

GENERAL BIOLOGY Lecture 3 - Scientific method and classification of life

- I. Scientific method
 - A. Ask a question - identify the problem
 - B. Make a hypothesis - induction (sort through criteria)
 - C. Predict what will happen - deduction
 - D. Test the deduction
 - E. Repeat the test
 - F. Make a conclusion
 - G. Examine alternative hypotheses
 - II. Scientific reports
 - A. Title
 - B. Introduction
 - C. Materials and methods
 - D. Results and discussion
 - E. Literature cited
 - III. Theory of natural selection (Charles Darwin)
 - A. More offspring are produced than can survive to the reproductive age
 - B. Populations vary - variation is heritable
 - C. Heritable traits improve chances of survival
 - D. Varied traits under the right conditions favor reproduction (differential reproduction)
 - E. Natural selection is the result of differential reproduction
 - IV. Classification of life - phylogenetic (natural) system
 - A. Based on lines of decent (evolution)
 - B. Classification
 - 1. Kingdom
 - 2. Phylum (previously Division in some Kingdoms)
 - 3. Class
 - 4. Order
 - 5. Family
 - 6. Genus
 - 7. Species
- King Philip Crossed Over From George's Swamp
- C. Examples:
 - 1. Dog: Animalia, Chordata, Mammalia, Carnivora, Canidae, Canis familiaris
 - 2. Man: Animalia, Chordata, Mammalia, Primates, Hominidae, Homo sapiens
 - 3. Redbud tree: Plantae, Anthophyta / Magnoliophyta (flowering), Magnoliopsida (dicot), Rosales (roses), Leguminosae (legume), Cercis canadensis
 - D. The six (previously five) kingdoms
 - 1. Monera (bacteria) – MONERA (EUBACTERIA and ARCHAEBACTERIA)
 - 2. Protista (single-celled eukaryotes, including most algae) - PROTISTA
 - 3. Fungi (fungi, including mushrooms) - MYCOTA
 - 4. Plantae (plants) - PLANTAE
 - 5. Animalia (animals) - ANIMAILIA