

Biology 48 - Human Physiology
Lecture Summary Sheet – Norris

Introduction to Physiology / Homeostasis

I. Definitions

- A. Physiology (vs. anatomy)
- B. Mechanism
- C. Homeostasis - "the dynamic constancy of the internal environment"
The maintenance of homeostasis is the key role of physiological systems.

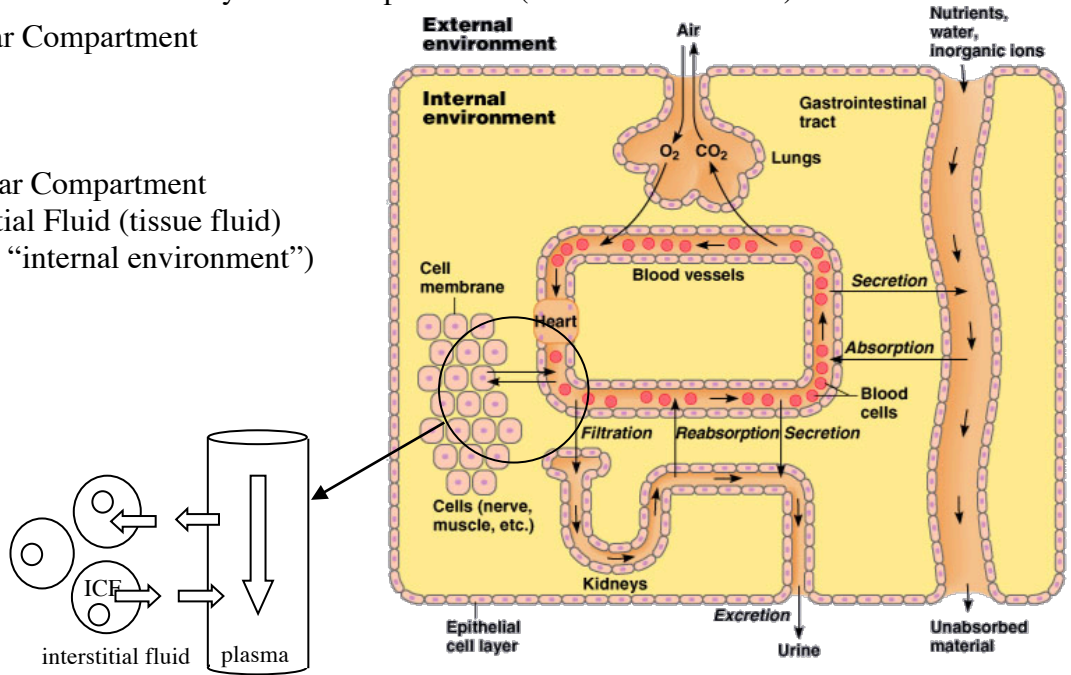
II. Organization of Structure - Body Fluid Compartments (“between” structure)

1. Intracellular Compartment

2. Extracellular Compartment

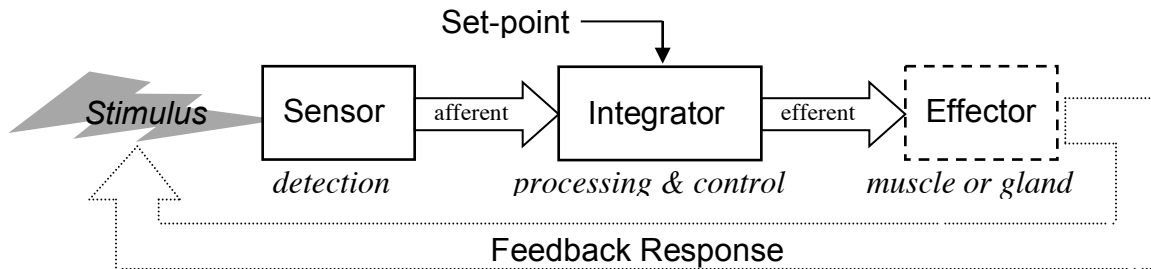
- a. Interstitial Fluid (tissue fluid)
(aka the “internal environment”)

b. Plasma



III. Homeostasis / Homeostatic Control

A. Basic Mechanism of Maintaining Homeostasis - Feedback



1. Negative Feedback - the principle mechanism by which homeostasis is maintained

2. Positive Feedback

B. Control Mechanisms

1. Single Effector Systems

a. Simple

b. Tonic Control

2. Two Effector Systems = Antagonistic Control

C. Control Pathways

1. Local Control (aka “intrinsic” control or “autoregulation”)

2. Long Distance Control (aka “extrinsic” control)

a. Systemic Regulation

b. Behavioral

VI. Additional Key Terms

afferent cytology
pathophysiology

efferent gradient
pharmacology

histology
receptor

integrate
teleology

pathology

Study Questions – Introduction:

1. Define “physiology” (compare and contrast anatomy and physiology).
2. Define “mechanism”.
3. Where is the intracellular fluid compartment? Describe it and provide examples.
4. Where is the extracellular fluid compartment? Describe it and provide examples.
5. Name and describe the subdivisions of the extracellular compartment.
6. Where do you find interstitial fluid? What are some alternative names for this fluid and/or the space it defines.
7. How is the interstitial fluid related to and important to the cell.
8. In the context of the body fluid compartments, describe the general pattern of movement of molecules from outside the body to (and from) the cells.
9. Define “homeostasis”.
10. Describe the primary components of a feedback system.
11. Provide some examples of homeostatically controlled physiological variables.
12. Define and describe “negative feedback”.
13. Describe how “positive feedback” differs from “negative feedback” and how positive feedback can maintain homeostasis.
14. Describe a simple single effector control system. Prepare a flow chart to describe the feedback system and a graph to illustrate how the controlled variable changes over time.
15. Describe a tonic single effector control system. Prepare a flow chart to describe the feedback system and a graph to illustrate how the controlled variable changes over time.
16. Describe an antagonistic control system. Prepare a flow chart to describe the feedback system and a graph to illustrate how the controlled variable changes over time.
17. Describe the difference between “active” versus “passive” feedback.
18. Define “intrinsic”.
19. Provide an example of intrinsic regulation.
20. Define “extrinsic”.
21. Provide an example of extrinsic regulation.