Introduction to anatomy

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Definitions

- **From Greek**: anatomia or anatome i.e. « cut through » or « **dissect** »
- **Paturet (1951)**: It is the « science which aims **to study constitution of organized beings** »
- **Rouvière**: It is the « science of body structures »
- **De Ribet (1961)**: It is the « science which aims **to study form, reciprocal relationships and the final structure of organized bodies, among them: human** »

Why study it ?

- **Vesalius** (1543): anatomy « should absolutely be considered **the only solid basis of all the art of medicine »**

- **Paturet (1951)**: « The study of human anatomy has **a considerable practical interest** because it interests not only the practician and the surgeon but also the artist, biologist, physiologist, anthropologist; it is above all the basic science, the fundamental science of medical studies, **that on which the study of physiology, clinical sciences and surgical techniques is based »**

Branches of anatomy

Branches of anatomy

Descriptive or explanatory anatomy

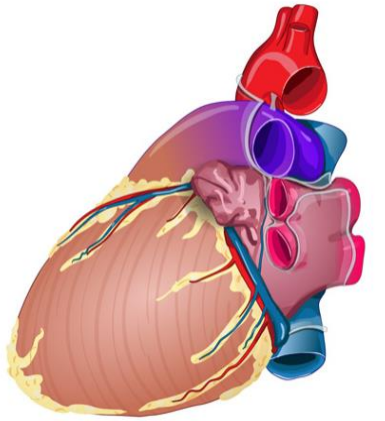
Analytical study of the morphology of separate organs (shape, dimensions, weight, consistency, color, structure…).

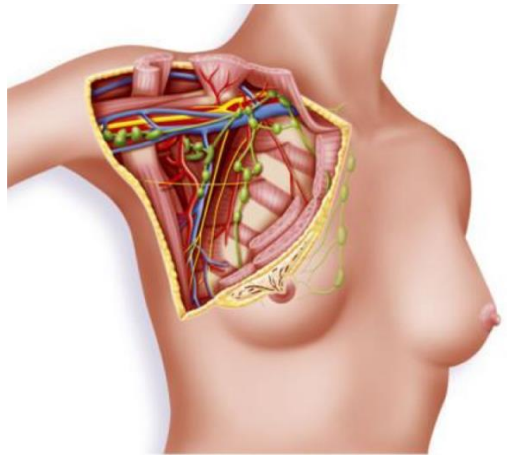
This is the basic study in anatomy.

Topographic or regional anatomy

Study of the situation and relations of organs between them in the same anatomical region.

This is the basic study in surgery.

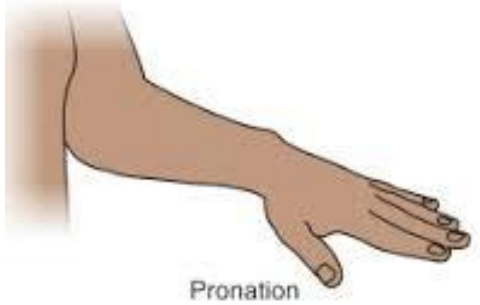




Branches of anatomy

Functional anatomy

Study of the functions of the organs and its relations with the morphology.



Medico-surgical or applied anatomy

It is an anatomy applied to clinical sciences and surgery.

Comparative anatomy

Study of the relationships existing between the homologous structures of all animals including Human either between individuals (ontogenesis) or between species (physiogenesis).

Branches of anatomy

Developmental anatomy

Study of the functions of the body's morphological transformations from fertilization to adulthood.
It includes prenatal development (embryology, fetology,) post-natal development (growth) and teratology (congenital abnormalities).

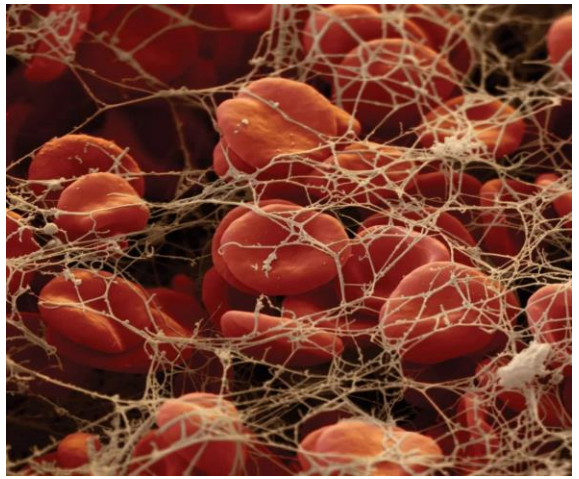
Branches of anatomy

Pathological anatomy

Study of the alterations of the anatomical structures caused by diseases.

Microscopic or structural anatomy

Microscopic study of the structure of cells (cytology) and tissues (histology).



Branches of anatomy

Radiological anatomy

Study of morphology that helps imaging techniques (x ray, MRI, CT, scintigraphy…)

Surface or artistic anatomy or of forms

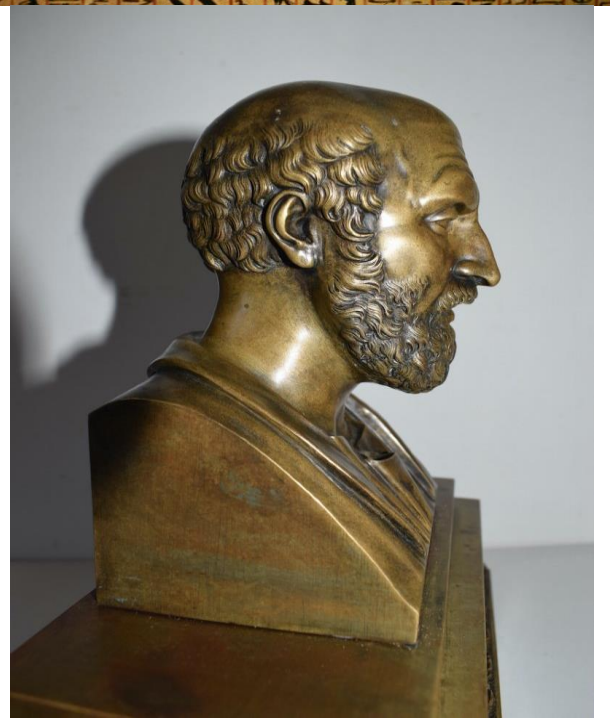
Study of external forms of the human body.
It is intended for sculptors, engravers and painters.

History and evolution of anatomy

History of anatomy

- **3000 before J-C**: **first anatomical descriptions on papyrus** (heart, blood, liver…). In addition, the mummification of bodies testifies to their knowledge of anatomy.

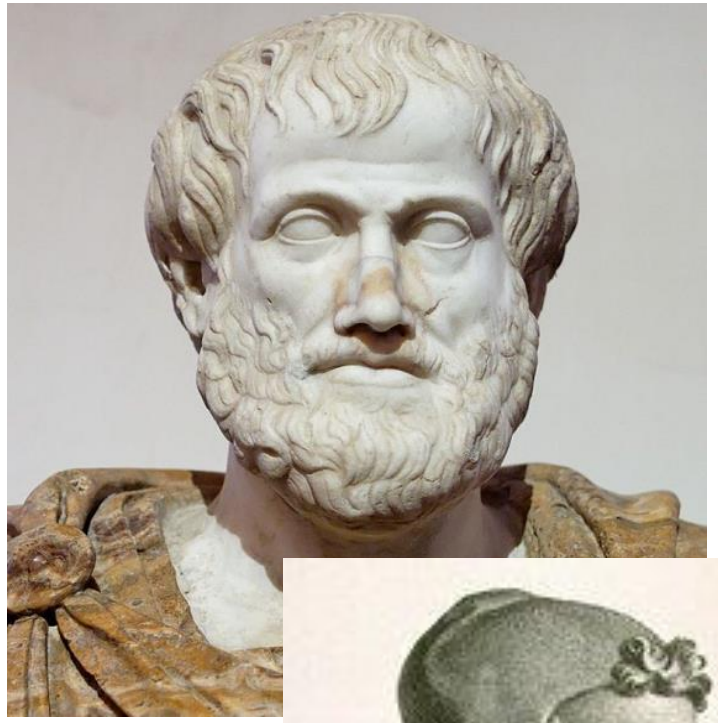
- **Hippocrates (460-377 BC)**: considered as « father of medicine », he has revolutionised medicine in ancient Greece, he has made medicine distinct and autonomous from other areas of knowledge such as philosophy to make it a profession, founder of the ethical rules for doctors through the Hippocratic Oath.

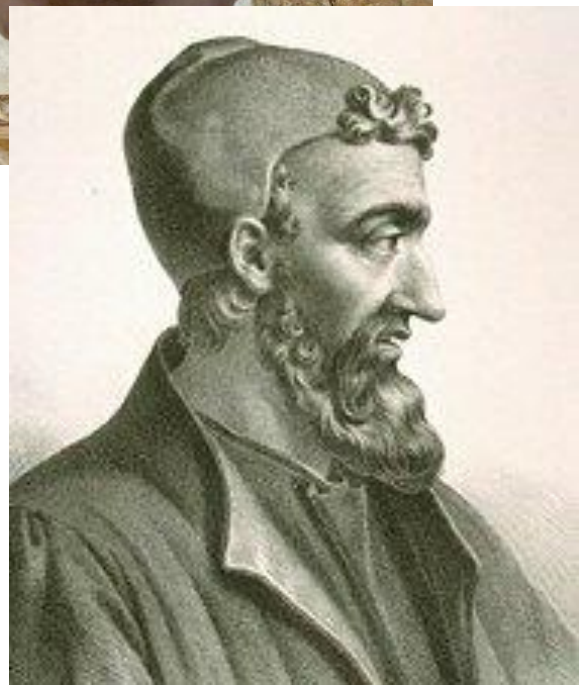


History of anatomy

- **Aristotle (384-322 BC):** founder of **comparative anatomy**, he used the term of anatomy for the first time.

- **Claude Galien (131-201 AC)** « prince of physicians »: teaches anatomy and writes on this discipline (500 publications). **Works on monkey.** He prohibited cadaveric dissection for religious reasons.

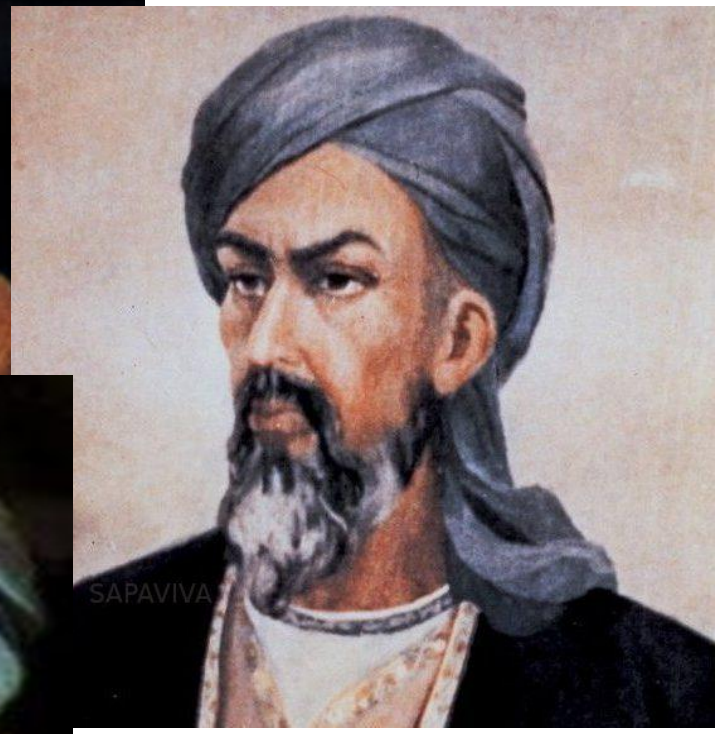


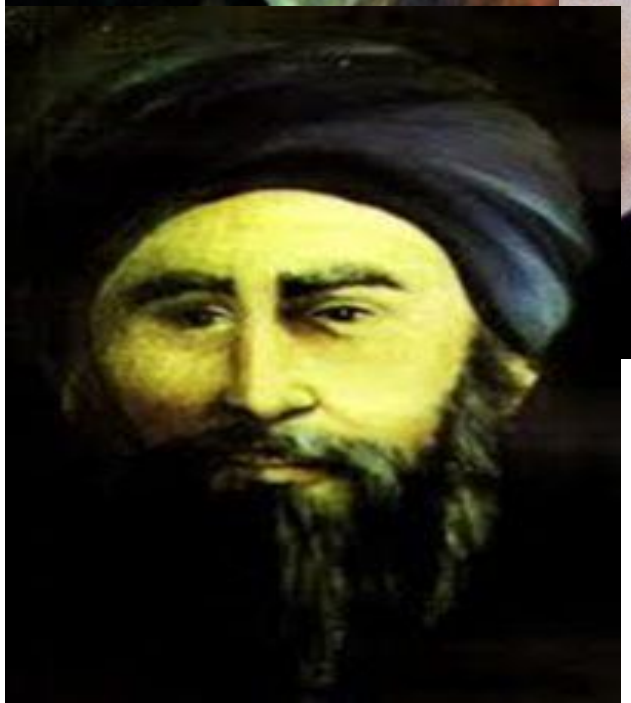


History of anatomy

Anatomy among muslims (from 10th to 13th century)

- **Ibn Al-Haitham (965-1040):** it was the first one who described the anatomy of the eye, he is known by his famous researches on lenses.
- **Ibn Sina (Avicenna) (980-1037)**: uses the corpses of the battlefields to dissect them and writes « The Canon of Medicine ».
- **Ibn Rochd (Averroes) (1126-1198)**: writes « Anatomy of the organs ».
- **Ibn an-nafis (1213-1288)**: reveals the first description of the pulmonary circulation and writes « Commentary on Anatomy in Avicenna's Canon ».

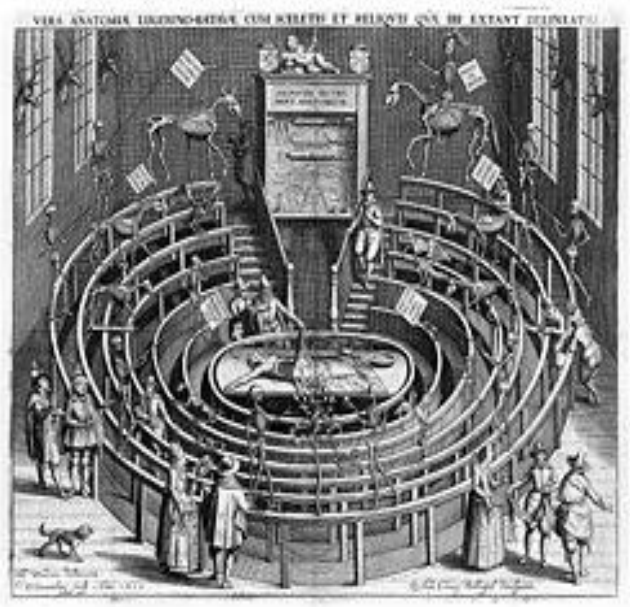




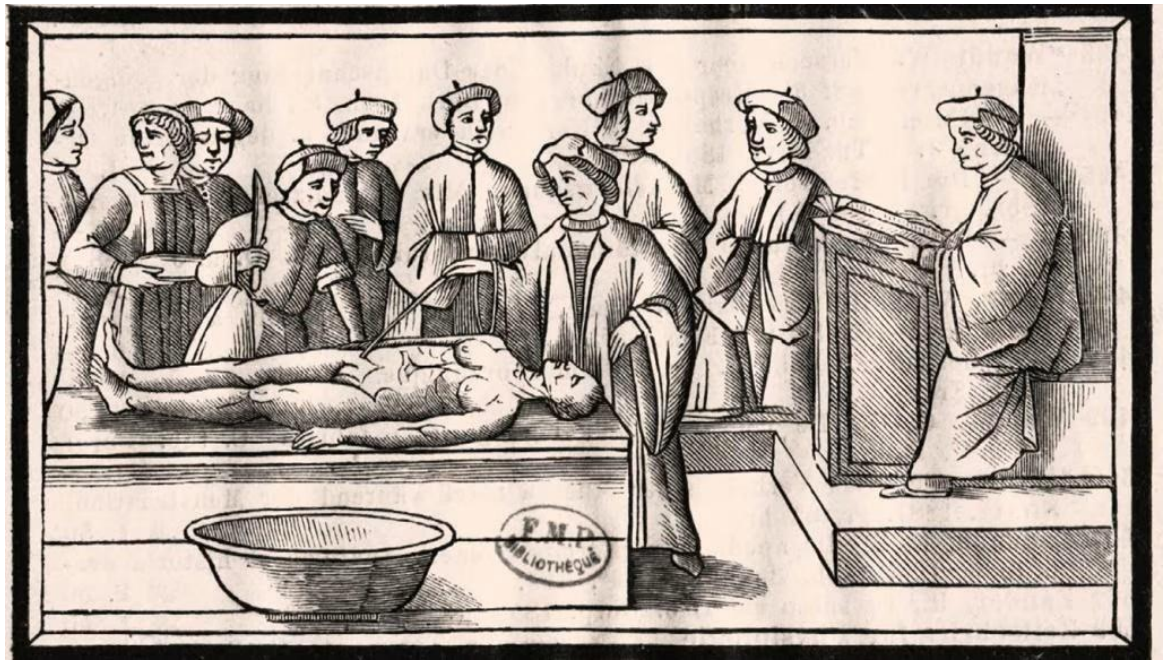
History of anatomy

The anatomy of the Renaissance (from 15th to 16th century)

- **Jacques Dubois (aka Sylvius) (1478-1555):** describes the middle cerebral artery.
- **André Vésale (1514-1564):** Professor of Anatomy. – Reference manual « De Humani Corporis Fabrica » published in 1543. **First public dissection.**



History of anatomy



Anatomy lessons in the 15th and 16th century

History of anatomy

Anatomy of the 17th century

- **William Harvey (1578-1657):** rediscovers and demonstrates pulmonary circulation.
- **Malpighi:** discovers capillaries.
- **Aselli, Pecquet:** discover and demonstrate the lymph drainage.

History of anatomy

Anatomy of the 18th century

- Birth of physiology, comparative anatomy, anthropology and biology.
- Foundation of pathological anatomy by Morgagni (1682-1771).

History of anatomy

Anatomy of the 19th century

- Period of histology where cell theory is demonstrated Development of topographic and surgical anatomy for the safety of amputations.
- Corti, Pacini, Golgi: carry out their works on neuroanatomy.
- Around 1890: use of formol as fixator.
- Conrad Röntgen (1845-1923): has discovered in 1895 x-rays.

History of anatomy

Current anatomy

- Anatomy becomes mainly applied, for medicine, imaging, surgery and teaching.
- 1993: project of visible man, it is a virtual human in 3D that allows you to see real human anatomy and this after the dissection of a death row in 1800 into thin strips

- **Anatomical models**

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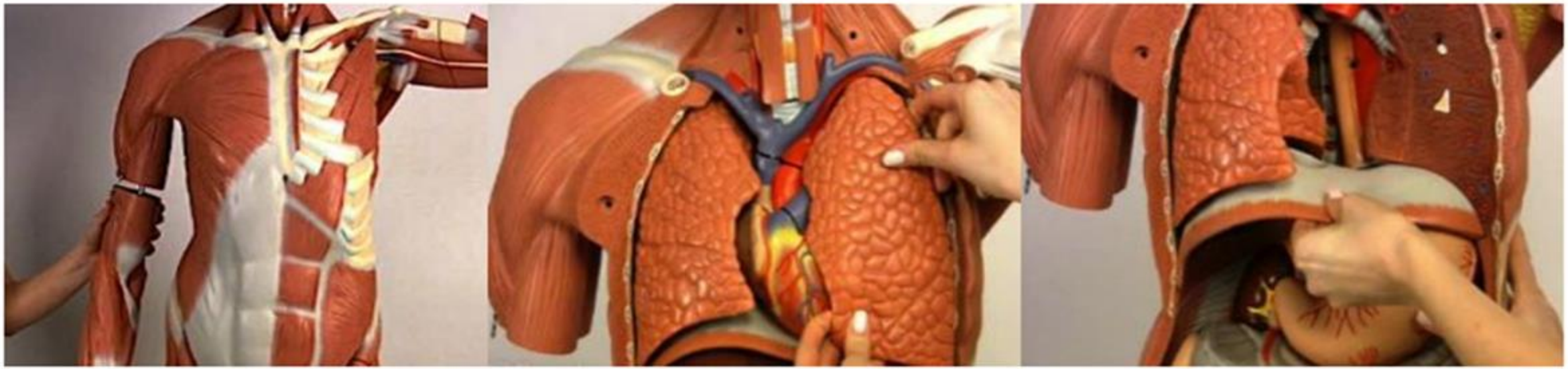

3B Scientific

- **Interactive softwares**

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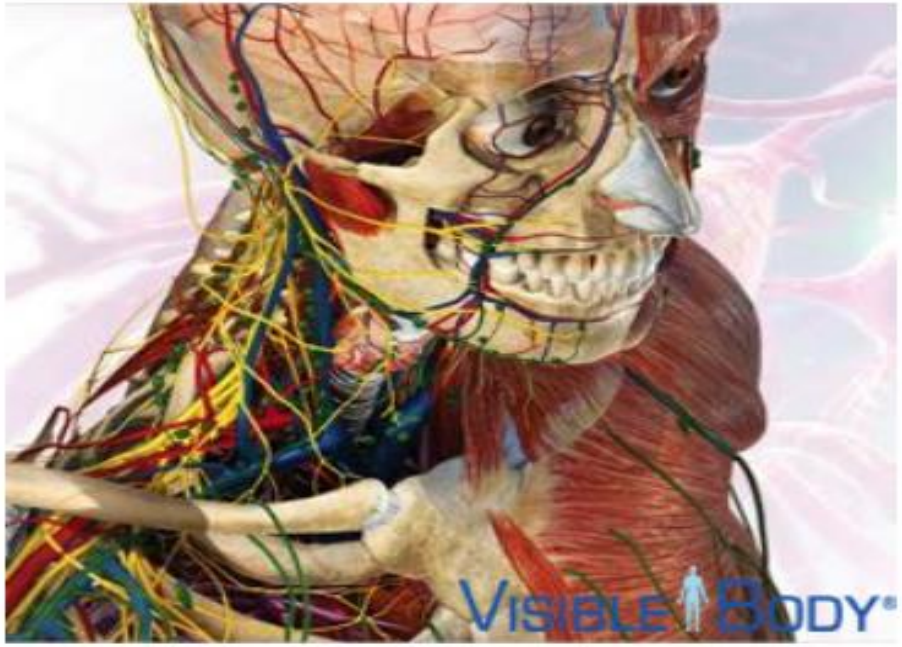

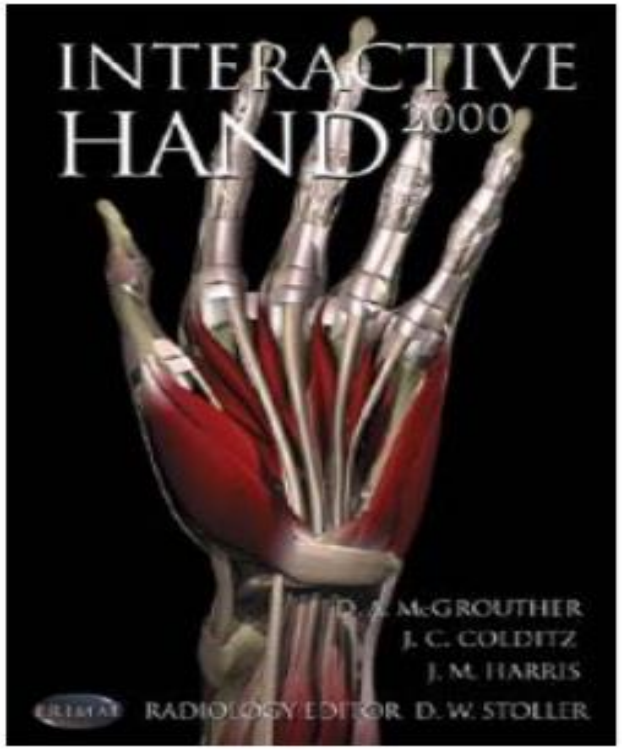

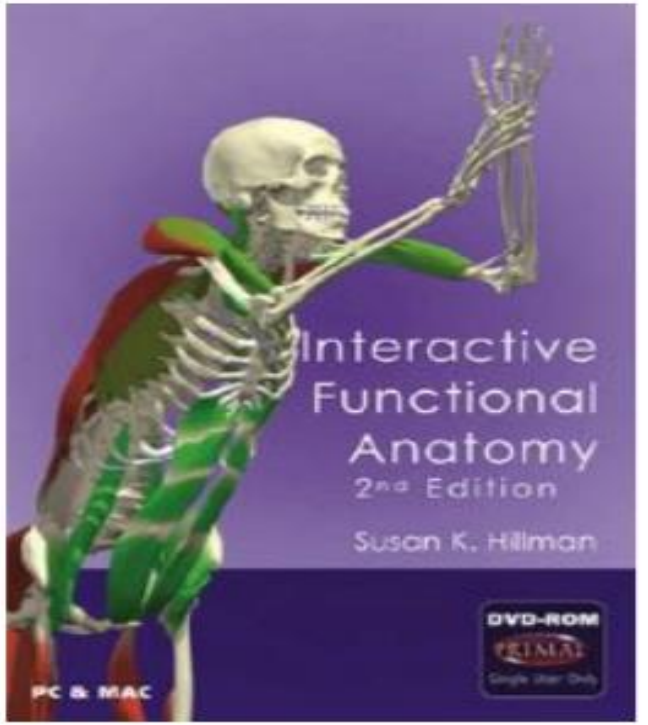

- **Virtual dissection table**

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Anatomage Table

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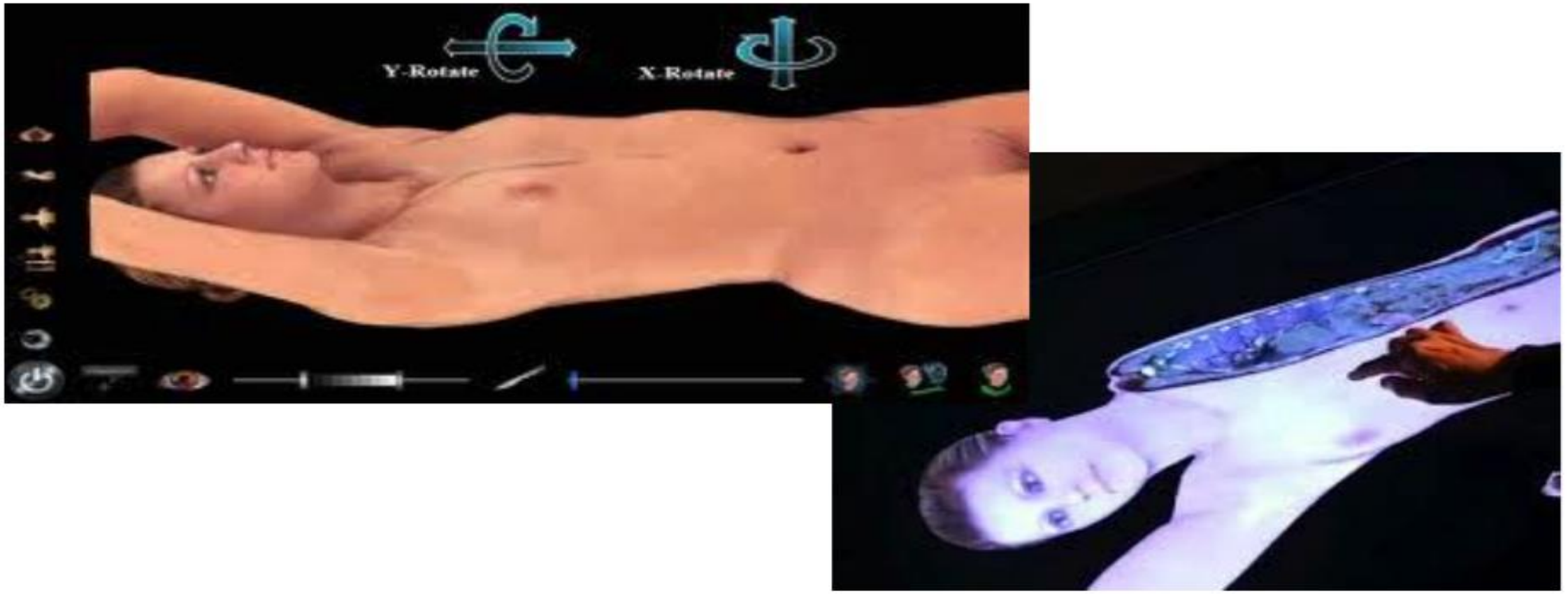

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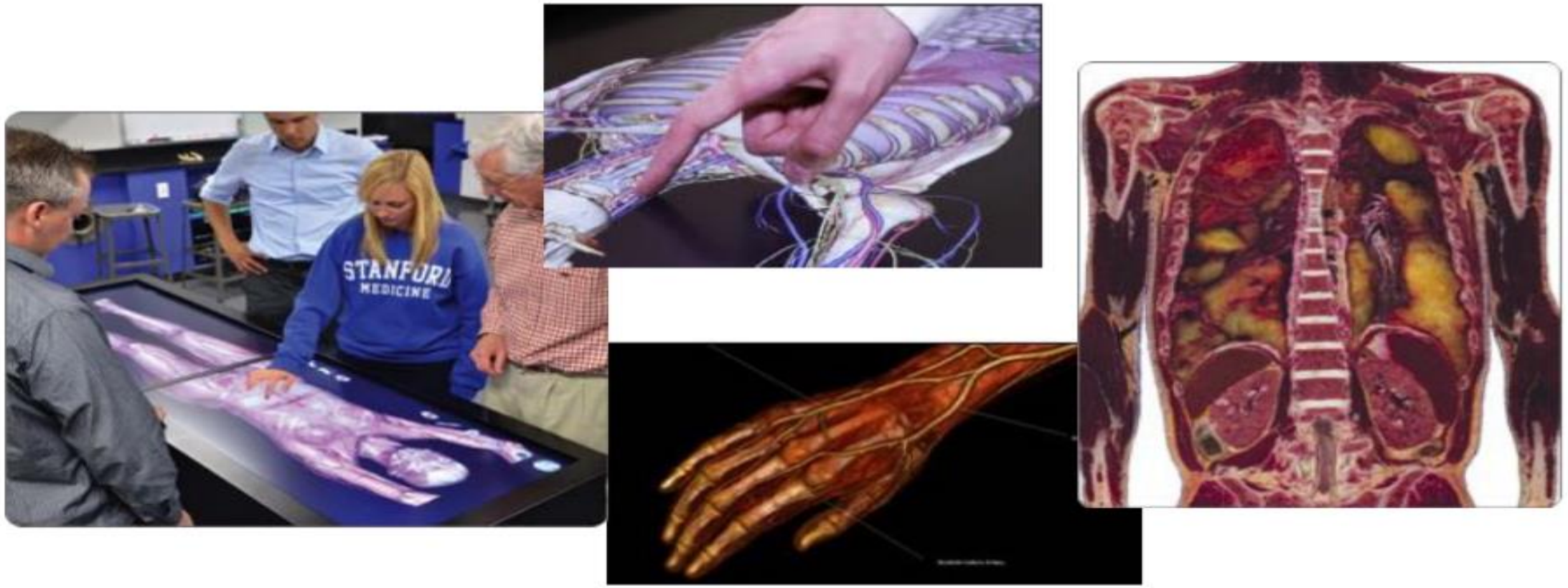

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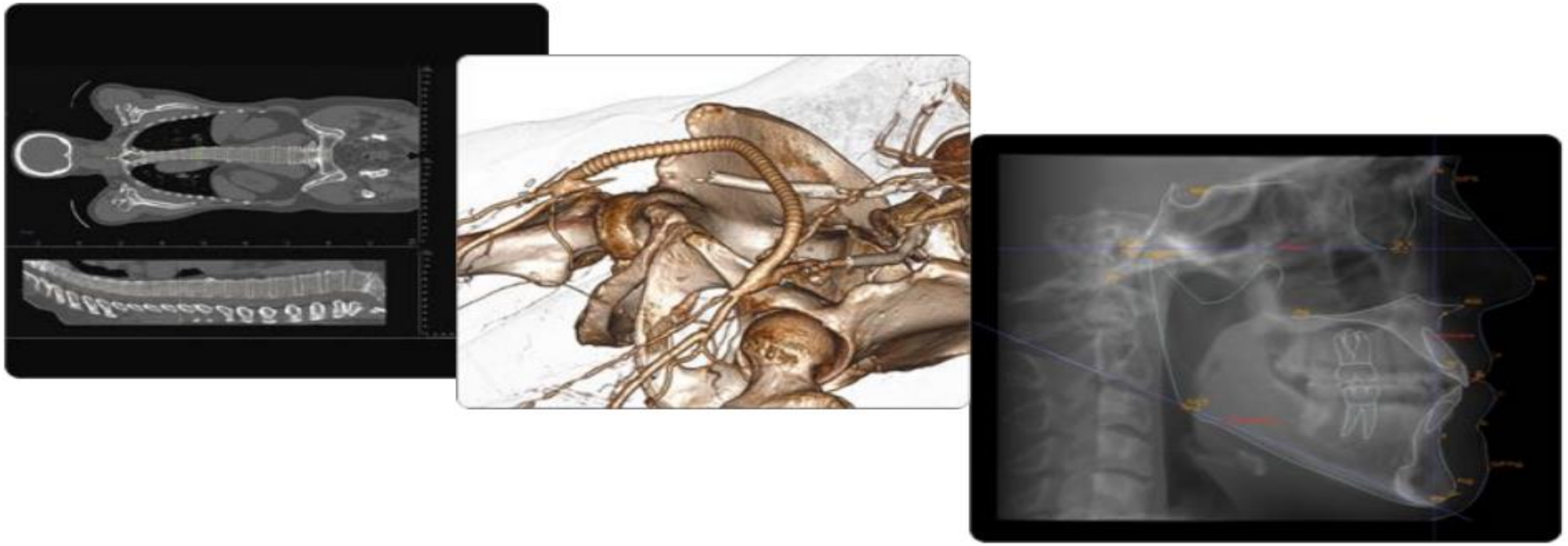

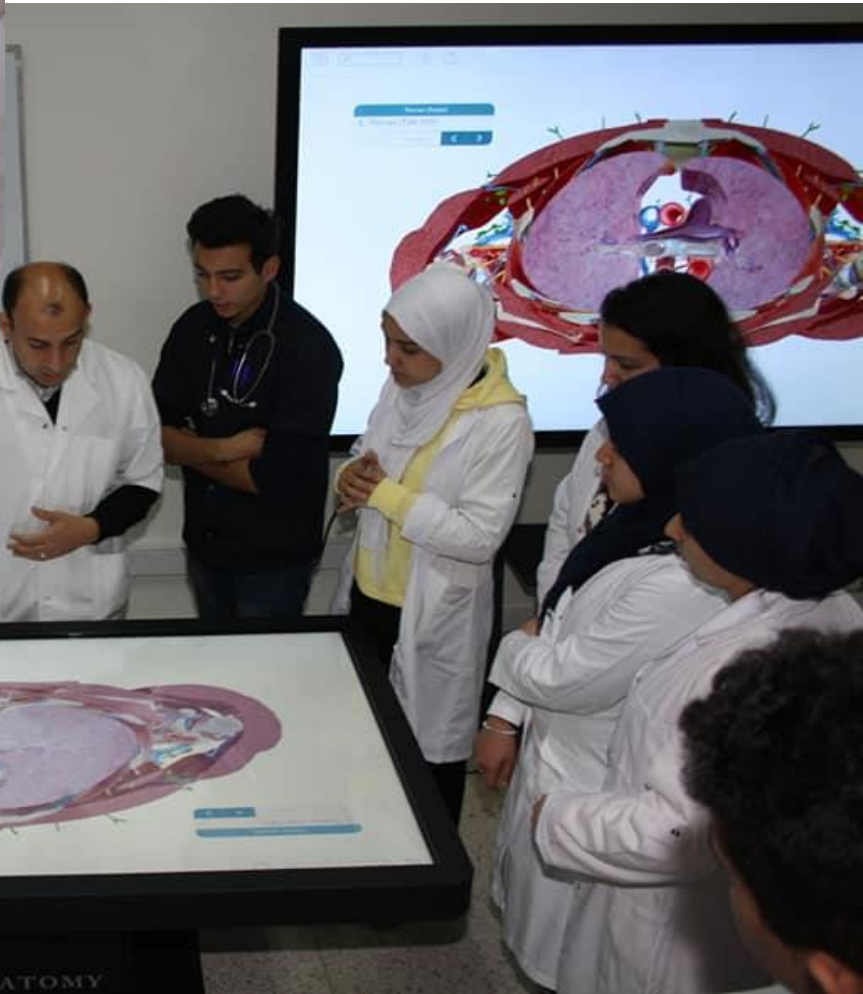

CYBER-ANATOMY

- **« Syndaver » synthetic human corpse**

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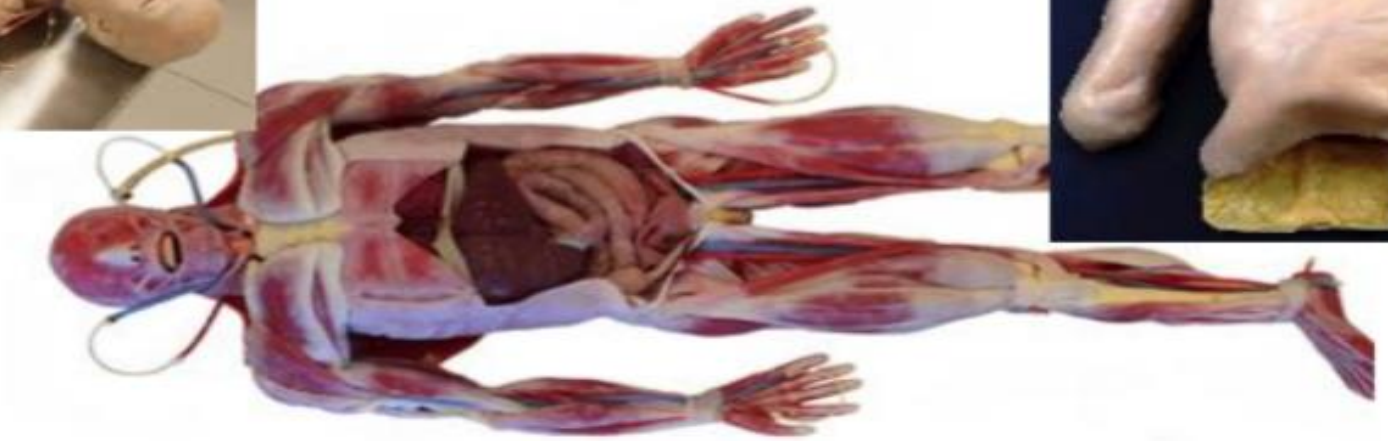

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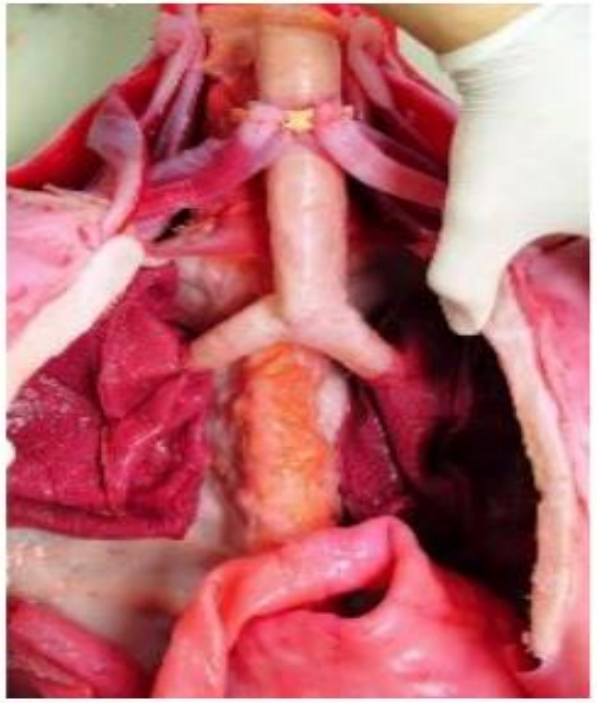

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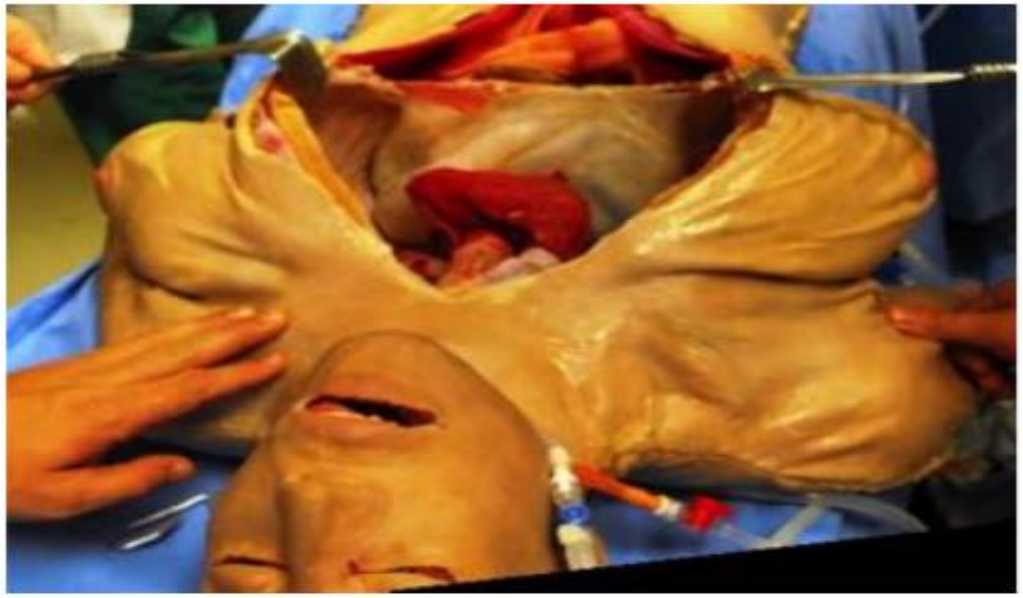


Methods of exploration and conservation of bodies in anatomy

Methods of exploration of bodies

- **Dissection**

Methods of exploration of bodies

- **Dissection**

Methods of exploration of bodies

- **Surgery** « vivisection »

Methods of exploration of bodies

- **Surgery** « vivisection »

Methods of exploration of bodies

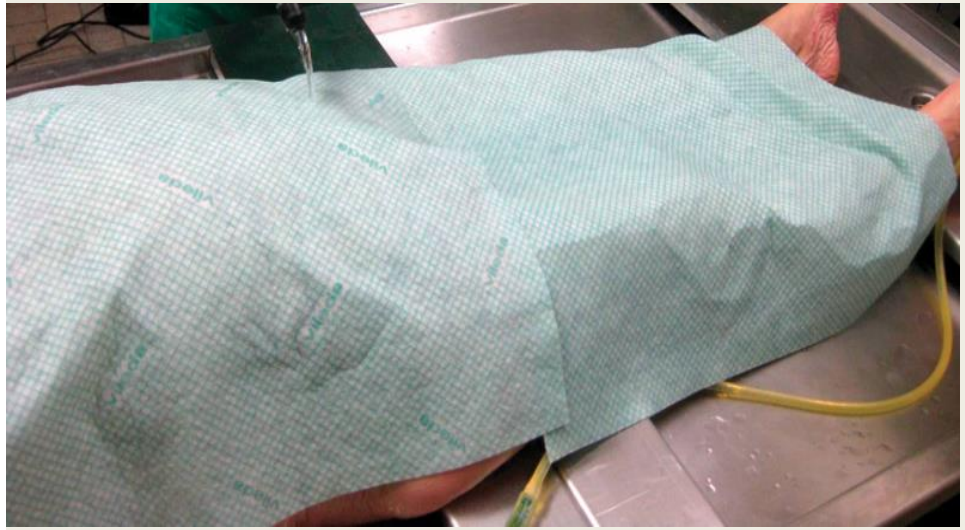
- **Imaging** (radiology, ultrasonography, CT, MRI, arteriography, IVU, scintigraphy…)
- **Endoscopy** (bronchoscopy, rectoscopy)

Methods of conservation of bodies

- **Embalming**

Methods of conservation of bodies

- **Embalming**

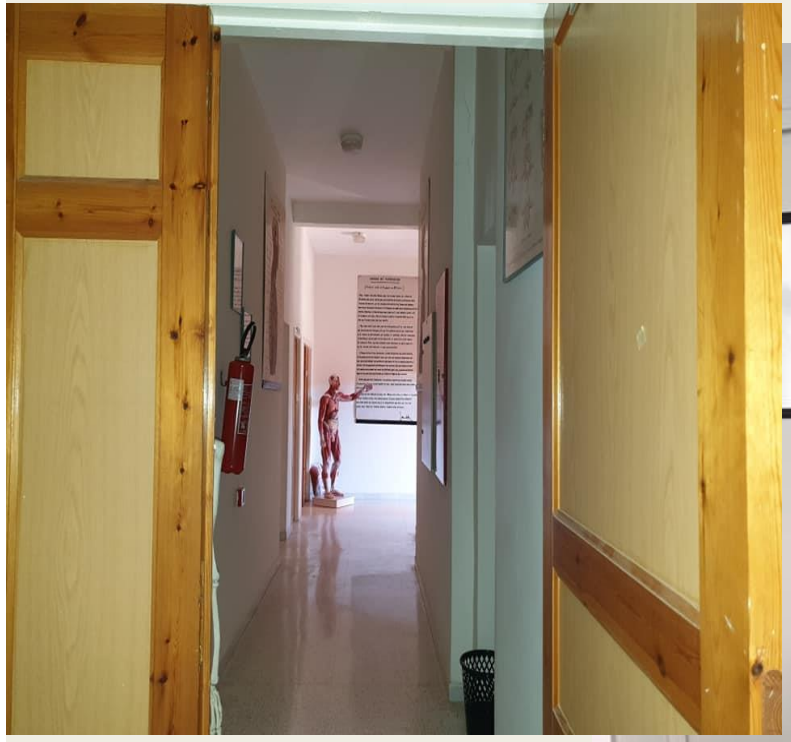


Methods of conservation of bodies

- **Embalming**

Methods of conservation of bodies

- **Freezing**



Methods of conservation of bodies

- **Plastination**

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- Preservation of biological tissue by replacing different organic liquids by silicone.

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- Sustainable, precise, clear and pleasant presentation of human anatomy by placing bodies in a position close to real life

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Methods of conservation of bodies

- **Plastination**

- Preservation of biological tissue by replacing different organic liquids by silicone.
- Sustainable, precise, clear and pleasant presentation of human anatomy by placing bodies in a position close to real life
- Invented by Gunther von Hagens (German anatomist)
- Serveral exhibitions around the world: « body world's exposition »

Methods of conservation of bodies

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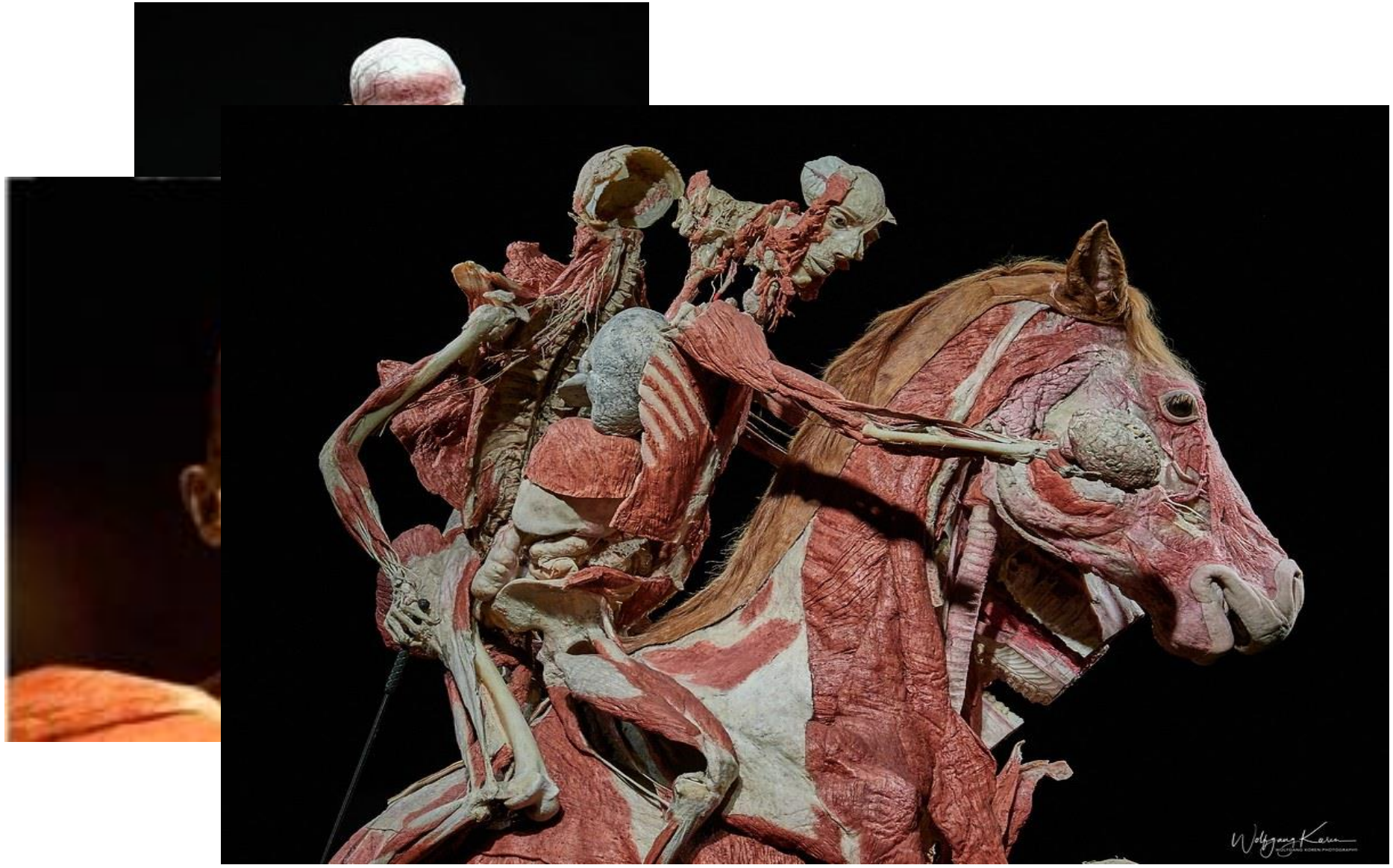

Anatomy teaching schedule

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- **In 1st year:**

  -1st mid-term final: Anatomie I

  -2nd mid-term final: Anatomie II

Anatomy teaching schedule

- **In 1st year:**

  -1st mid-term final: Anatomie I

  -2nd mid-term final: Anatomie II

- **In 2nd year:**

  -1st mid-term final: Anatomie III

  -2nd mid-term final: Anatomie IV

Anatomy I teaching schedule

- Anatomy of the upper and lower limbs, thorax and cardio-vascular system
- Lectures and practical learning sessions

Doing well in anatomy?