



Little Leonardo's™ Fascinating World of Paleontology introduces kids to the captivating study of fossils and dinosaurs. Through fun facts about dinosaurs and the scientists who study them—plus a collection of simple hands-on activities—kids will be encouraged to go out and make a dino discovery of their own. Also includes a glossary of key terms.

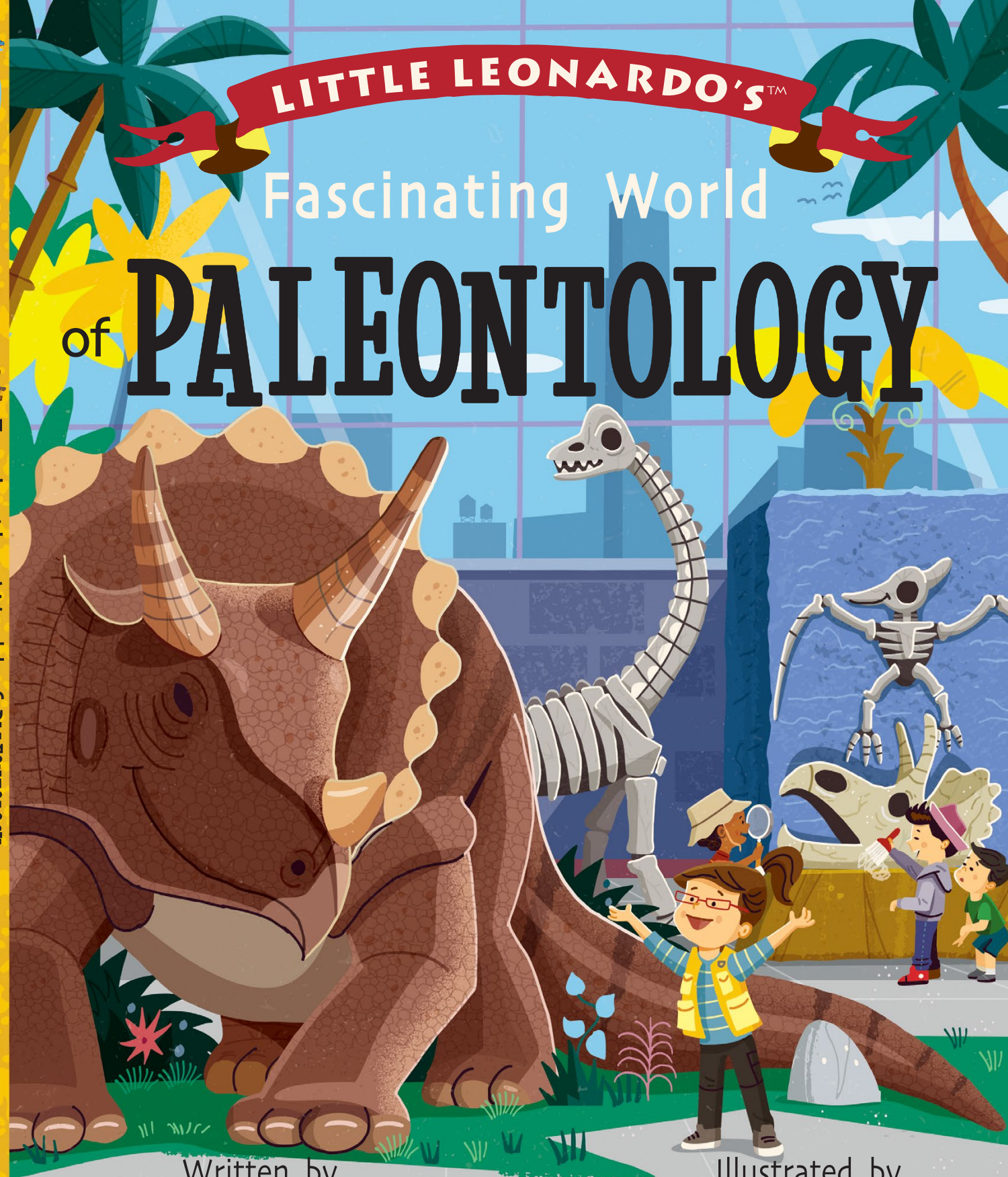
With original Renaissance man Leonardo da Vinci as inspiration, these charming primers are the perfect way to encourage your brilliant child's interest in the fascinating worlds of the educational STEAM curriculum: Science, Technology, Engineering, the Arts, and Mathematics.



\$12.99 U.S. • Ages 4 to 8



LITTLE LEONARDO'S™ Fascinating World of PALEONTOLOGY Paprocki ★ Bond GIBBS SMITH



LITTLE LEONARDO'S™ Fascinating World of PALEONTOLOGY

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Sometimes animals only leave **IMPRESSIONS** in the mud, like footprints. If these impressions fill up with more mud, they can make fossils called **NATURAL CASTS**. They can even copy body parts that don't normally preserve as fossils, like skin.



Other natural systems can preserve fossils, but they are still pretty rare. Some natural forces, such as **EROSION**, can also destroy them. Hunting for fossils sometimes feels like a race against time, and fossil **LABS** have to work quickly and carefully to recover and repair their fossils.



Figuring out which fossils belong to which **SPECIES** really challenges scientists. Some living things completely change shape as they age. Scientists call these changes **ONTOGENY**. For example, a baby **PROTOCERATOPS** hatched with a head that looked like a parrot's head. As adults, they grew large frills, like a Triceratops.



Together, anatomy, sedimentology, and other techniques work like parts of an imaginary time machine. Scientists can use them to learn about prehistoric life, almost like traveling back in time. What discoveries will you make in the distant past?



BUGS IN GUMMY AMBER



Would you ever want to eat a bug? EW! What if you covered it in ten-million-year-old maple syrup? Double EW! Eating bugs in amber would never be a good idea, but you could eat *this* model of amber, if you wanted to. Just don't eat the bug inside! For this project you may need help from a grown-up.

What You Need:

- ✧ Plastic insects small enough to fit completely inside ice tray compartments
- ✧ Ice tray
- ✧ 1/2 cup water or fruit juice (for best results, use 100% juice)
- ✧ Small saucepan
- ✧ Food coloring (optional)
- ✧ 2 tablespoons of gelatin (about 2 packets) or 1/2 tablespoon agar powder
- ✧ 2 tablespoons honey or agave syrup (optional)
- ✧ Turkey baster

What You Do:

1. Rinse the plastic bugs, especially if you intend to make these models as treats. It's best to avoid bug toys with any paint on them. Prepare the ice tray by loading each compartment with at least one bug. Don't let any parts stick out of the tray.
2. Start the gummy mixture by adding water or juice to the pan. If using water, a few drops of food coloring will make better-looking gummy amber. Real amber comes in yellow-orange, orange-red, light green, and pale blue. Apple juice is a great color for amber.
3. Add gelatin to the water and let it soak for a bit. (For a vegetarian option, use agar instead. Agar is a seaweed extract that is sold in whole foods stores or Asian food markets. Agar gummies won't be as firm and won't be transparent.) Heat the mixture over medium heat until all the gelatin or agar is dissolved, stirring continually—do not allow the mixture to boil. It may have the consistency of a thin syrup at this point. Turn off the heat, but keep the mixture on the stove so it doesn't cool too rapidly. If you are using honey or agave syrup, add it now and stir until it dissolves.

4. Use a turkey baster to transfer the gummy mixture to the ice tray. Make sure the mixture completely covers the toy bug. Do not overfill. Depending on the size of the ice tray, it will probably take a few batches of gummy mixture to fill the whole tray. Timing is important for the gelatin/agar to set up, so it's best to work in small batches at a time. Chill the project in the refrigerator for about an hour. The gummies will keep for about a week if kept refrigerated in an airtight container. Again, be careful not to eat the bugs!



FIX THE CHOCO-CHIP FOSSILS

Fossil repair takes steady hands, sharp eyes, and a lot of practice! Not many people get to work on irreplaceable fossils, but this project lets you practice the skills without risking the bones.

What You Need:

- ✧ Chocolate chip cookies
- ✧ Toothpicks (round, sturdy ones)
- ✧ Metal forks (optional)

What You Do:

1. The best cookies for this project will have hard chips in a soft cookie. Cheap but fresh store-bought cookies often work best, especially if they have mini M&M's. However, don't be afraid to experiment with different brands.
2. Pretend the chocolate pieces are fossils, and you are a technician in a fossil lab. Just like real fossils, every cookie will present different challenges. Start by observing the cookie and finding where each of the chocolate "fossils" hide. Plan ahead: starting on the edge and working inward will lead to better results.
3. Use a toothpick (preferably) or metal fork to scrape the cookie matrix away from the chocolate. The goal is to remove the chocolate with as little damage as possible. For safety's sake, always scrape away from you or your fingers! You can break the cookie as long as you can control where it cracks.
4. Sometimes working on chunks of cookie away from the fossil leads to better results than doggedly scraping right next to it. Sometimes you can gently pry the fossil out of the cookie without scraping at all. Try finding a cookie that will let you try this! This part of paleontology definitely uses more art than science—sometimes it's all about feeling your way through the project.



WHAT YOU SHOULD KNOW: Chocolate chips may not count as fossils, but the skills used in this project nearly match the ones scientists use to recover and repair real dinosaur bones. Fortunately, cookies are much more forgiving than fossils: breaking a chocolate chip feels much better than breaking an irreplaceable 150-million-year-old fossil! And though you wouldn't want to eat a dinosaur bone, believe it or not, sometimes lab technicians will lick fossil bones! They don't do it to taste them, though, because rock tastes horrible. But bone has a texture that will stick to your tongue, while rock doesn't. It wouldn't be a good idea to try this the next time you visit a museum! Bones on display always have special coatings that help preserve them, so you wouldn't feel the stickiness anyway.