

For Creative Minds

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Mummy Map

| Mummy | Country | Continent |
|-------------|-----------|---------------|
| Blue Babe | USA | North America |
| Inca Maiden | Argentina | South America |
| Tamut | Egypt | Africa |
| Lady Dai | China | Asia |
| Otzi | Italy | Europe |

There are mummies all over the world. Which of these mummies was found closest to where you live?

1. Which ocean is closest to Blue Babe?
2. Which mummy is south of Otzi?
3. Which ocean is closest to Lady Dai?
4. Which ocean is closest to the Inca Maiden?
5. Which two mummies are in the Americas?
6. Which mummy is east of Tamut?



1: Pacific. 2: Tamut. 3: Pacific. 4: Atlantic. 5: Blue Babe and Inca Maiden. 6: Lady Dai

Mummy Scientists and Their Tools

Scientists who study ancient human artifacts and remains such as the mummy of King Tut are **archaeologists**. Scientists who study the remains of ancient plants and animals like Lyuba are **paleontologists**. Both use similar methods and tools to locate sites, objects, and remains to study. By analyzing fossils, preserved remains, and the artifacts surrounding them, they can piece together something of how the person or animal lived and died.

An **artifact** is an object made by people.



Tools and Technology

Scientists use medical scanning equipment to “see” inside fossils and mummies. These are some of the tools researchers use:

DNA

DNA can show family relations (such as Ramesses III and his son) and can expose diseases the person or animal might have had.

CT Scan

A computer combines multiple x-rays in layers to make a 3-D cross-section of bones and soft tissues.

MRI

Magnetic field and radio waves produce 3-D images of organs and tissues.

X-ray

Radiation passes through the body. Denser structures such as bone show up better on an X-ray than soft tissues.

Chemical tests

Chemicals in the body can show what the mummy ate, what certain materials are made of, or the presence of disease.

Do you want to be an archaeologist or paleontologist? It takes many years of study and field experience, but if you work hard the dream can come true! Most archaeologists and paleontologists get advanced college degrees in their field of study. But you can prepare even before starting college! Read as much about the field as possible. Volunteer to help research at a museum, or work on a dig. This will help you develop the skills and experience you need to start your science career!

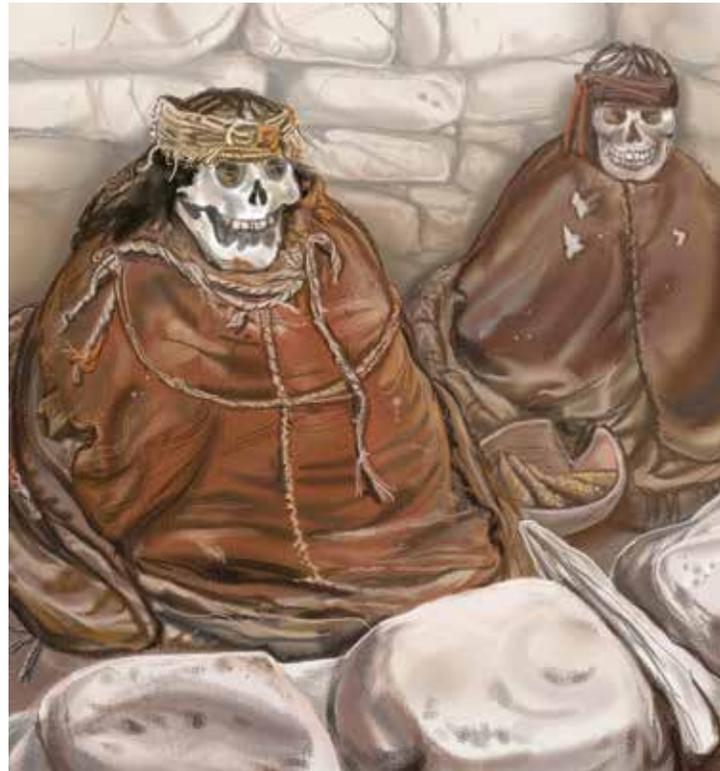


How to Make a Mummy

There are several ways to make a mummy. Here are the four main ways mummies get preserved.

Bogged Down

Tollund Man and other bog mummies were preserved in a wet environment. While this seems like it would rot the bodies faster, the water in a peat bog has very little oxygen. Bacteria that cause a body to decay need oxygen to survive. And bog water is acidic. It's like mild vinegar, which can help preserve canned food. Just like vinegar turns a cucumber into a pickle, the chemistry of bog water "pickles" a body.



Drying Out

The first mummies were made naturally. Dry conditions like those in a desert will naturally preserve a body. The Egyptians must have realized this in perfecting their method of mummification. But they weren't the only ones. Along the western coast of South America, the climate is dry and the soil contains salts that helped preserve bodies. Here bodies were buried in the sand to dry them before they were tied together in a seated position and wrapped in layers of cloth. Prized possessions were tucked into pouches and hung on the body.

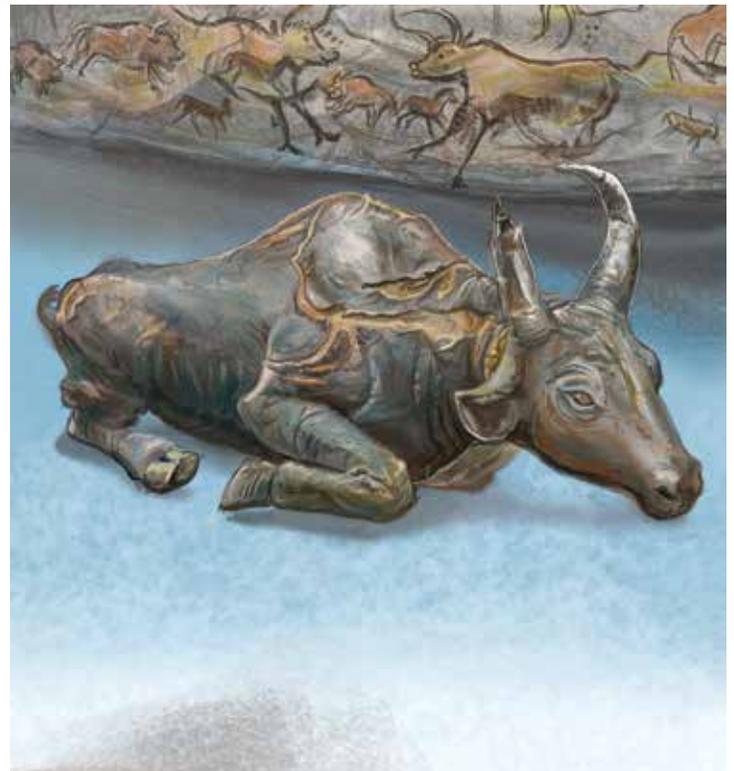


Egyptian Method

The Egyptians' elaborate process of mummification could take more than two months to complete. First the body's organs were removed, including the brain, which was sometimes pulled out through the nose with hooks. The organs were preserved in canopic jars. Sometimes the heart was left inside the body. Egyptians believed the gods would weigh a person's heart to decide whether he or she deserved eternal life. Next they used a kind of salt called natron, to dry the body out. The skin was preserved with resin, oil, and wax. The body was packed with linen or sawdust and finally wrapped in linen strips. Several nested cases held the body. Animals were preserved in the same way.

Freezing Up

Some mummies are naturally made when a body is quickly frozen. This is how Lyuba, Blue Babe, and Otzi became mummified. It's like putting a body in a freezer. Bodies that are frozen may be very well preserved, including the internal organs, blood, and other soft tissues. Once the bodies are removed from the ice, they begin to decay, so they must remain frozen.



Mummy Sequencing

Put these mummies in order from oldest to most recent to unscramble the word.

| | | |
|----------|-----------------------|-----------------------|
| T | Tamut | 2,900 years ago |
| I | Otzi | 5,300 years ago |
| R | Inca Maiden | 500 years ago |
| H | Lyuba | 42,000 years ago |
| S | King Tut | 3,300 years ago |
| Y | Vladimir Lenin | about 100 years ago |
| O | Tollund Man | 2,300-2,400 years ago |

Fuzzy Dates

How can the Tollund Man be dated to 2,300-2,400 years ago? Did it take a hundred years for him to die? No!

Scientists have different ways of dating mummies and other historical artifacts. Some things are written down by historians at the time. We know Lenin's exact date of death, because we have historical records that talk about him and record his death.

But there were no people writing about the Tollund Man when he died. So scientists use clues to learn when he died. They look at the soil around him, at the mummy itself, and at any artifacts found near the mummy.

If you found a mummy holding an iron sword, you might not know *exactly* when that mummy lived, but you could make an educated guess. The mummy had to live sometime after people learned how to make things out of iron.

These clues help scientists come up with a range of time. They can be confident that the mummy comes from some time within that range. The Tollund Man could be as old as 2,400 years old, or as recent as 2,300 years. But we know he's from around that time period.

Natural or Not?

Some mummies are formed by nature. Other mummies are preserved because people worked hard to make sure the body would be protected. Sort the following mummies based on whether they are natural or man-made.



Lyuba



Blue Babe



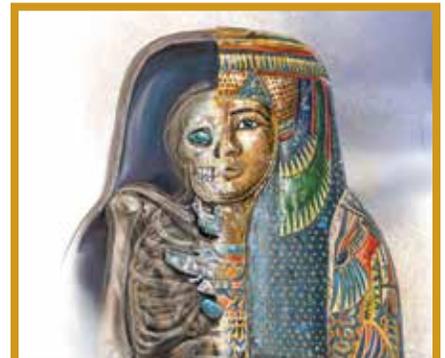
Pharaoh's Dog



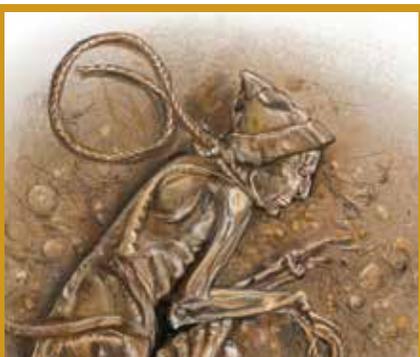
King Tut



Otzi



Tamut



Tollund Man



Lady Dai



Vladimir Lenin

Natural: Lyuba, Blue Babe, Otzi, Tollund Man
Man-made: King Tut, Pharaoh's Dog, Tamut, Lady Dai, Vladimir Lenin