

Evolution of Flight

Before you begin, complete the activities found on:

<http://www.ucmp.berkeley.edu/education/explorations/reslab/flight/index.htm>

This is step five of the process, so you will not be successful unless you have taken accurate notes on the cladograms and other activities presented there

Procedures:

1) Brainstorm with your teammates about what the data in each of the cladograms and the Feature Table suggest about how and when flight evolved in the dinosaur lineage. Make sure that you consider the following:

- Which features are associated with flight? Which are absolutely essential for flight?
- When did each of these features first appear in the fossil record?
- Did these features evolve for flight or did they originally serve other functions?
- What was “necessary” for flight to evolve?

2) Based on this evidence at hand, develop a hypothesis about the evolution of flight. If possible, this hypothesis should describe both the “how” and the “when.”

3) Your hypothesis must be well supported.

- a. Consider the information in all of the cladograms.
- b. Use direct evidence to support inferences.
- c. Suggest other evidence you could look for to support your hypothesis.
- d. Suggest other evidence you could look for to disprove your hypothesis.

When you finish, you may want to explore the hypothesis proposed by Dr. Kevin Padian, a paleontologist who specializes in the evolution of flight in dinosaurs (Section #6).

Rubric for Evolution Project

	Excellent	Successful	Acceptable	Attempted
Content Accuracy	Describes both the “how” and the “when.” 10 9 8	Describes either the “how” or the “when.” 7 6 5	Does not describe either the “how” or the “when.” 4 3 2	Does not address the issue described. 1 0
Content depth	Evolutionary concepts are well explained and documented 10 9 8	Evolutionary concepts are explained but lack documentation 7 6 5	Evolutionary concepts are mentioned. 4 3 2	Evolutionary concepts are not mentioned. 1 0
Make inferences	Uses direct evidence from multiple sources to substantiate claims. 10 9 8	Uses only one source of direct evidence. 7 6 5	Uses only inference. 4 3 2	Does not use either direct evidence or inference. 1 0
Suggest other evidence to look for.	Identifies missing evidence to support and to disprove the claims. 10 9 8	Identifies evidence that could disprove the claims. 7 6 5	Identifies missing evidence that could support the claim. 4 3 2	Does not suggest other evidence to look for. 1 0
Be neat, well organized and communicate effectively.	Is neat and well organized with information clearly and effectively communicated. 10 9 8	Is mostly neat and organized and most information is clearly presented. 7 6 5	Parts are neat and organized with some information clearly presented. 4 3 2	Is not neat or well organized and/or lacks information. 1 0

Total Rubric Score: _____

50–41 = Excellent

40–31 = Successful

30–21 = Acceptable

20–0 = Poor