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| **Science Objectives** * Explain evolutionary relationships by examining similarities and differences in the anatomy of organisms
* Identify patterns seen in bone structure of organism to understand evolutionary relationships

**Vocabulary*** Analogous structures
* Carpals
* Common ancestor
* Comparative Anatomy
* Homologous structure
* Humerus
* Phalanges
* Radius
* Ulna
* Vertebrates

**About the Lesson*** In this lesson students will:
* Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms to infer evolutionary relationships.

**TI-Nspire™ Navigator™*** Send out the .tns file.
* Monitor student progress using Class Capture.
* Use Live Presenter to spotlight student answers.

**Activity Materials*** Compatible TI Technologies:TI- Nspire™ CX Handhelds, TI-Nspire™ Apps for iPad®, TI-Nspire™ Software

 | **Tech Tips:*** This activity includes screen captures taken from the TI-Nspire CX handheld. It is also appropriate for use with the TI-Nspire family of products including TI-Nspire software and TI-Nspire App. Slight variations to these directions may be required if using other technologies besides the handheld.
* Watch for additional Tech Tips throughout the activity for the specific technology you are using.
* Access free tutorials at <http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials>

**Lesson Files:***Student Activity** No\_Bones\_About\_It\_Student.doc
* No\_Bones\_About\_It\_Student.pdf

*TI-Nspire document* * No\_Bones\_About\_It.tns
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| **Discussion Points and Possible Answers**Have students read the background information stated on their activity sheet. |
| **Move to page 1.2.** |
| 1. After reading the instructions on page 1.2, students will then close the directions box by selecting .2. Students should use the drop-down box to select a group of bones to investigate. When a bone is selected, the corresponding bone will be highlighted in a specific color on the human arm example. Use the curser to identify the similar bones in the other organisms. When all bone groups have been identified, all groups will have check marks within the drop-down menu.  |  |
| **Tech Tip:** To access the Directions again, select **> Directions** |
| **Move to pages 1.3 – 1.8**Have students answer questions on the device, the activity sheet, or both.Q1. The bones in this simulation show similar traits between organisms. This is an example of**Answer:** B. Homologous StructuresQ2. What do these structures suggest about the relationship of the organisms?**Answer:** Common AncestorQ3. The wings of a bird and a bat are an example of **Answer:** A. Homologous Structures |

Q4. The wings of a bee and a bird are an example of

**Answer:** B. Analogous Structures

Q5. What do the structures of the bee and bird suggest about the relationship of the organisms?

**Suggested Answer:** They both have similar function but different structures. No common ancestors (Convergent Evolution)

Q6. The neck of a giraffe and the neck of a human are an example of

**Answer:** A. Homologous Structures

Q7. The body plan of a Shark and a Dolphin are an example of

**Answer:** B. Analogous Structures

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| **TI-Nspire Navigator Opportunities**Make a student a Live Presenter to illustrate show how to move the sliders. Throughout the activity, monitor student progress. At the end of the activity, collect the .tns file and save to Portfolio.  |

**Wrap Up**

When students are finished with the activity, retrieve the .tns file using TI-Nspire Navigator. Save grades to Portfolio. Discuss activity questions using Slide Show.

**Assessment**

* Formative assessment will consist of questions embedded in the .tns file. The questions will be graded when the .tns file is retrieved. The Slide Show will be utilized to give students immediate feedback on their assessment.
* Summative assessment could consist of questions/problems on the chapter test.