

Upon completion of *Evolutionary Evidence (WB)*, students should be able to:

1. Describe differences between evolution (descent with modification) versus design-based theories for how life's diversity arose. Describe the contrasting predictions the two types of theories make about the pattern of trait sharing among species.
2. Characterize nestedness of traits among a group of species.
3. Use data on trait nestedness as evidence for or against evolutionary relationships among a group of species. That is, compare the pattern of nestedness in the traits shared among a set of species to theoretical predictions to infer whether the species arose by special creation versus descent with modification.
4. Predict the relative age of traits based on their distribution and nestedness among species.
5. Use fossil data, including transitional fossils and trait nestedness comparisons with extant species, to support or refute proposed evolutionary patterns. Test the predictions made in the LO above (PredictTraitAge) by comparing them to data from the fossil record.
6. Use the existence of transitional fossils as evidence for evolution: i) Note that the theory of descent with modification, unlike design-based theories, predicts the existence of transitional fossils; ii) Note that transitional fossils, such as fish with legs and dinosaurs with feathers, have been found.
7. Increase acceptance of evolution as the scientific explanation for diversity of life.

Students should also reduce their expression of the following misconceptions:

1. Newly derived traits are more widespread (across taxa) than older traits.
2. Lineages always become more complex over time.
3. Species in a lineage arise in linear succession, replacing their ancestors.