**Evolutionary Relationships--I**

**Grade**: 9 **Standard #**: B.8.3

**Title of investigation: Comparison of Anatomical Similarities as Evidence in Establishing Evolutionary Relationships**

**Author(s):**  A. Johnson and C. Keller, Notre Dame Modeling Workshop participants

**Leading Question:** What are some ways that animals use their forelimbs?

**Summary of the investigation:** Students draw forelimbs of animals, (examples may include bat, dolphin, bird, cat and human), and describe their function on a whiteboard. Students will then be given pictures of specific animals for students to compare and contrast number, arrangement and type of bones.

**Science Standard:**

B.8.3 Use anatomical and molecular evidence to establish evolutionary relationships among organisms.

**Equipment:**

Picture of skeletal forelimb structure of different animals. (examples: bat, dolphin, bird, cat and human)

White boards

Dry-erase markers

**Engagement –** Think about animals that swim and fly and those that don't. How do their forelimbs differ? How are they alike? Students will brainstorm examples.

**Procedure**:

Groups of students will be asked to draw and describe the functions of the forelimbs of a variety of animals. Students will be given pictures of the skeletal structures of four or five forelimbs and will be asked to compare these structures.

**Description of Procedures, notes (teacher manual):**

Teacher will prepare pictures of animals along with a picture of that animal's forelimb skeletal structure.

When circulating in the classroom, teacher selects specific groups to present a specific animal.

If there are enough groups, a "dueling whiteboard" situation would be appropriate.

**Follow-up Question(s):**

How can anatomical evidence be used to establish evolutionary relationships among organisms?

**Possible leading question for next activity:**

Given pictures of a variety of embryos, ask students to compare the embryos of different organisms in the early stages of development.