

Exam Review from previous term:

- The exam will consist of 62 questions.
- Humans have excessive amounts of energy from food consumption.
- Neanderthals needed 4,500 calories a day for hunting and gathering. After killing an animal, they were lazy in order to conserve energy.
- Laziness is an adaptation from the past that made survival possible. Currently, the gene is still present.
- Sister species have a recent common ancestor. At some point, they may become reproductively isolated.
- Know the three examples against science and the six points that go along with it in *The Making of the Fittest*. These can be found in chapter 9.
- Both cooperation, or mutualism, and reciprocal altruism are selfish.
- Cooperation occurs at one point in time. In contrast, reciprocal altruism happens at different times.
- Sickle cell anemia has the adaptation to prevent malaria.
- Sickle cell anemia, which comes from a mutation, occurs soon after the arrival of malaria.
- Barriers evolve to make pathogens less virulent.
- Corridors evolve to make pathogens more virulent.
- Altruism is seen more in nature when there is a small cost.
- Why is altruism rare in nature?
 - 1) It lowers fitness.
 - 2) It makes us vulnerable to selfish cheaters.
 - When lemming populations become too large, they migrate as a group into water. As a result, they drowned. However, the selfish cheater will not walk into water with the rest of the group. Within a few generations, the number of lemmings walking into water will decrease as the selfish cheater gene gets passed along.
- Selfish cheaters appear altruistic, but they are selfish.
- Because altruism is extremely rare in nature, there are few examples of individuals retaliating against selfish cheaters.
- Anti-predator adaptations include warning coloration, mimicry, flash coloration, camouflage, and warning sound.
- Animals that are harmful to predators will exhibit warning coloration and warning sound.
- Harmless animals exhibit mimicry, camouflage, and flash coloration. These predator adaptations typically occur together.
- Does camouflage coloration exist with flash coloration on an individual? Yes
- Does warning coloration exist with flash coloration on an individual? No
- Does warning coloration exist with camouflage coloration on an individual? No
- Warning sounds can be associated with camouflage. For example, both are present in rattlesnakes.
- Flash coloration is present in:
 - 1) Grasshoppers- They have camouflage coloration on its back (black) and warning coloration on its stomach (blue).
 - 2) Frogs
 - 3) Moth- The under wings are red and yellow. The other wings are camouflaged.
- Reproductive Isolation
- Behavioral Isolation (pre-zygotic)
 - Although certain species have the ability to mate with one another, they may have different mating rituals or dissimilar mating seasons. For example, lions and tigers have different mating rituals.
- Mechanical Isolation (pre-zygotic)
 - This occurs when species physically cannot mate with one another.
- Hybrid Sterility (post-zygotic)

- Mules, which are a cross between horses and donkeys, are an example.
- Another example occurs between horses and zebras.