

Palaeontology

with Dr Gabriel Ladeira Osés

Talking points

Knowledge & Comprehension

1. What is a fossil?
2. How and why do fossils differ from the original organisms that formed them?
3. What is biomineralisation, and what examples of it can you give?

Application

4. If you discovered a fossil, what would you want to learn about it? If you were a palaeontologist, what techniques would you use to analyse it, and why?
5. What areas of palaeontology interest you most as a possible career path? What steps would you need to take to pursue this path?

Analysis

6. Why do you think Gabriel compares palaeontologists to detectives?
7. Why does Gabriel combine many different techniques to analyse fossils, rather than using just one?

Evaluation

8. Which do you think is more important – discovering new fossils, or developing better techniques for studying those already found? Explain your answer.
9. To what extent do you agree that it is important to study organisms that lived hundreds of millions of years ago? Why?

Activities

Spend some time researching online to learn more about biomineralisation, fossils, preservation of soft tissues and the techniques used by palaeontologists. You should be able to find videos and accessible articles that can help you dive deeper into the topic. Try to find images that give an indication of what the earliest biomineralising animals might have looked like, and what their fossils look like today.

Inspired by Gabriel's article and your own research, create an engaging creative art piece telling the story of the earliest biomineralised organisms and how palaeontology techniques have helped to uncover their secrets.

You could produce a comic strip, artwork, poster, short animation or mini documentary. Think about what definitions and images you might want to include, how to explain the science in a factual, fun and interesting way, and how you will capture your audience's attention.

Reflection questions

Share your creative art piece with your classmates and hear their feedback. Reflect on your work by considering the following questions:

- What are you most proud of?
- What do you think you could improve?
- How did you decide what to include and what to leave out?
- How easy was it to communicate the science while keeping your piece interesting and engaging?
- Why do you think it is important for researchers to be able to explain their work to others who do not have a background in science or palaeontology?
- Who is your target audience? How would you adapt your piece for different audiences (e.g., young children, teenagers, older adults)?
- How has creating this work developed your own understanding of biomineralisation and the different techniques for studying fossils?

More resources

- Visit Gabriel's Futurum webpage to watch videos showing his research techniques:
futurumcareers.com/time-travelling-detectives
- This collection of TED Talks contains videos that explore different ideas about fossils, dinosaurs, evolution and extinction: ted.com/topics/paleontology
- The American Museum of Natural History provides palaeontology articles, activities and 'Meet the scientist' interviews: amnh.org/explore/ology/paleontology