

## **MAMMOTHS. ICE MUMMIES FROM SIBERIA**

Special exhibition at the NHM Vienna until 02.03.2015

The year 2014, in which the Natural History Museum Vienna is celebrating its 125th anniversary, draws to a close with a major autumn exhibition dedicated to an iconic animal of the Ice Age and the most famous extinct trunked animals in the world: mammoths.

Summer is the time when Siberia's ice mummies emerge as the permafrost thaws and the banks of rivers and streams are washed away. It is believed that today millions of mammoths remain frozen in the vast expanses of the Russian landscape. Whenever one comes to the surface there is no time to lose. If it is not quickly found and excavated then it thaws and is torn apart by scavengers, who rip the meat from the bones. Once exposed to the air, the soft tissue quickly succumbs to decay. That is the fate that awaits most of these ice mummies.

One of the world's most significant mammoth collections is housed in the Zoological Museum of the Russian Academy of Sciences in St Petersburg. Now, for the first time, the Zoological Museum has agreed to provide the NHM Vienna with a selection of its most important exhibits:

*"We are delighted about this cooperation. This is the first time we are able to present these exceptional objects to our visitors in Vienna. Among the highlights of the exhibition will be the first complete mammoth skeleton ever found (Lensky Mammoth or Adams Mammoth, discovered in 1799), fossils of dwarf mammoths which only became extinct around 3700 years ago – when the Great Pyramid of Giza in Egypt was already around 1000 years old – and a baby mammoth who was preserved in the Siberian permafrost for thousands of years,"* explains NHM Director General, Christian Köberl. *"This exhibition is a special experience for guests of all ages."*

Also on show will be around 15 exhibits from mammoth finds in Vienna, including fossilized teeth and bones from the NHM Vienna's paleontological collection.

**Media material and photos available for download are available at the following link:**

<http://www.nhm-wien.ac.at/presse>

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## About the exhibition

Around 60 spectacular exhibits – including approximately 30 original body parts, such as teeth, skeletons, and preserved remains from St. Petersburg, 15 objects found in Vienna, two models from the NHM's workshops, as well as graphs, pictures, and videos – are displayed in a 550 m<sup>2</sup> exhibition area at the NHM Vienna.

Woolly mammoths once inhabited a huge area that stretched from Western Europe across Asia as far as North America. Today, mammoth bones, as well as frozen mammoth remains and artefacts from Ice Age human civilizations, tell us much about how these animals lived and died. The contents of their stomachs even reveals the plants they ate and their preferred habitats. Over the centuries, discoveries of mammoth remains have provided the inspiration for fantastical ideas. During the Middle Ages, for example, it was thought that their bones were the bones of giants. Today the main question surrounding mammoths is why they died out. Did we as human beings contribute to their extinction? And will we, thanks to modern genetics, ever be able to bring them back to life?

The two main highlights of the exhibition are the first complete mammoth skeleton ever found (the Lensky Mammoth, better known as the Adams Mammoth) and “Khroma” the baby mammoth who was preserved in the Siberian permafrost for thousands of years. On show for the first time in Austria will be the famous baby mammoth “Dima”, as well as fossils of mammoths to survive on Wrangel Island in Siberia until the Great Pyramid of Giza in Egypt was 1000 years old. Further exhibits include copies of the baby woolly mammoths “Ljuba” and “Mascha”, as well as the mummified remains and body parts of other animals preserved in the ice, among them wolverine, horse, steppe bison, and rhinoceros.

Many of the objects on display are on loan from the Zoological Museum of the Russian Academy of Sciences in St Petersburg. The exhibition also includes finds from Vienna, giving visitors the chance to discover more about these animals that once roamed the region where the Austrian capital stands today.

## Highlights of the exhibition

### **Baby mammoth “Khroma”**

The frozen remains of the baby female mammoth Khroma were found in the permafrost of North Yakutia, Siberia, in October 2008. Dating back 45,000 years and named after the nearby Khroma River, she was found standing upright, buried up to her shoulders in frozen. As the upper layers of earth began to thaw and were eroded, parts of the body became exposed. By the time an expedition team arrived in May 2009 to excavate the remains, much of the body above the ground – including the head, trunk, and shoulders – had been destroyed by predators, most likely ravens and Arctic foxes. The heart and lungs had also been destroyed. However, the lower part of the body was undamaged and has been kept frozen ever since. Remnants of her mother's milk were even found in Khroma's stomach and intestines. DNA analyses and CT scans of the urogenital tract showed that Khroma was a female. These scans also revealed the cause of her death: Khroma's mouth, nasal cavities, throat, and windpipe are full of mud, indicating that this youngster suffocated after falling into a mud hole or becoming trapped under a mudslide. She was only around two months old when she died.

Khroma is shown in a specially cooled display case as she has been kept in a frozen state since her discovery.

### **Baby mammoth “Dima”**

In 1977 a bulldozer operator working in the gold-mining industry discovered the preserved remains of a young male mammoth in the Madagan region of Siberia. Dima, as he became known, was the first full baby mammoth to be found and soon became a media sensation. He lived around 40,000 years ago and died at the age of six to twelve months. The mummified remains included all internal organs and the penis. Upon discovery there were some small areas of fur on the ears, the 58 cm trunk and parts of the body; following conservation work, however, just a few hairs remained on the feet. When he was alive Dima would have stood around 90 cm tall and weighed around 110-115 kg; the dried out remains weigh only 61 kg.

There are several indications that Dima was not in the best of health when he died. A very thin layer of fat and empty small intestine show that he was most likely undernourished. He was also weakened by a

severe parasite infection and a wound on his front right leg. It is likely that he fell into a pit or a mud hole and became so exhausted that he was unable to free himself.

The stomach contained black mud as well as some of Dima's own hair, which he most likely ate out of desperation.

### **Lensky Mammoth (Adams Mammoth)**

The first mammoth skeleton to be fully mounted and exhibited was discovered in 1799 in north-eastern Siberia at the estuary of the Lena River. Originally the fully preserved remains were discovered in the permafrost, with only the trunk missing. However, by the time it was excavated six years later and transported to St. Petersburg, the soft tissue had been destroyed by animals.

### **Mammoth finds in Vienna**

Woolly mammoths lived not only in Siberia, but also across the Eurasian region and North America. In Central Europe they were particularly common during the most recent glacial period, between 117,000 and 12,000 years ago. Finds of thousands of fossilized teeth and bones – particularly in Lower Austria – prove that mammoth herds used to roam across Austria. Mammoth remains have also been found at construction sites and former gravel pits in Vienna.

Mammoth teeth and bones have been found at the following places in Vienna, including famous locations, such as the Dominikanerbastei, Burgtheater, Belvedere, Hohe Warte, and Lainzer Tiergarten.

- 1st district, Dominikanerbastei, molar tooth from upper jaw
- 1st district, Kärntnerstraße / Johannesgasse, molar tooth from upper jaw (1907)
- 1st district, between Krugerstraße and Seilerstätte, molar tooth from lower jaw (1882)
- 1st district, Burgtheater, molar tooth from lower jaw
- 1st district, Schwarzenbergplatz, molar tooth from upper jaw (1898)
- 3rd district, Belvedere, molar tooth from upper jaw
- 4th district, Lehargasse (formerly "Laimgrube"), molar tooth from lower jaw (1866)
- 9th district, Canisiusgasse 8-10, molar tooth from lower jaw (1912)
- 13th district, Lainzer Tiergarten, tusk
- 18th district, Türkenschanze, molar tooth from upper jaw (1904)
- 19th district, Nussdorf, first vertebra
- 19th district, Nussdorf, upper jaw with molar teeth
- 19th district, Heiligenstadt, Greinergasse (formerly "Schottergrube"), molar tooth from lower jaw (1895)
- 19th district, Heiligenstadt, between Heiligenstädter Straße and Grinzinger Straße (formerly "Ziegelei"), molar tooth from lower jaw and tusk (1914)
- 19th district, Heiligenstadt, Hohe Warte, molar tooth from lower jaw (1894)

### **AEIOU Bone**

One of the most well-known discoveries is the "AEIOU Bone". This thigh bone, which today belongs to the collections of the University of Vienna, is inscribed with the letters AEIOU (A.E.I.O.U., was an acronym devised by the Habsburg emperor Frederick III (1415–93); there are several interpretations of its meaning, including: *Austriae est imperare orbi universo* ["It is Austria's destiny to rule the whole world"]) and the date 1443. During excavation work for the North Tower of St Stephen's Cathedral, workers found two enormous bones that were at the time believed to have belonged to giants. They were hung up next to the main entrance to the cathedral, which may be the reason why this entrance is today still known as the "Riesentor" ("Giant's Door").

## A few things you, didn't know about mammoths

- Contrary to popular opinion, **woolly mammoths** were not particularly large. The largest reached a shoulder height of 3.2 m, but most were **smaller than the modern African bush elephant**. There was also a dwarf mammoth form that lived on Wrangel Island and grew to a maximum height of 2.3 m.
- Studies have shown that **mammoths and Asian elephants** are “siblings”. They are **more closely related to each other than Asian and African elephants**, which can be considered “cousins”.
- Woolly mammoths weighed **between 4 and 6 metric tons**. Like modern elephants, **mammoths were unable to run or jump** due to their enormous weight – **one of the four legs** had to **stay in contact with the ground** at all times.
- For reasons of animal conservation, **trade in elephant ivory is strictly forbidden**. **Mammoth ivory**, on the other hand, can be **bought and sold freely**. This is one of the reasons why mammoth ivory is occasionally presented as elephant ivory. Differences can, however, be seen by comparing cross-sections of the respective ivories.
- As with elephants, mammoth skeletons continued to grow throughout an animal's life. Therefore, **the larger the mammoth, the older it was**. **In order to reduce the weight of the huge head, the bones are not solid but instead have a honeycomb-like structure**. The trunk is pure muscle and has no internal skeleton.
- The **closest living relations** to proboscedia (trunked mammals) are, in fact, **manatees and hyraxes**, despite there being no physical similarity at first sight.
- Mammoths and elephants are among the largest and heaviest mammals to have walked the Earth. Therefore, it may come as a surprise to learn that both do not **walk** on the soles of their feet but more or less **on their toes – almost like ballerinas**. The bones in their hands and feet are protected by a thick layer of fat and collagen to enable their legs to carry their enormous body weight.
- Mammoths most likely lived in **herds** with adult females and their young. **Each herd was led by an old and experienced female animal: a matriarch**. While young female animals stayed with their families, young males left the herd as soon as they were sexually mature. Adult males lived alone or in small groups with other adult males, only meeting up with females to mate.
- The **last of the European mammoths** lived **around 12,000 years ago in France and Great Britain and around 10,000 years ago in western Russia and Estonia**. In earlier times their enormous area of distribution stretched from Western Europe via the Eurasian region as far as North America.
- Tusks are elongated incisors. Tusks grow throughout an animal's life, so the older an animal is the longer its tusk are. Male mammoths had longer tusks than female mammoths. The **largest woolly mammoth tusk** ever found **measures 4.2 m and weights 84 kg!**
- Tests on DNA taken from the tissue of mammoths preserved in permafrost show that, just like in modern mammals, the color of a mammoth's coat was determined by its genes. There were blonde and brunette mammoths. However, the **reddish color seen in the coat of many preserved mammoths** is the result of a **chemical change** in the pigment over the course of many millennia.

- There are a number of theories on the **etymology of the word “mammoth”**. One theory is that the name is derived from the Hebrew word **“Behemoth”**, which describes a huge mythical creature with a gentle nature. Another theory is that it is a combination of the Estonian words **“Maa” (earth)** and **“Mutt” (mole)** – mammoth bones were believed to be the remains of animals living in the earth.
- There is **no permafrost south of 60 degrees of latitude**, so in these regions one finds mammoth bones but **no well-preserved remains**. Nevertheless, it is still rare to find full skeletons. In many cases the bodies of mammoths have been destroyed by scavengers and also humans. Most bones on display in museums are molar teeth and tusks, both of which are hard and therefore able to resist decay.
- For over two million years the **European continent** has experienced fluctuating periods of warm and cold weather. Mammoths were **“visitors”** to Europe **during the cold periods**, migrating all the way to Siberia during warmer periods.
- **Numerous large mammals** became **extinct** at the end of the last Ice Age. However, even today it is still not entirely clear why this happened. There are two theories, which are not mutually exclusive: **climate change and hunting by humans**. To what extent each of these two factors contributed to mammoths becoming extinct is a **subject of intense discussion among scientists and researchers**.

Supported by the AUSTRIAN LOTTERIES.

## Information

### Opening hours

Thu–Mon, 9.00–18.30 | Wed 9.00–21.00 | Tue closed

### Opening hours over Christmas and New Year

Wed, 24 December 2014: 9.00–15.00

Thu, 25 December 2014: closed

Fri, 26 December 2014: 9.00–18.30

Tue, 30 December 2014: 9.00–18.30

Wed, 31 December 2014: 9.00–18.30

Thu, 1 January 2015: closed

Tue, 6 January 2015: 9.00–18.30

### How to find us

Underground lines U2, U3 | Bus routes 2A, 48A

Tram routes 1, 2, D, 46, 49

### Admission

Adults	€10.00
up to 19 years & Friends of the NHM	free admission
Concessions	€8.00
Groups (min. 15 persons) per person	€8.00
Students, apprentices, soldiers & individuals performing civil service	€5.00
Year pass	€27.00
Planetarium	€5.00
Concessions	€3.00

### Information

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### About the Natural History Museum Vienna

Opened in 1889, exactly 125 years ago, the Natural History Museum Vienna is one of the most important natural sciences museums in the world. It is home to around 30 million exhibits and in 2013 welcomed more than 750,000 visitors. The museum's earliest collections date back over 250 years and feature famous and unique objects such as the 25,000-year-old Venus of Willendorf, the Steller's sea cow that became extinct over 200 years ago, and enormous dinosaur skeletons. Further highlights in the 39 rooms include the world's largest and oldest collection of meteorites, among them the spectacular new Tissint meteorite from Mars, and the new anthropological exhibition „becoming (hu)man“. A Digital Planetarium has also been installed to mark the NHM Vienna's 125th anniversary.

The museum's departments are home to around 60 scientists carrying out fundamental research in a wide range of fields related to earth sciences, life sciences and human sciences. This makes the museum an important public institution and one of the largest non-university research centers in Austria.

## Media photos (1/5)



View of the exhibition "Mammoths. Ice Mummies from Siberia."

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."  
Foreground: the first complete mammoth skeleton ever found, the  
Lensky Mammoth/Adams Mammoth.

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."  
Foreground: the first complete mammoth skeleton ever found, the  
Lensky or Adams Mammoth.

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."  
Background: the first complete mammoth skeleton ever found, the  
Lensky or Adams Mammoth.

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."  
Front view of the Lensky or Adams Mammoth.

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## Media photos (2/5)



View of the exhibition showing a rear foot belonging to a woolly mammoth.

© NHM Vienna, Kurt Kracher



View of the exhibition showing a rear foot belonging to a woolly mammoth.

© NHM Vienna, Kurt Kracher



Woolly mammoth tusks; background: photos showing excavation work in Siberia

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."

© Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."

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### Media photos (3/5)



View of the exhibition "Mammoths. Ice Mummies from Siberia."

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View of the exhibition "Mammoths. Ice Mummies from Siberia."  
Baby mammoth "Dima", left: his heart, right: his penis

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."

© NHM Vienna, Kurt Kracher



Steppe bison (*Bison priscus*)  
Skull with horns

© NHM Vienna, Kurt Kracher



View of the exhibition "Mammoths. Ice Mummies from Siberia."

© NHM Vienna, Kurt Kracher

## Media photos (4/5)



Baby mammoth "Dima"

© NHM Vienna, Kurt Kracher



Baby mammoth "Khroma"

© NHM Vienna, Kurt Kracher



Baby mammoth "Ljuba" (replica)

© NHM Vienna, Kurt Kracher



Mummified wolverine (*Gulo gulo*)

© NHM Vienna, Kurt Kracher

## Media photos (5/5)



Giant bone from St. Stephen's Cathedral, Vienna  
"AEIOU" mammoth bone  
Collections of the Center for Earth Sciences at the University of W  
Vienna

© NHM Vienna, Kurt Kracher



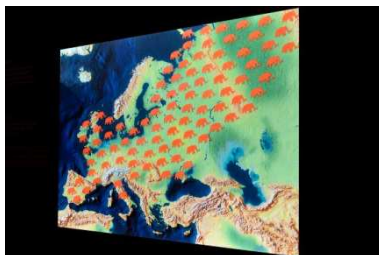
Baby mammoth "Khroma" in his special cooled display case at the  
NHM Vienna

© NHM Vienna, Kurt Kracher



View of the exhibition showing (foreground) the lower section of a  
mammoth jaw and (background) a chart comparing the sizes of  
different trunked animals, including the front leg of a Deinotherium

© NHM Vienna, Kurt Kracher



Maximum extension area of woolly mammoths 40,000 years ago

© NHM Vienna, Kurt Kracher



Woolly mammoth (*Mammuthus primigenius*)  
Painting by Franz Roubal, 1959

© NHM Vienna, Kurt Kracher



Woolly rhinoceros (*Coelodonta antiquitatis*)  
Painting by Franz Roubal, 1965

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