

GENERAL BIOLOGY Lecture 39 - Animal Behavior

- I. Integral parts of behavioral responses**
 - A. Sensory
 - B. Neural
 - C. Endocrine
 - D. Effector components
- II. Mechanisms of behavior**
 - A. Genetic basis - bird songs
 - B. Seasonal photoperiodicity - hormone synthesis
 - 1. Bird song
 - a) Estrogen organizes development of song system in males and females
 - b) Testosterone activates song system in males
- III. Instinctive and learned behavior**
 - A. No aspect of phenotype can develop without genetic and environmental contributions
 - B. Behavior acquired as a result of genetic and environmental inputs
 - 1. Instinct - response to a first-time encounter with a stimulus
 - a) Baby humans smile in response to a face
 - 2. Learning - information storage - as with instinct, includes genetic and environmental inputs
 - a) Imprinting as a form of learning (Goslings follow an object at a young point in life) - short, early, sensitive period - note migration & Big Dipper
- IV. Adaptive value of behavior**
 - A. Behavioral evolution
 - 1. Reproductive success - survival
 - 2. Adaptive behavior - promote reproductive success
 - 3. Selfish behavior - individual protects itself
 - 4. Altruistic behavior - individual sacrifices to help "kin-folks"
 - 5. Natural selection - survival of the fittest
 - B. Key point: species tend to follow the path of INDIVIDUAL SELECTION (me, me, me...)
- V. Reproductive behavior**
 - A. Male species
 - 1. Lots of male stuff to go around - low energy input
 - 2. Attempts to fertilize as many as possible to be successful
 - B. Female species
 - 1. Less female stuff - high energy stuff
 - 2. Female stuff - a limited resource for males
 - 3. Success based on how many eggs she can produce and how many offspring she can care for
 - 4. Quality of the female's mate is more important than quantity
 - C. How mating is regulated
 - 1. Male must convince female that he, rather than someone else, should fertilize her (energetically expensive) eggs
 - 2. Benefits of the female's choice
 - a) Superior genes
 - b) Superior material benefits