

Name:

Maaya



Role:

Researcher

Question:

What happens when a caterpillar becomes a butterfly?

Why it is important?

Imaging can be used to monitor the life cycle of the chrysalis showing the changes during 13 days of his life. Imaging inside a caterpillar as it changes into a butterfly is important as it gives us a better understanding of the lifecycle of insects. Insects are important in nature as they pollinate plants and are food for other animals.

What will you do?

By using computed tomography, me and my team will look at the internal anatomy of the chrysalis and track the changes in structures such as the breathing tubes, gut and wings.

What does success look like?

Changes will help us understand the lifecycle of insects, helping us to protect them and understand when things go wrong in their growth. Changes that we see in caterpillars can also help us understand changes in other species of insects and even animals (including humans).

Name:

Dominic



Role:

Researcher

Question:

What do Schistosome flatworms look like as they grow inside animals (including humans)?

Why it is important?

Schistosomes are small parasitic flatworms that live inside the blood vessels of infected mammals, including humans. They are also commonly known as blood flukes. Schistosomiasis, the disease caused by having a Schistosome infection, affects almost 210 million people worldwide. Up to 200,000 people die every year as a consequence of being infected.

What will you do?

We will take detailed scans of the Schistosomes using X-rays. By taking lots of images at different angles, we will be able to piece together what the Schistosomes look like in fine detail.

What does success look like?

We will reveal how the male and female Schistosomes live together in the body. By understanding how they interact we can understand their lifecycle allowing us to develop better treatments.

Name:

Matthew



Role:

Researcher

Question:

How can we better understand the history and context of archaeological artefacts using the latest analytical techniques?

Why it is important?

Archaeology is the study of the human past. It addresses big questions about our past that cannot be answered in other ways. Understanding the social history and development of human civilisation is a subject that makes us think about where we are now and where we want to go in the future.

What will you do?

By using the very latest X-ray CT technology, we will scan an extremely delicate human skull dating back 7000 years which will enable us to examine its 3D structure.

What does success look like?

This will tell us important information about this person's life, including their diet and potentially causes of death. We will also have a digital record of this artefact which could be used by future scientists for other studies without damaging its delicate structure.

Name:

Claire



Role:

Researcher

Question:

What is inside a battery and why won't it last forever?

Why it is important?

Batteries are fascinating devices that allow us to take energy wherever we want. They are vital for everyday life and power our phones, tablets, cameras and now even our cars. We need to know how batteries are made and how they fail so that we can make batteries that are smaller and last much longer.

What will you do?

By taking fine detailed scans, my team and I will be able to peer inside batteries and see why they fail by looking for defects, such as cracks.

What does success look like?

We will use this information to improve the design of batteries so that they last longer, store more energy, and are lighter and smaller.

Name:

Michelle



Role:

Researcher

Question:

What do plants look like inside?

Why it is important?

Plants are important in nature. They provide food and homes for animals and insects. They provide crops for us to harvest and eat.

What will you do?

We will look inside plants using X-rays. We will take lots of pictures and then assemble them to form a 3D image of different parts of the plants, such as the roots and the flowers. By using X-rays, the roots and flowers will not be destroyed or altered. This will allow us to look at and measure the structures in an undisturbed state.

What does success look like?

We will be able to better understand what plants need to grow well. In doing so, we will be able to help them grow better and understand when they do not grow well. This will help produce crops and also help maintain ecosystems in nature.

Peer Review Prompts

Look for Strengths

- I like this work because...
- This work meets the needs of society by...
- The biggest strength is...
- The equipment requested will be useful because...
- You have thought of a good way of doing...
- Your idea is...

Areas to reconsider

- You might like to...
- You could explain in more detail...
- You could take another look at ...

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