

Name: _____

HIDDEN MASTERPIECE?

In “Standing Guard” (p. 12), you learned how scientists used detective work to discover the original appearance of ancient terra-cotta statues. In the following passage, you’ll learn about technology being used to uncover a masterpiece that was thought to have been destroyed. Read the passage, and then use complete sentences to answer the questions that follow.

ART SLEUTH

For nearly five centuries, people thought a mural created by the famous artist Leonardo da Vinci, *The Battle of Anghiari*, was destroyed during a 1563 makeover of the building in Florence, Italy, where it was painted. It turns out that the architect in charge of the building’s renovation might have secretly saved Da Vinci’s masterpiece.

Scans revealed a gap—not found anywhere else in the building—behind a wall covered by another artist’s painting. Maurizio Seracini, an engineer from the University of California, San Diego, believes that the gap conceals a secondary wall containing Da Vinci’s lost mural. Seracini hopes to use high-tech tools to “see” through the outer wall and reveal what lies behind it.

Paint pigments get their colors from different

chemical elements. For instance, the white paint Da Vinci used contained lead (Pb), and his bright-red paint contained mercury (Hg). Seracini can detect these elements with a beam of *neutrons*, or uncharged particles, that penetrates the outer wall.

If Da Vinci’s mural is there, then the atoms in the paint will absorb the neutrons, break down, and give off *gamma rays*—a type of high-energy electromagnetic radiation. Because different chemical elements emit gamma rays of different energy, Seracini would learn which elements and paints are hidden behind the wall.

So far, Seracini has tested the new technology on mock walls, with promising results. The final step is to build a portable machine and take it to Florence to examine the real thing.

QUESTIONS

1. What evidence suggests that Da Vinci’s mural may still be intact?
2. In your own words, explain what happens when a neutron hits an atom.
3. What does it indicate if one material gives off gamma rays with a different energy than another material when exposed to a beam of neutrons?
4. Why do you think Seracini has tested his scanning technology on a mock wall before he attempts to use it on the real thing?
5. How might the technology described in the passage be helpful to archaeologists studying the terra-cotta warriors?