

Module 1

Introduction to the Human Body

Dr. Lisa Brinn

lbrinn@fiu.edu

Learning Outcomes

1. Define and differentiate anatomy and physiology
2. Levels of body organization
3. Life processes
4. Anatomical terminology and body planes
5. Body cavities and cavity membranes
6. Abdominopelvic regions and quadrants
7. Homeostasis

Learning Outcomes

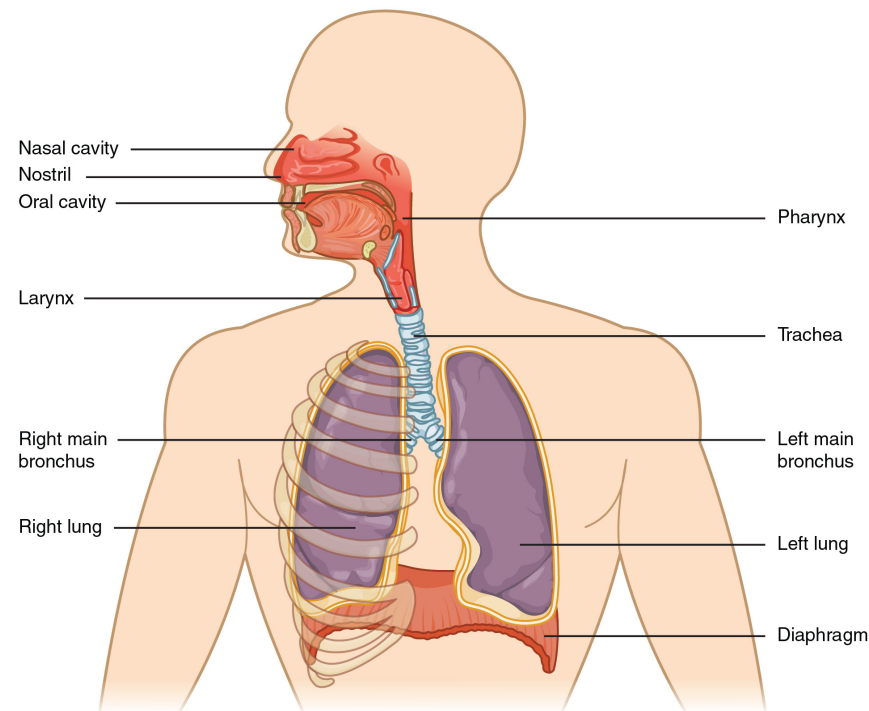
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1. Definitions

- Anatomy
 - Study of external and internal structures
 - In other words:
 - Anatomy is the careful observation of the human body
- Dissection
- Physiology
 - Study of function of body parts

Introduction

All specific functions are performed by specific structures.
Structure, therefore, determines function.



Study Methods

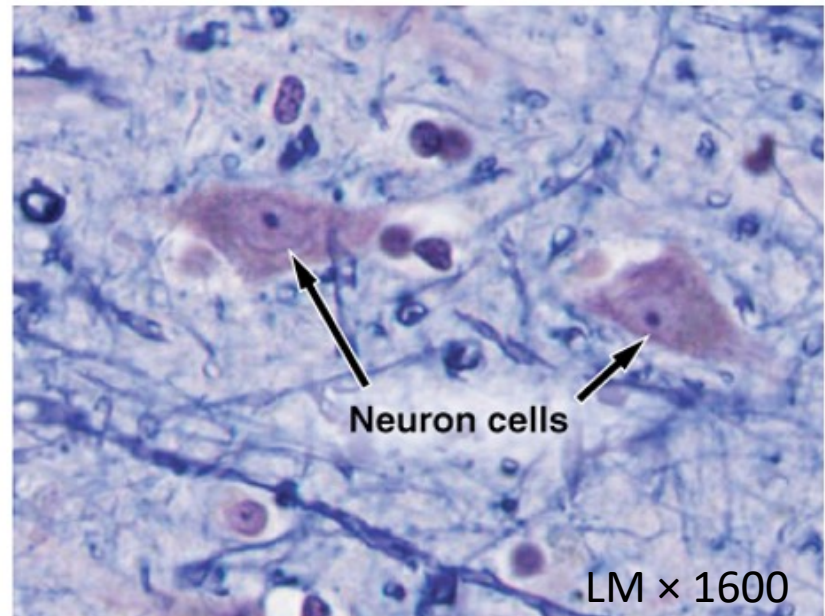
- a. Gross anatomy
- b. Anatomical imaging
- c. Embryology
- d. Developmental biology
- e. Cell biology
- f. Histology
- g. Sectional anatomy
- h. Systemic anatomy
- i. Regional anatomy
- j. Surface anatomy
- k. Pathological anatomy

a. Gross X Microscopic Anatomy

Gross anatomy - considers large structures such as the brain.



Microscopic anatomy - can deal with same structures, though at different scale. This is a micrograph of nerve cells from the brain.



(credit a: "WriterHound"/Wikimedia Commons; credit b: Micrograph provided by the Regents of University of Michigan Medical School © 2012)

b. Anatomical Imaging

- I. X-ray**
- II. Ultrasound**
- III. Computed Tomography (CT)**
- IV. Digital Subtraction Angiography (DSA)**
- V. Magnetic Resonance Imaging (MRI)**
- VI. Positron Emission Tomography (PET)**

I. X-ray

- Electromagnetic wave of high energy and very short wavelength, which moves through body
- Is exposed on photographic plate creating a radiograph.



II. Ultrasound

- Sound waves that have ultrasonic frequency
- When passing through the body structures these waves bounce back to receiver
- Visualized as a **sonogram**.



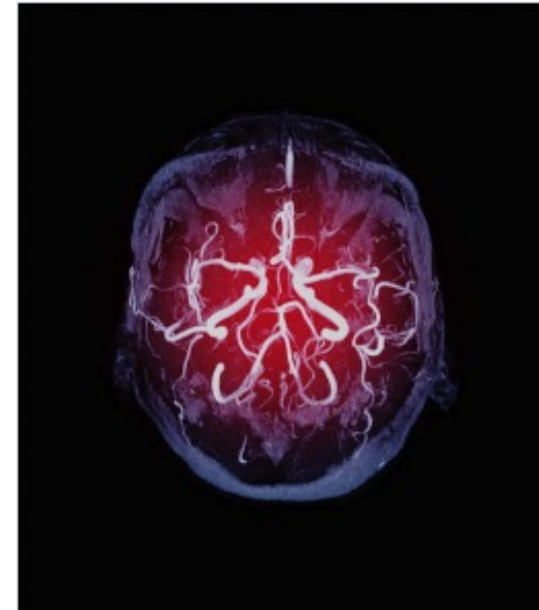
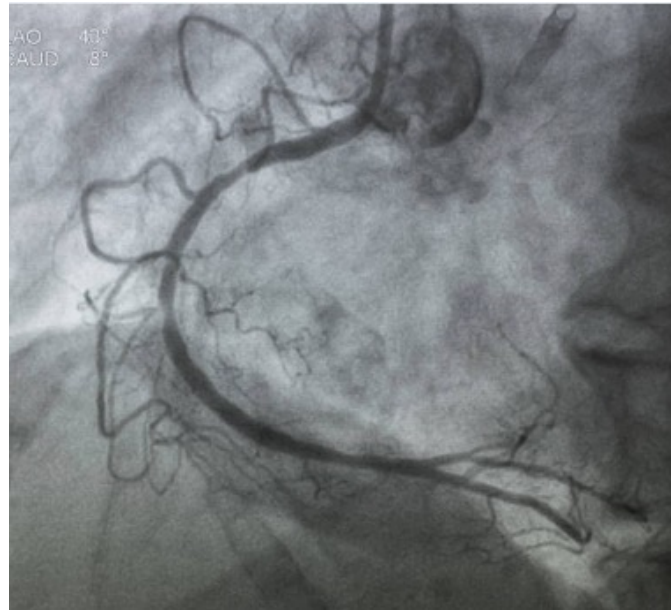
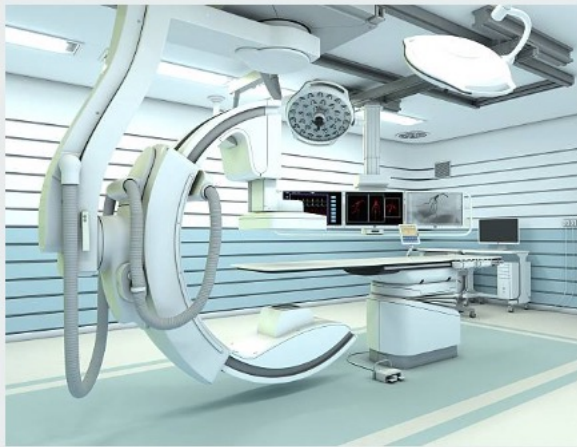
III. Computed Tomography (CT scan)

- Computer-analyzed x-ray images
- Computer:
 - Controls the motion of the x-ray source and detectors
 - Processes the data
 - Produces the image



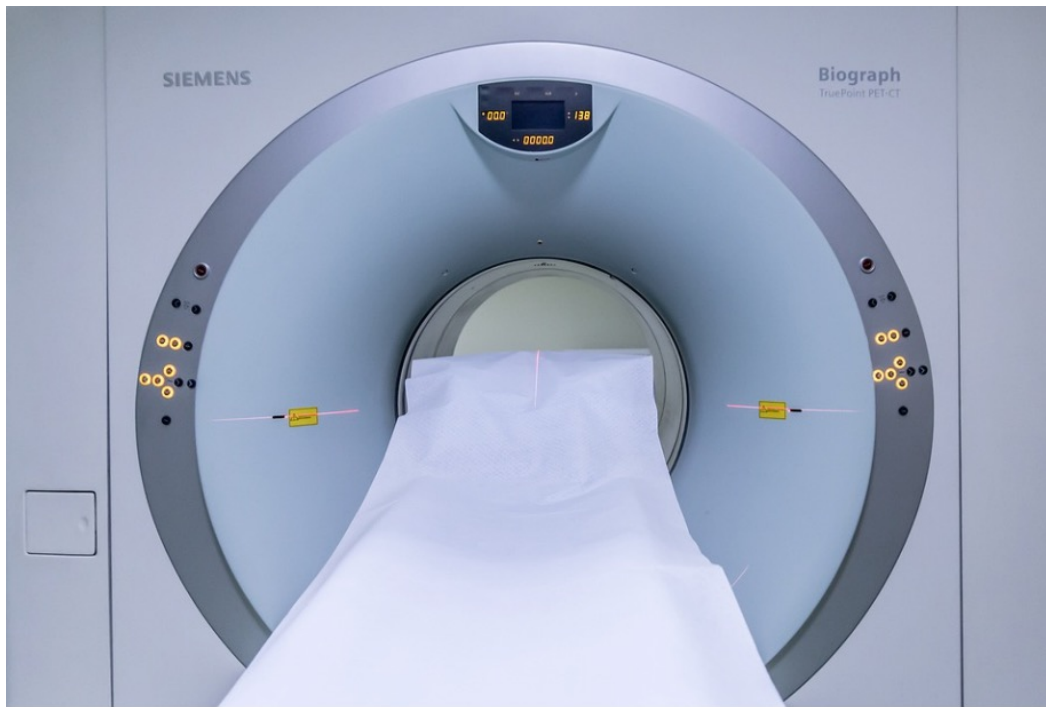
IV. Digital Subtraction Angiography (DSA)

Comparable to a CT scan but uses a radiopaque dye to enhance differences in areas.



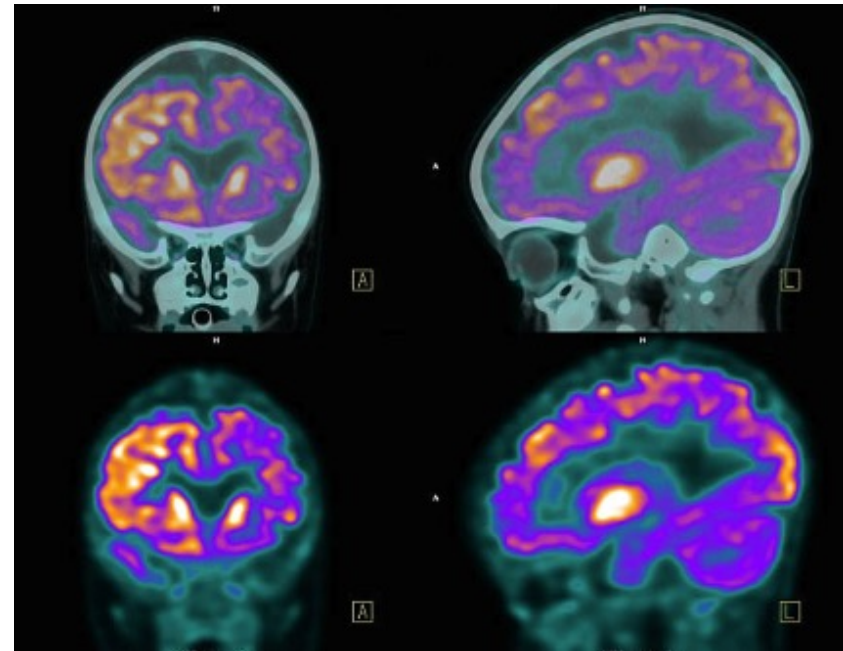
V. Magnetic Resonance Imaging (MRI)

Radio waves directed to patient while under electromagnetic field; radio waves collected and analyzed by computer.



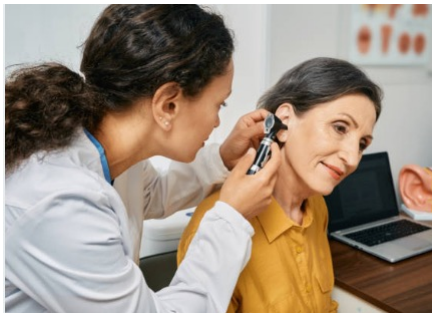
VI. Positron Emission Tomography (PET)

Radioactively labeled glucose usage by a tissue is detected; provides info on metabolic state.

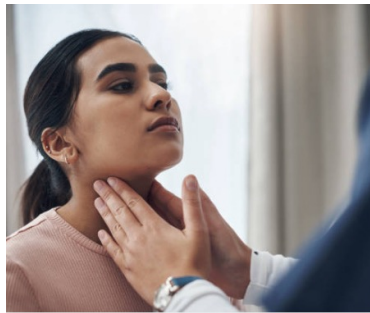


Diagnostic Techniques

- Inspection
- Palpation
- Auscultation
- Percussion



Inspection



Palpation



Auscultation



Percussion