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1 Animals and Environments

Introduction

- What is physiology?
  - Form and function of organisms; the study of how organisms work.
- Central questions of physiology: mechanism and origin.
  - Mechanism:
    - refers to the components of living organisms and understanding how components interact to enable the organism to function.
  - Origin:
    - asks why a mechanism exists, or what is the mechanistic adaptive significance of the mechanism.
  - Mechanism and adaptive significance are distinct concepts; knowing about one doesn't necessarily mean you know anything about the other.
- Krogh's principle:

  > "For such a large number of problems there will be some animal of choice or a few such animals on which it can be most conveniently studied."

- Krogh's principle central to disciplines that rely on the *comparative method*. The key take away: there is unity in diversity; many organisms are very much alike at the most fundamental levels.
- Physiology subdisciplines:
  - Mechanistic: emphasizes the mechanisms by which organisms perform their life functions.
  - Evolutionary: emphasizes evolutionary origins and the adaptive significance of traits.
  - Comparative: emphasizes the way in which diverse phylogenetic groups resemble and differ from each other.
  - Environmental: emphasizes the ways in which physiology and ecology interact.
  - Integrative: emphasizes the importance of all levels of organization, from genes to proteins and tissues to organs in order to better understand whole physiological systems.

Homeostasis

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