Embryo Clues

Compare embryo diagrams to infer patterns of relatedness.

MS-LS4-3 "Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the visible features shared by all six embryos in the early-stage display. Circle the later-stage details that make groups of embryos look different, then number the sentence that explains how these patterns can show relatedness.

What Embryo Displays Reveal

1. Scientists can learn about relationships by comparing embryo diagrams from several species. An embryo is an organism in an early stage of development. In one classroom display, diagrams show fish, salamander, turtle, chicken, pig, and human embryos at an early stage. The diagrams are drawn at the same scale and face the same direction. At this stage, each embryo has a curved body, a tail, a large head region, and visible grooves in the neck area. These shared features are macroscopic, meaning they can be seen without a microscope.

2. A second row shows the embryos at a later stage. The fish and salamander still have long tails and similar elongated bodies. The turtle and chicken have developing limb buds, while the pig and human have larger head regions and distinct limb buds. As development continues, the adult forms will look much less alike: a fish has fins, a chicken has wings, and a human has arms. The early diagrams reveal a pattern of similarities that the adult anatomy can hide.

3. Scientists use patterns across many embryo diagrams, not one feature alone, to infer relatedness. Species whose embryos share more overall features during comparable stages are generally inferred to have a more recent common ancestor than species with fewer shared features. For example, the fish and salamander in this display show a similar long-tailed, elongated pattern later than the other groups. This evidence supports an inference about relatedness, but it does not mean one living species changed into another living species. Embryo pictures provide evidence alongside other kinds of evidence.

2 ANSWER WITH EVIDENCE

Use the passage

1. What two details about the early-stage diagrams make the comparison fairer?

2. Name two visible features that all six embryos share at the early stage.

3. Which two embryos show a similar later-stage pattern, and what relatedness inference does that pattern support?

4. Why can a comparison of fully formed adults hide a pattern that embryo diagrams reveal?

3 YOUR TURN

Your own words

Create a labeled, two-stage sketch display for three imaginary species, A, B, and C. Show at least two shared visible early features and at least two later differences. Under your display, write exactly two sentences that compare the patterns and make a relatedness inference using evidence from your sketches.

ANSWER KEY

Embryo Clues

GRADES 6-8 · MS-LS4-3

PART 1 · READ AND MARK

Underline the visible features shared by all six embryos in the early-stage display. Circle the later-stage details that make groups of embryos look different, then number the sentence that explains how these patterns can show relatedness. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What two details about the early-stage diagrams make the comparison fairer?	**The diagrams are drawn at the same scale and face the same direction.**
2	Name two visible features that all six embryos share at the early stage.	**Any two: a curved body, a tail, a large head region, or visible grooves in the neck area.**
3	Which two embryos show a similar later-stage pattern, and what relatedness inference does that pattern support?	**The fish and salamander show long tails and similar elongated bodies. The pattern supports an inference that they generally have a more recent common ancestor than species with fewer shared features.**
4	Why can a comparison of fully formed adults hide a pattern that embryo diagrams reveal?	**Adult forms can look much less alike, such as fins, wings, and arms, while early embryos can share visible features.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Sketch labels: Early, A: curved body, tail, large head; B: curved body, tail, large head; C: curved body, tail, small head. Later, A: long tail, two limb buds; B: long tail, two limb buds; C: short tail, no limb buds. A and B share more visible features at both stages than either species shares with C. Based on the embryo patterns, A and B are inferred to have a more recent common ancestor than either has with C.

Accept evidence-based comparisons of visible, macroscopic embryo features at comparable stages. For the open task, accept varied sketches and inferences when the student identifies shared features, later differences, and supports a relatedness claim with the display.