A105 Exam 2 Study Guide

scheduled for February 28, 2000

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Your second exam will include 15 multiple choice questions (1 point each) and 3 short-answer questions (3 points each) for a total of 30 points. We will assign you a grade based on your score, and this grade will be worth 15% of your course grade.

This exam will expect you to remember the basic concepts (e.g., natural selection) covered on the first exam, but will focus on the materials we have covered since then.

The exam will cover lectures 6-12, and the following readings:

- **Lewin chapters 46.8, 12-13.** It will NOT include Lewin Chapter 11 or 14, which we have not yet had a chance to discuss in class.

The exam will cover topics discussed in sections during weeks 2-7.

Study Hints:

Reminder: we have posted lecture outlines and additional notes on the class web page. Take advantage of these resources to help you study! Review all the terms that have been mentioned in class and highlighted in the readings. You will be expected to understand these terms when used in the context of a question, and to use them appropriately and explain what they mean in the short answer questions.

**Important concepts and topics to review:**

<table>
<thead>
<tr>
<th>Anatomical and behavioral characteristics of primates</th>
<th>Phylogenetic systematics (classification and taxonomy) and the use of analogy and homology (primitive and derived traits)</th>
<th>Racial classifications of humans</th>
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<tbody>
<tr>
<td>Primates</td>
<td>Phylogenetic relationships</td>
<td>The human genome diversity project</td>
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<td>Monkeys, Apes, &amp; Humans</td>
<td>General understanding of how genetic similarity indicates evolutionary relationships, with primate examples</td>
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<td>Mechanisms of macroevolution as they apply to primates, in particular:</td>
<td>DNA fingerprinting</td>
<td>Primate body size, brain size, life history patterns (e.g., reproductive strategies)</td>
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<td>e.g., speciation patterns, adaptive radiation, convergent evolution, etc.</td>
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<td>Principles and patterns of primate social organization</td>
<td>Polygynous vs monogamous social systems &amp; sexual dimorphism</td>
<td>Primate locomotor behavior and diet</td>
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Here are some examples of the types of topics you will be asked about. Some of these come directly from the "Key questions" list at the end of every chapter in Lewin:

- Why do phenotypic and phylogenetic patterns often differ?
- How do evolutionary biologists use character states to classify and reconstruct the phylogenetic relationships of different animals?
- What do primates have in common with our primate relatives and how do we differ? (anatomy or behavior)
- Why do anthropologists argue that racial classifications of humans have no biological validity?
- What was controversial about the human genome diversity project?
- What types of differences have primatologists observed in the behavior of different populations of chimpanzees?
- What types of observations have led primatologists to conclude that primates often live in ranked societies?
- How do male and female primate reproductive strategies differ and how do these differences affect their social organization and behavior patterns?
- What evidence do we have for differences in intelligence between monkeys and apes?

**Examples of multiple-choice questions:**

What is the relationship between human genetic variation and American systems of racial classification?

- a) Racial categories are based on data from population genetics
- b) Racial categories are a more accurate reflection of human biological variation than genetic variation
- c) Racial categories are cultural inventions based on a few polygenic traits, and have little or no relationship to patterns of human genetic variation
- d) Racial differences account for over half of the observed genetic variation among living humans
- e) Racial differences account for 65% of the observed genetic variation among living humans.

If the troop of baboons discussed in the "Junk Food Monkeys" article was prevented from feeding off the tourist garbage, which of the following would be a likely effect on the reproductive success of these monkeys?

- a) NEUTRAL: Darwinian Fitness is related to the activity levels of the animals, not their diet, so this would have no effect
- b) NEGATIVE: Competition for food would drive them apart, and without the protection of the troop they would be killed by camaras more frequently
- c) NEGATIVE: Offspring would stop maturing early, which would decrease their chances of reproductive success
- d) POSITIVE: Their Darwinian Fitness would increase because they would be less likely to catch infectious human diseases, such as diabetes
- e) POSITIVE: It would increase their reproductive success because eating more natural foods would help them grow faster and stronger.

During the first A105 lecture, our class suggested that the following traits were important differences between humans and other animals. Which trait can you now identify as uniquely human, and not also characteristic of wild chimpanzees?
a) they are tool makers
b) they communicate with spoken and written language
c) they are emotional and can be both affectionate and aggressive
d) they are political and compete for status and social power
e) their offspring must learn in order to survive

How intelligent are chimpanzees, compared to humans?

a) Chimps are highly intelligent, as evidenced by their construction of complex hunting weapons in the wild.
b) In captivity, chimps display a sense of aesthetics, have learned to communicate with symbols and understand abstract concepts such as numerical sequences.
c) Chimps can perform and imitate humans in captivity, but demonstrate no capacity for problem solving or tool use in the wild.
d) Chimpanzees are socially savvy, “political” animals, but lack analytical skills and the capacity for abstract concepts.
e) Chimps have small brains and all attempts to teach them to communicate with humans have failed.