

Biology 204 Human Anatomy & Physiology

I. Introduction to Anatomy & Physiology

A. Structure = Anatomy

1. gross, macroscopic anatomy (Gr. "to cut apart")
2. regional anatomy
3. systemic anatomy
4. surface anatomy
5. microscopic
 - a) cytology
 - b) histology
6. developmental anatomy
 - a) embryology
 - b) teratologies
7. pathological
8. radiographic
9. molecular (?)

B. Function = Physiology

1. systems, e.g.,
 - a) renal
 - b) cardiovascular
 - c) neurophysiology
2. comparative
3. environmental
4. evolutionary

C. Complementarity

1. function reflects structure
2. i.e., what a structure can do depends on its specific form

D. Integration

E. Applied Physics & Chemistry

F. Natural Selection

1. adaptation vs. :
2. trade-offs
3. multiple functions

G. Central Themes

1. function is based on structure at many levels
 - a) molecular (chemical)
 - b) cellular
 - c) tissue and organ (2 tissue types)
 - d) organ system (e.g., cardiovascular), note integration
 - e) organism
2. homeostasis
 - a) Claude Bernard "milieu interieur"
 - b) Walter Cannon
 - c) not so much unchanging as dynamic equilibrium
3. feedback-control systems
 - a) variable: receptor-> afferent pathway->control center (compares to set point)->efferent pathway ->effector (response feeds back (+ or -))
 - (1) continuous sampling and corrective action
 - (2) sensor, setpoint, error signal,
 - (3) negative feedback
 - (a) car
 - (b) thermostat
 - (4) positive feedback
 - (a) rock concert
 - (b) oxytocin
 - (c) blood clotting
 - (d) congestive heart failure