8th Grade

Driving Question: How can we engineer a species that thrives in a hypothetical alien habitat, utilizing principles of natural selection and demonstrating common ancestry through homologous structures and embryologic development, culminating in the creation of a functional organism capable of survival and adaptation?

Content:

Students create/design a species that will be able to survive and adapt on a hypothetical planet. The design of the species is based on the unique alien habitat of the planet. They create unique traits and adaptations based on the hypothetical planet's environment that will allow their species to survive, AKA Natural Selection. Students also provide/create evidence of common ancestry with the other species on the alien planet, by creating homologous structures and illustrating embryologic development.

Standards: NGSS:

- LS4.C: Adaptation: Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2)
- Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)
- LS4.B: Natural Selection: Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4).
- Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3)

Major Products:

Students will produce a designed species with tailored adaptations for a hypothetical alien habitat, provide evidence of common ancestry via homologous structures and embryologic development, construct a functional model with movable appendages and defense mechanisms, and present their species' name, environment, and survival adaptations.

Public Presentation:

Students will showcase their designed species, its name, the environment it inhabits, and the adaptations it has evolved to survive.Projects will be presented in class and open to the public for viewing.