

**CHAPTERS 16–19**    *Approximately 75% of this assignment is due in class on Tuesday, January 30, 2018  
The completed assignment, in its entirety, is due Wednesday, January 31, 2018*

Read Hillis Chapters 16 and 17, and Section 19.1. Answer the following concept questions in complete sentences:  
Concept 16.1 (questions 1 & 3); Concept 16.2 (questions 1 & 2); Concept 16.3 (questions 1 & 3);  
Concept 16.4 (question 1); Concept 17.3 (all questions); Concept 17.4 (question 2); Concept 19.1 (all questions)

**CONFERENCE**    *By appointment; must be scheduled before Tuesday, March 22, 2018*

Answer the following questions in complete sentences:

1. Discuss your progress in AP Biology so far. What are you most proud of? Where do you need to improve?
2. Describe your goals for the remainder of the course and the AP exam. What score do you think is realistic for you to obtain on the exam? What specific steps will you take to accomplish this goal?
3. Describe how this course has changed your perspective on biology. How do you view biology—or science in general—differently than you did before starting AP Biology?
4. Describe how AP Biology has informed your understanding of how college courses are different from high school courses.

Schedule an appointment for a 5-minute midterm conference with me, at which time you will submit your written reflection. You are strongly encouraged to schedule your meeting as early in the semester as possible.

**CHAPTERS 42–43**    *Approximately 75% of this assignment is due in class on Monday, February 5, 2018  
The completed assignment, in its entirety, is due Tuesday, February 6, 2018*

Read Hillis Chapters 42 and 43. Answer the following concept questions in complete sentences:  
Concept 42.1 (all questions); Concept 42.3 (all questions); Concept 42.5 (all questions);  
Concept 43.1 (question 1); Concept 43.2 (question 2); Concept 43.4 (all questions); Concept 43.5 (all questions)

**ESSAY 1**    *Due Thursday, February 8, 2018*

Answers must be written out in paragraph form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but a diagram without a written explanation will not receive credit. You must cite the source of all information you mention. Include the page number of information from the textbook or the web address of information found online.

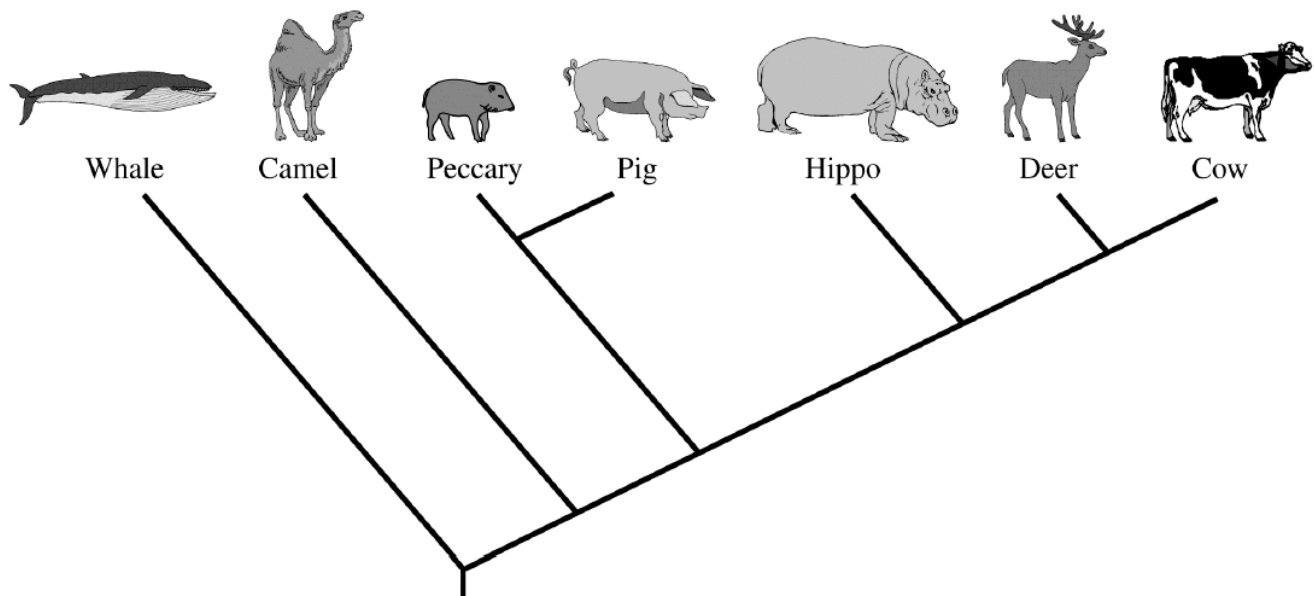


Figure 1. Phylogenetic tree representing the relationship of whales to six Artiodactyl species

Bone	Cow	Deer	Whale	Hippo	Pig	Peccary	Camel
Distal tarsals	+	+	+	+	+	+	+
Calcaneum	+	+	+	+	+	+	+
Pulley-shaped astragalus	+	+	–	+	+	+	+

Figure 2. Data on the presence of specific limb bones where + indicates the presence of the bone and – indicates the absence of the bone

Locus	1	2	3	4	5	6	7	8	9	10	11	12	13
Cow	–	–	–	–	–	+	+	+	+	+	+	+	–
Deer	–	–	–	–	–	+	?	+	+	+	+	+	–
Whale	+	+	+	+	+	–	?	+	+	–	?	+	–
Hippo	?	–	+	+	+	–	+	+	+	–	?	+	–
Pig	–	–	?	–	–	–	?	–	?	–	–	+	+
Peccary	?	?	?	?	?	?	?	?	?	?	?	?	+
Camel	–	–	–	–	–	–	–	–	–	–	–	–	–

Figure 3. Data on the presence of specific DNA sequences where + indicates presence of the sequence, – indicates the absence of the sequence, and ? indicates that data is not available

The order Artiodactyla include hoofed animals whose weight is evenly distributed between the third and fourth toes. The figures above show one model for the relationship of whales of six Artiodactyl species along with morphological and genomic data comparing the species.

- Justify** the placement of the whale in the phylogenetic tree in Figure 1 using the morphological data from Figure 2.
- Refine** the model in Figure 1 by reconstructing the phylogenetic tree to better represent the genomic data in Figure 3. **Provide reasoning** to support your placement of the whale in your model.
- For BOTH the original model shown in Figure 1 and for your refined model, **identify** a monophyletic group, the closest relative to the whale, and the point at which the pulley-shaped astragalus bone was lost or gained.
- Determine** whether the morphological data in Figure 2 or the genomic data in Figure 3 are more likely to accurately represent the true evolutionary relationships between the species. **Provide reasoning** to support your answer.
- Describe** TWO features of a model to represent the speciation of separate Artiodactyl families from a common ancestor.

**AP EXAM FEE**      *Due Friday, February 9, 2018*

Payment for all 2018 AP Exams must be submitted to Treasurer's Office, Room 150.

**CHAPTERS 44–45**      *Approximately 75% of this assignment is due in class on Monday, February 26, 2018*  
*The completed assignment, in its entirety, is due Tuesday, February 27, 2018*

Read Hillis Chapters 44 and 45. Answer the following concept questions in complete sentences:

Concept 44.1 (all questions); Concept 44.2 (question 3); Concept 44.3 (question 3); Concept 44.4 (both questions);  
 Concept 45.2 (all questions); Concept 45.3 (all questions); Concept 45.6 (both questions)