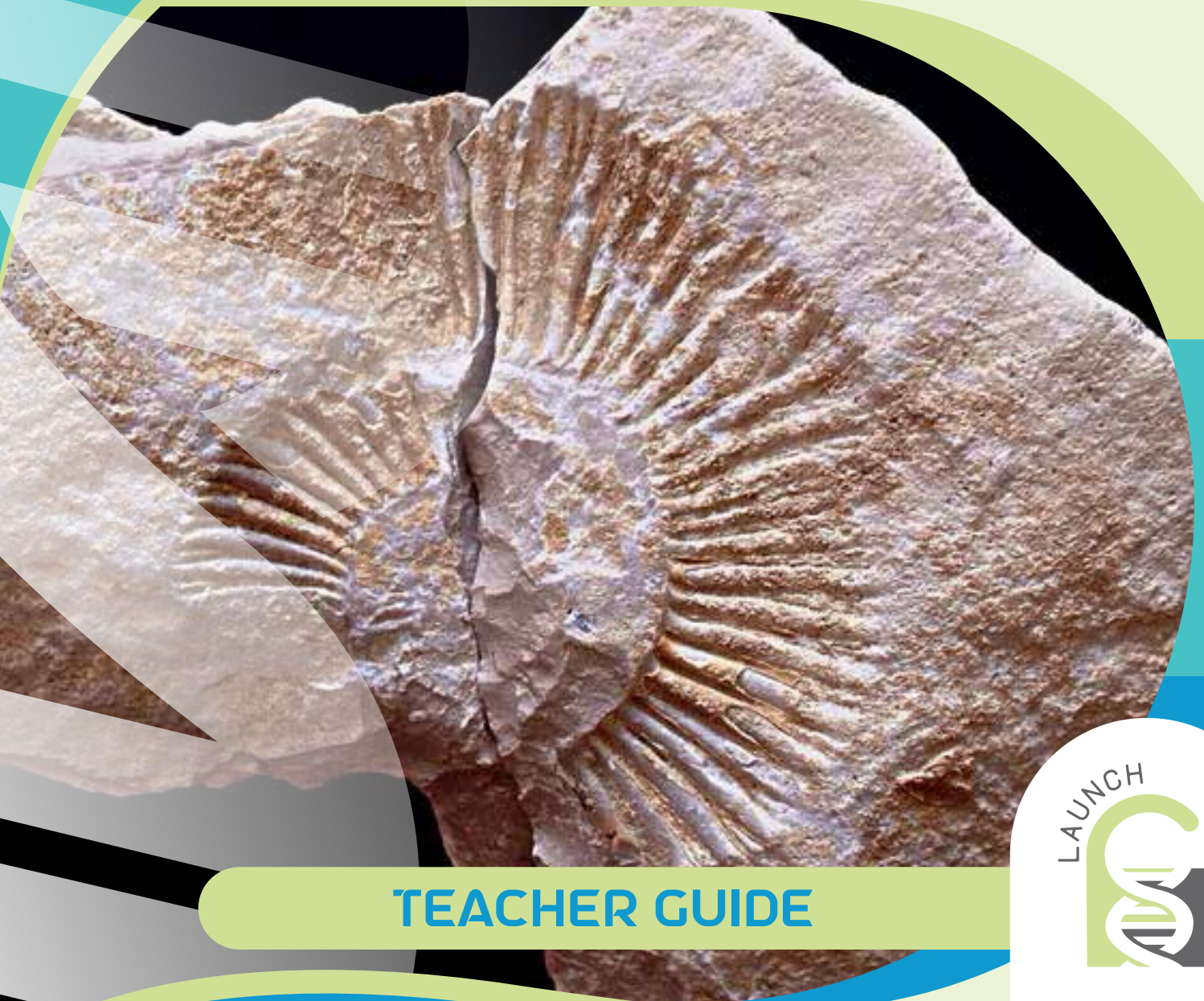


# ANCIENT ORGANISMS



TEACHER GUIDE

LAUNCH



# PLANNING

Here's a suggested schedule for this kit! The activities should be completed in order, but you can choose when the lessons take place over time.

ACTIVITY INFORMATION	SECTION(S)	TIME REQUIRED	DAY/ LESSON
<b>ACTIVITY 1: DO I KNOW WHAT I THINK I KNOW?</b>  Decide which specimens are fossils and which are not with two tests commonly performed in the field.  <b>Total time: 1 h</b>	<input type="checkbox"/> Test for Fossils	60 minutes	Day 1
<b>ACTIVITY 2: DISSOLVING DINOSAURS</b>  Discover the characteristics of fossils!  Total time: 2 h	<input type="checkbox"/> Fossils	30 minutes	Day 2
	<input type="checkbox"/> Mistakes Happen	30 minutes	Day 3
	<input type="checkbox"/> Create a Model for Fossilization	60 minutes	Day 4
<b>ACTIVITY 3: I GOT YOU COVERED</b>  Footprints and feathers teach scientists about anatomical similarities between modern and ancient organisms.  <b>Total time: 3 h 30 min</b>	<input type="checkbox"/> Trace Fossils	30 minutes	Day 5
	<input type="checkbox"/> Make a Trace (through Step 4)	60 minutes	Day 6
	<input type="checkbox"/> Make a Trace (through the end)	60 minutes	Day 7
	<input type="checkbox"/> Design Challenge	60 minutes	Day 8
<b>ACTIVITY 4: MORE IN COMMON THAN WE THINK</b>  Find out how many animals are... start!	<input type="checkbox"/> Emb...		

*Full schedule available with purchase*

**Total time: 14+ hours**

# 1

## activity

# DO I KNOW WHAT I THINK I KNOW?







In this activity, your student will put their knowledge to the test by developing criteria to describe what a fossil is then experimentally test a series of fossils and non-fossils based on these criteria. Often, a student will say they know something but is unable to explain that knowledge to others. This is often true of fossils as students can label a fossil in a picture. However, to be able to explain knowledge to another is a true test of knowing about a topic or object. Following this activity, they should understand that fossils and non-fossils do have commonalities, but also be able to ask questions about and/or describe the differences between the two.

## 1

# TEST FOR FOSSILS

## CONTENT

- There is a series of three fossils, two rocks, and a non-fossil tooth. You can use this identification key to aid your student if they appear overly confused about the identification of a particular sample.
- We recommend you do NOT tell them what the samples are. Rather, encourage them to ask questions about the samples and come to their own conclusions.
- The order that your student labels their samples does not need to be consistent with the order in this chart or the numbering in the image in their student workbook.

FOSSILS		NON-FOSSILS	
	Fossil Tooth		Red Sandstone
	Dinosaur bone fragment		Granite
	Horn coral		Non-fossil tooth

## 2

## CONTENT

- Help develop criteria for fossils by encouraging your student to split the samples into two groups – fossils and non-fossils. Encourage your student to look for commonalities between the objects they think are fossils, and notice the differences between the samples they think are non-fossils.
- If your student has previous knowledge on fossils, ask them to describe fossils based on that knowledge, encouraging them to determine what of their knowledge is consistent with the objects they have in their “fossil” group.
- Criteria commonly associated with fossils include: an age (defined as being at least 10,000 years old), the preserved remains (an imprint or piece) of a plant or animal, originating from sedimentary rock, and having a porous structure (has small air pockets or pores; this is generally true for fossilized bone).

# I GOT YOU COVERED

An organism's body coverings and footprints allow us to understand anatomical similarities between modern and ancient organisms. While footprints do fossilize well as "trace fossils", body coverings often do not as the tissues break down prior to fossilization. However, there is more recent evidence of feathers present on ancient organisms, both as a mechanism to maintain body warmth and to assist in flight or gliding among trees.

In this activity, your student will look at trace fossil evidence in footprints and body coverings to make the connection that modern and ancient organisms have similarities based on their anatomy.

## LEARNING GOALS:

- ✓ I can infer relationships based on anatomical similarities and differences.

II

## TRACE FOSSILS

### CONTENT

- This is a reading section that introduces your student to trace fossils and Archaeopteryx.
- There are many scientists who speculate that Archaeopteryx is a "missing link" that demonstrates the relatedness of dinosaurs and birds. It is important to know that this is only speculative.

## MAKE A TRACE

### PREPARATION AND SUPERVISION

**WARNING:** Do not inhale plaster powder. It can irritate the lungs.



- Be aware that dust from mixing the plaster can irritate your lungs. Do not allow your student or yourself to breathe in closely to the plaster while it is being mixed.
- The packaging will tell you to mix two parts plaster with one-part water. However, this will make the mixture thinner and take longer to dry. If your student struggles to mix the plaster thoroughly with only 4 tablespoons of water, have them add no more than 1 tablespoon of water.
- If you used 5 tablespoons total to create your mixture, you will want to let the plaster sit for longer than 90 minutes. Another option, is to take a paper towel and absorb water sitting at the top of the mixture to reduce the overall water content. Have your student observe the imprints when they remove their feather and shell. The imprint of the feather will be clearer after sitting in the plaster longer than the shell. If the shell isn't making a good imprint, feel free to leave it sitting in the plaster longer. However, do not have the shell sit in the plaster overnight or it can damage the imprint left behind as the plaster may stick and dry to the shell.
- You will want the plaster to dry fully. To do so, you can place the pan in a sunny window or even bake it on low for a couple minutes. If you choose to bake your plaster, watch it while it bakes. If it becomes too dried out, it can crack. DO NOT microwave the pie pan!



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