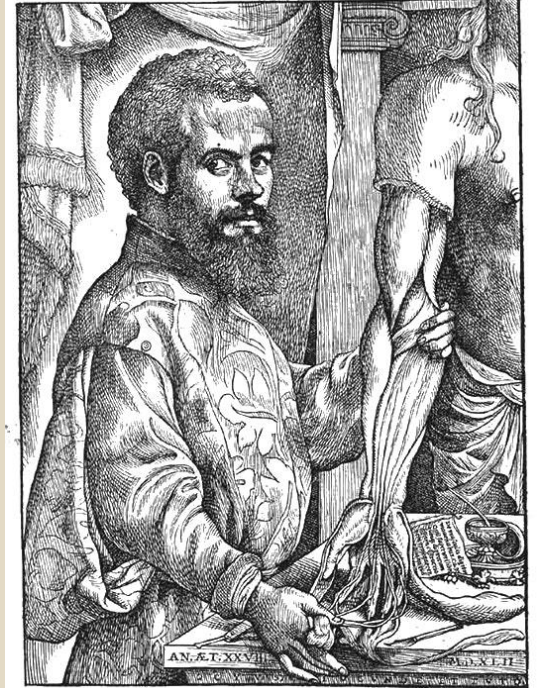


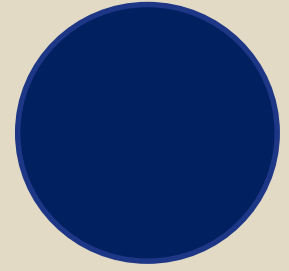
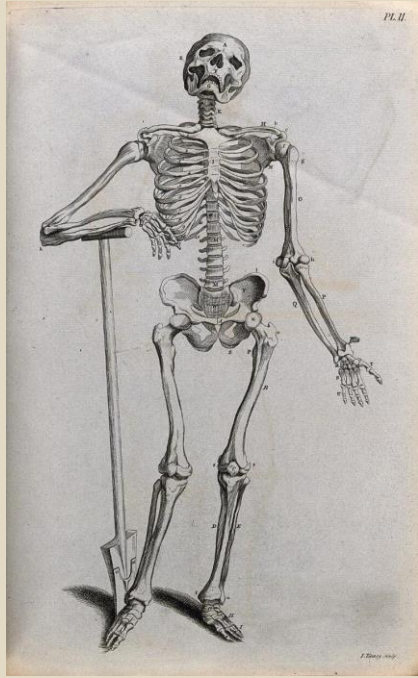
Perspective

Renaissance

Andreas Vesalius, 1514 - 1564

- Worked in Padua
- "*De Humani Corporis Fabrica*" (Fabric of the Human Body) - 7 volumes, 1543
- Revolutionised the teaching of anatomy, challenged hundreds of Galen's erroneous concepts
- Father of modern anatomy



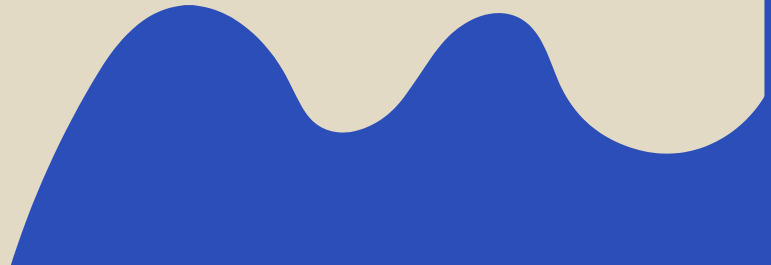
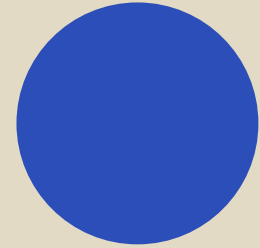


De Humani Corporis Fabrica

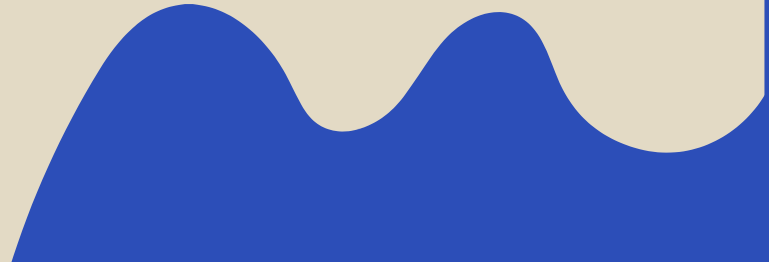
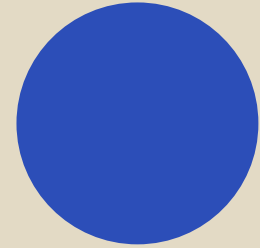
Renaissance

Andreas Vesalius, 1514 - 1564

- By the time of Vesalius, Church Laws had been relaxed and limited dissections were permitted; Vesalius worked on cadavers of executed criminals with permission
- Anatomists and doctors would have to change the way that looked at the human body and hence their methods of treating patients



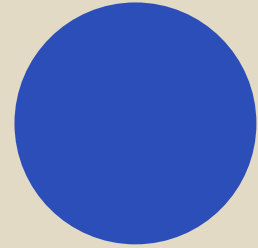
Resurrectionists



Renaissance

William Harvey, 1578 – 1657, English
anatomist

- Conducted experiments ' on the motion of heart and blood in animals
- Suggested **continuous circulation** of blood with in vessels
- Demonstrated that blood circulates and does not flow back and forth through the same vessels
- Credited for providing physiological (functional) orientation to anatomy

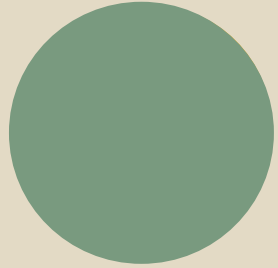


“The heart of animals is the foundation of their life, the sovereign of everything within them, the sun of their microcosm, that upon which all growth depends, from which all power proceeds.”



17th – 18th centuries

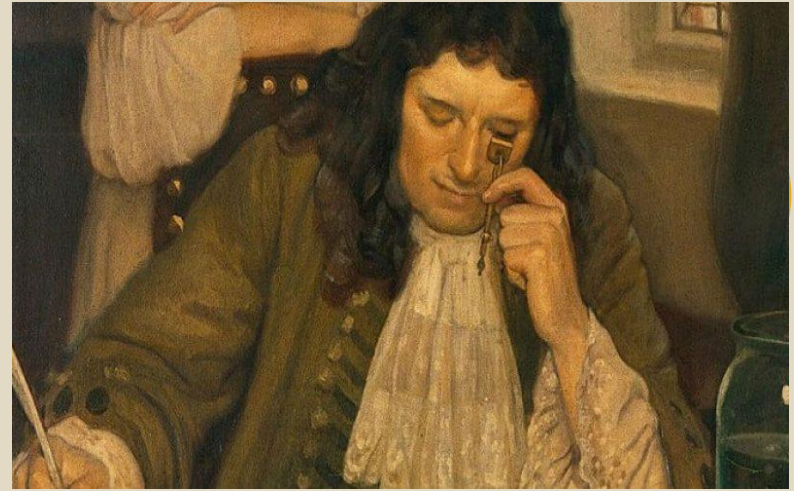
- Development of microscopical technique
- Robert Hooke, Jan Swammerdam, Marcello Malpighi, Anton van Leeuwenhoek – Development of "The Cell Theory"
- Robert Hooke:
 - Originator of the Word "cell"
 - "Micrographia" – 1665
 - 30x microscope



17th – 18th centuries

Anton van Leeuwenhoek, 1632-1723

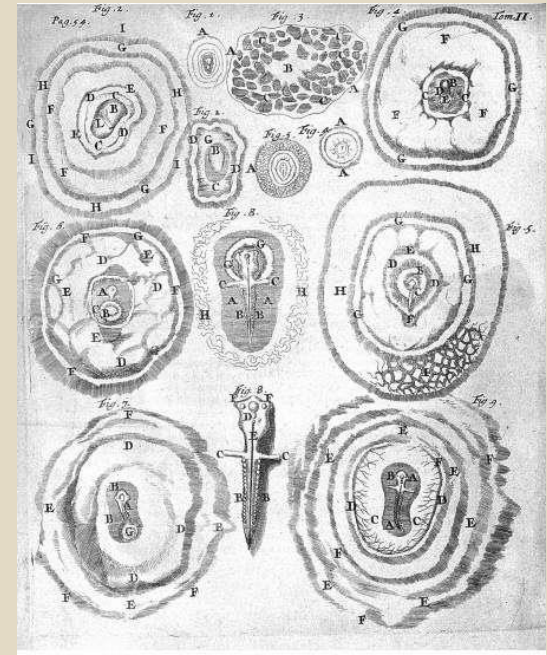
- Ground his own lenses
- Did detailed drawings of microorganisms enlarged up to 2000 diameters



17th – 18th centuries

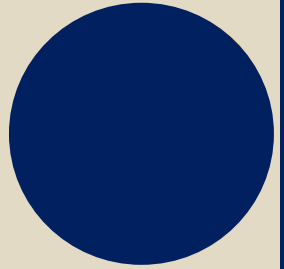
Malpighii, Italian anatomist, 1628 - 1694

- "Father of Histology"
- Defined the capillary vessels
- His name is associated with malpighian corpuscles of the kidney and malpighian bodies of the spleen

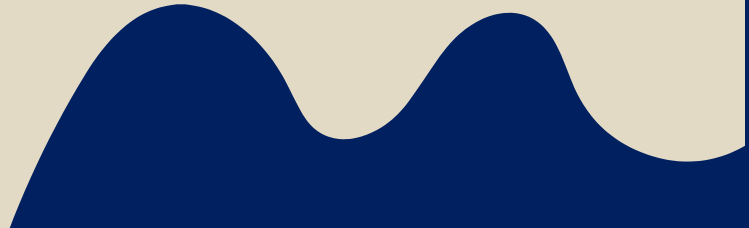
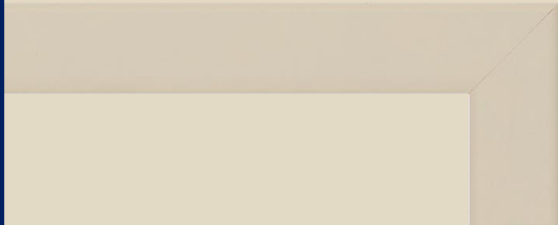


19th – 20th centuries

contribution to Cell Theory



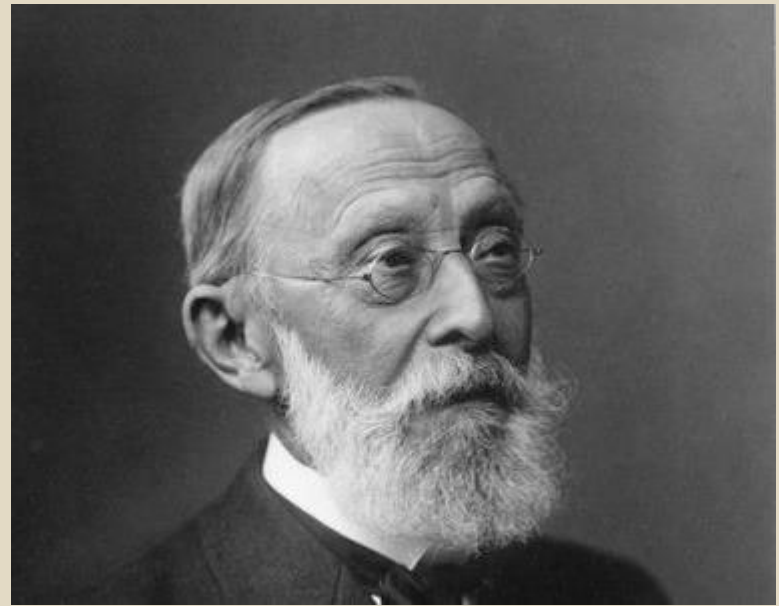
- The Cell Nucleus
 - Discovered by Robert Brown in 1833, in plant cells
- Cell theory propagated
 - Schleiden, botanist
 - *Contributions to Phytogenesis*, 1838



19th – 20th centuries

Rudolf Virchow, 1821-1902

- Pathologist, anthropologist,
- Applied cell theory to medicine
- "*Cellular Pathology*", 1858
- Studied diseased cells to associate abnormalities in cells with diseases
- "*Omnis cellula e cellula*«
 - all cells arise only from preexisting cells



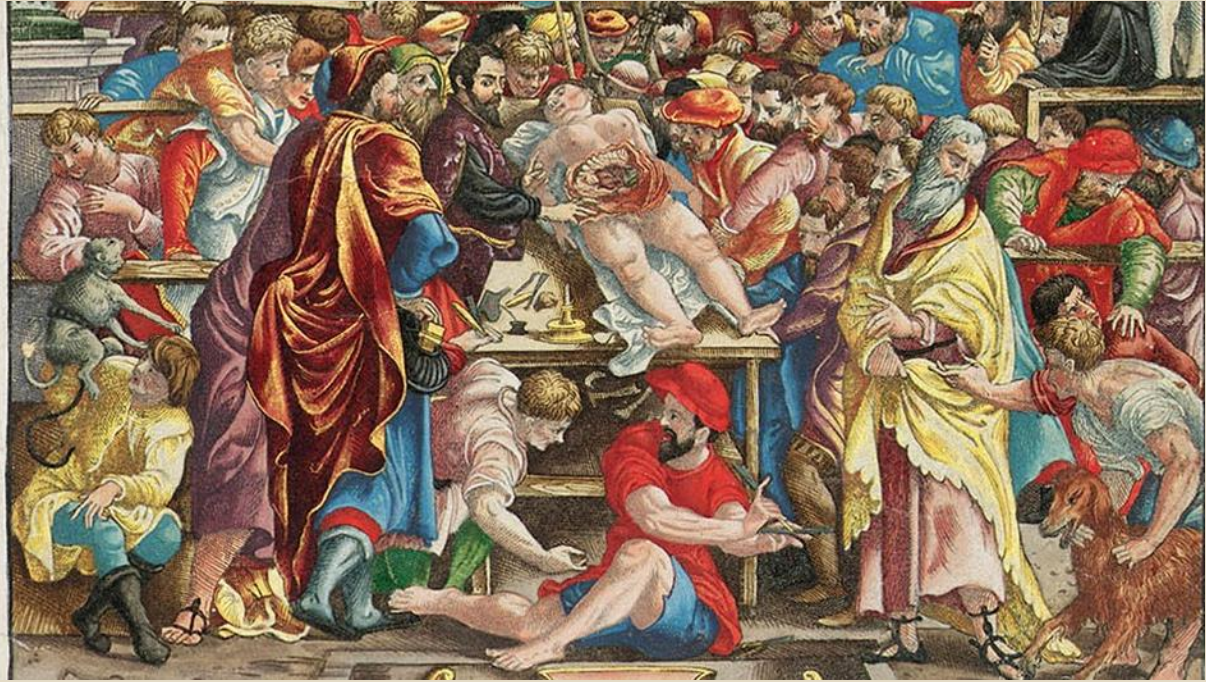


FINAL REMARKS

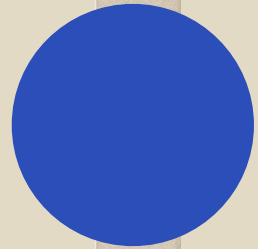


De Humani Corporis Fabrica

Front page







Mortui Vivus Docent

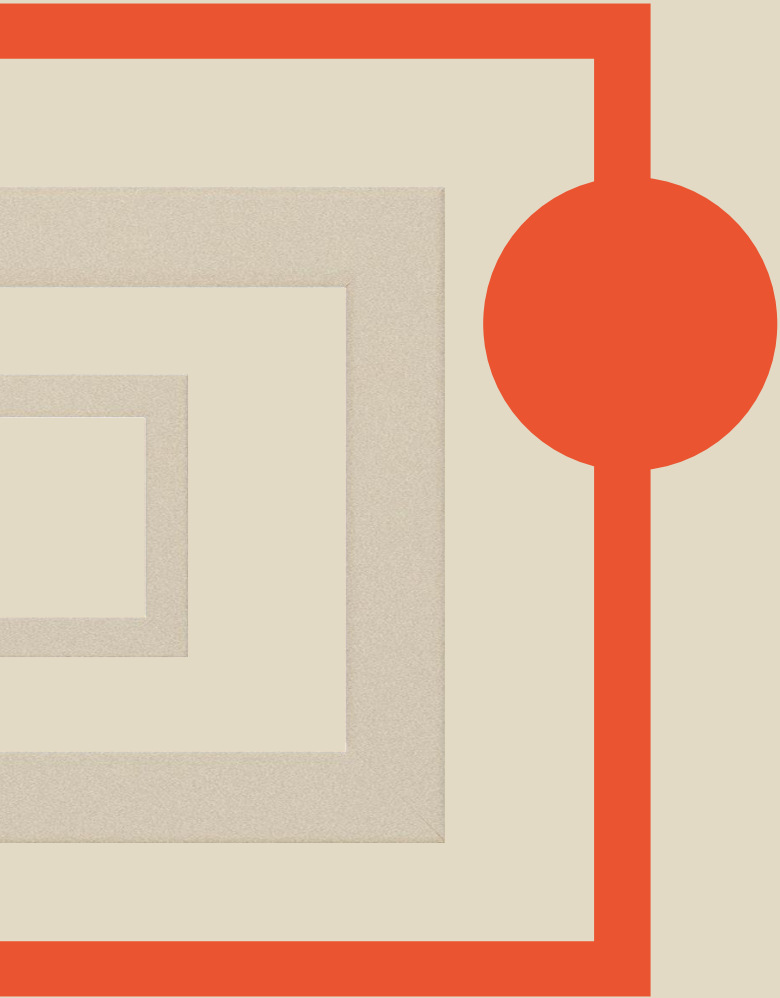
THANKS

Does anyone have any questions?



orhnonder@gmail.com

orhan.onder@marmara.edu.tr



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