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The Yukagir Mammoth

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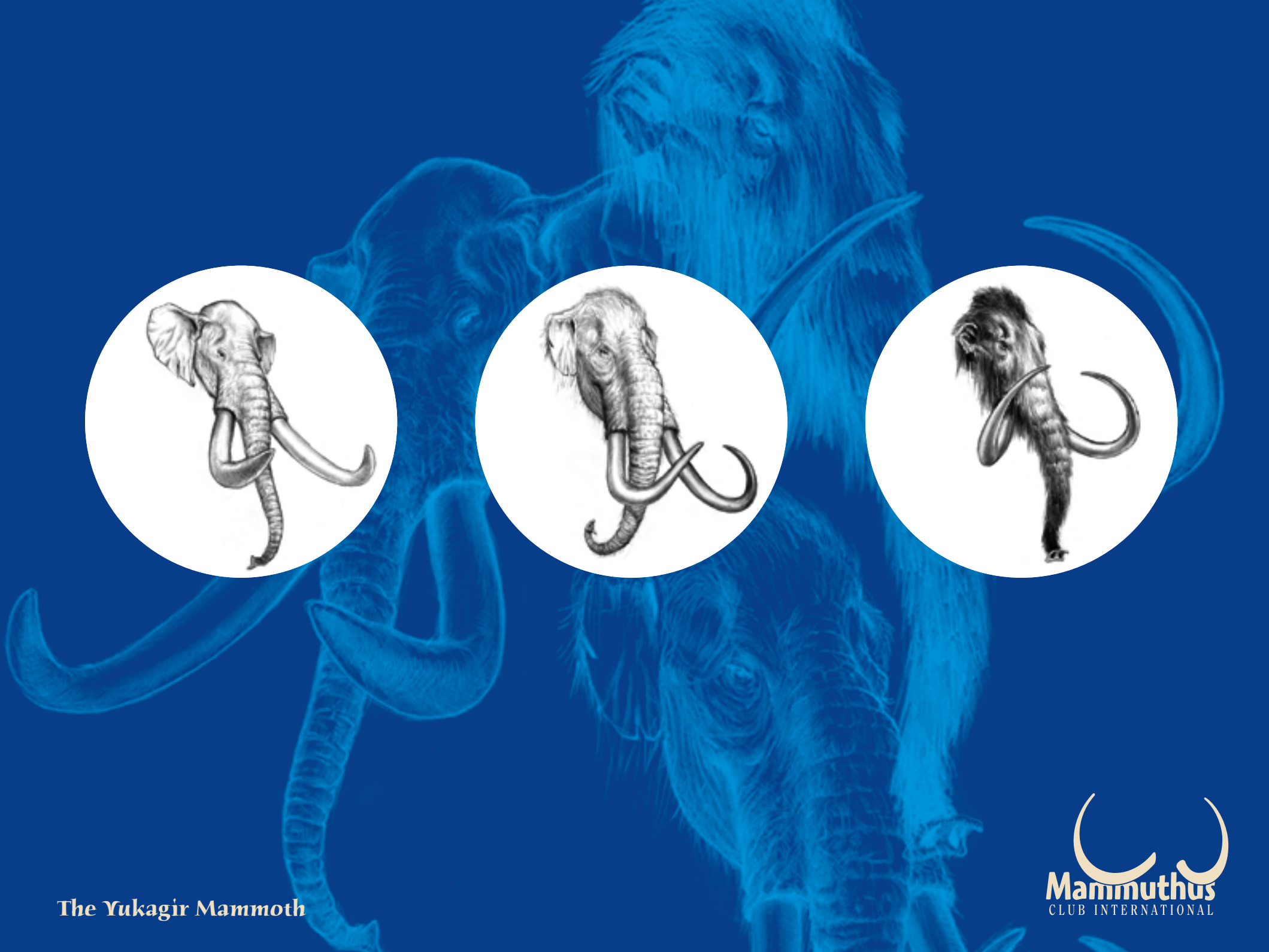

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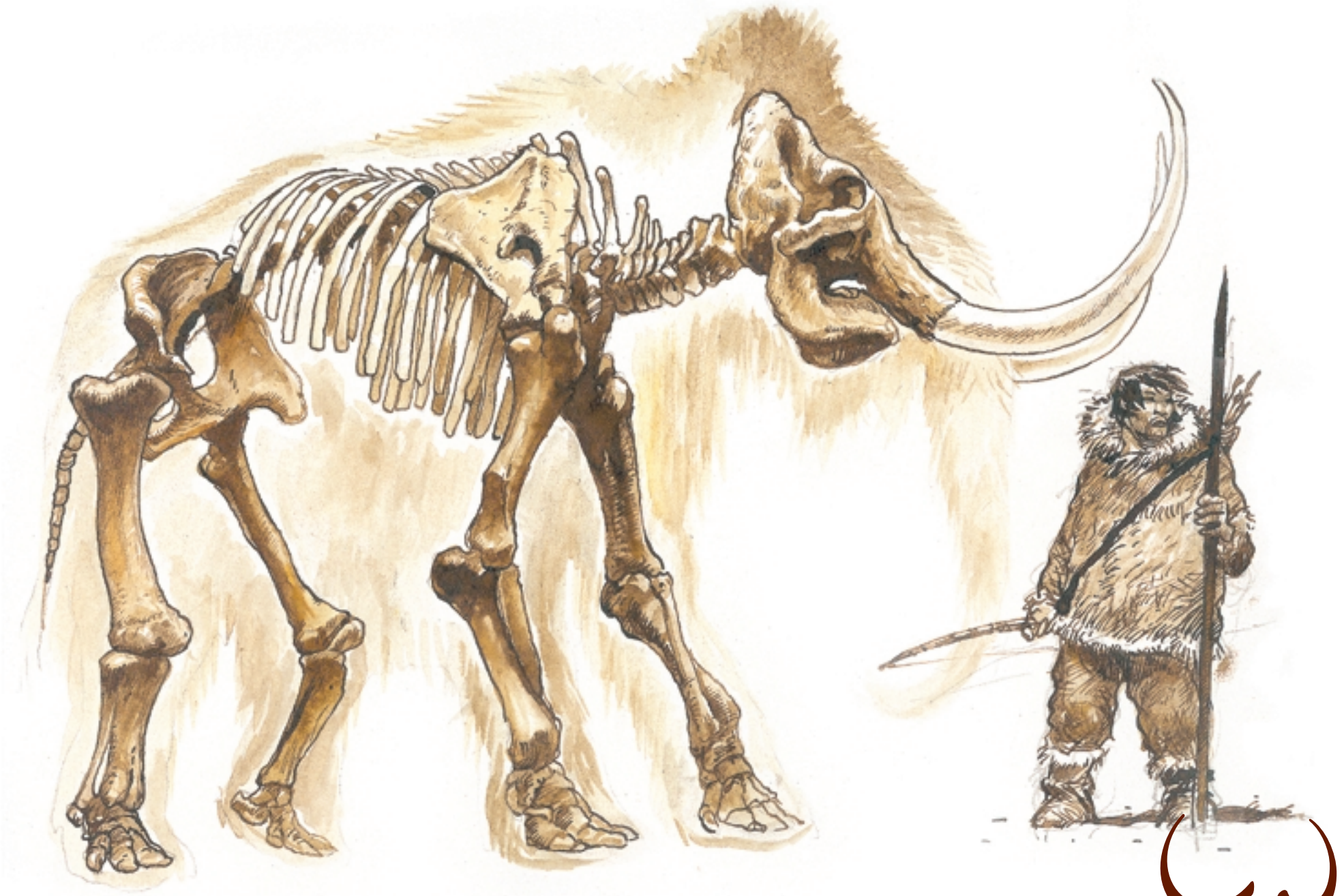

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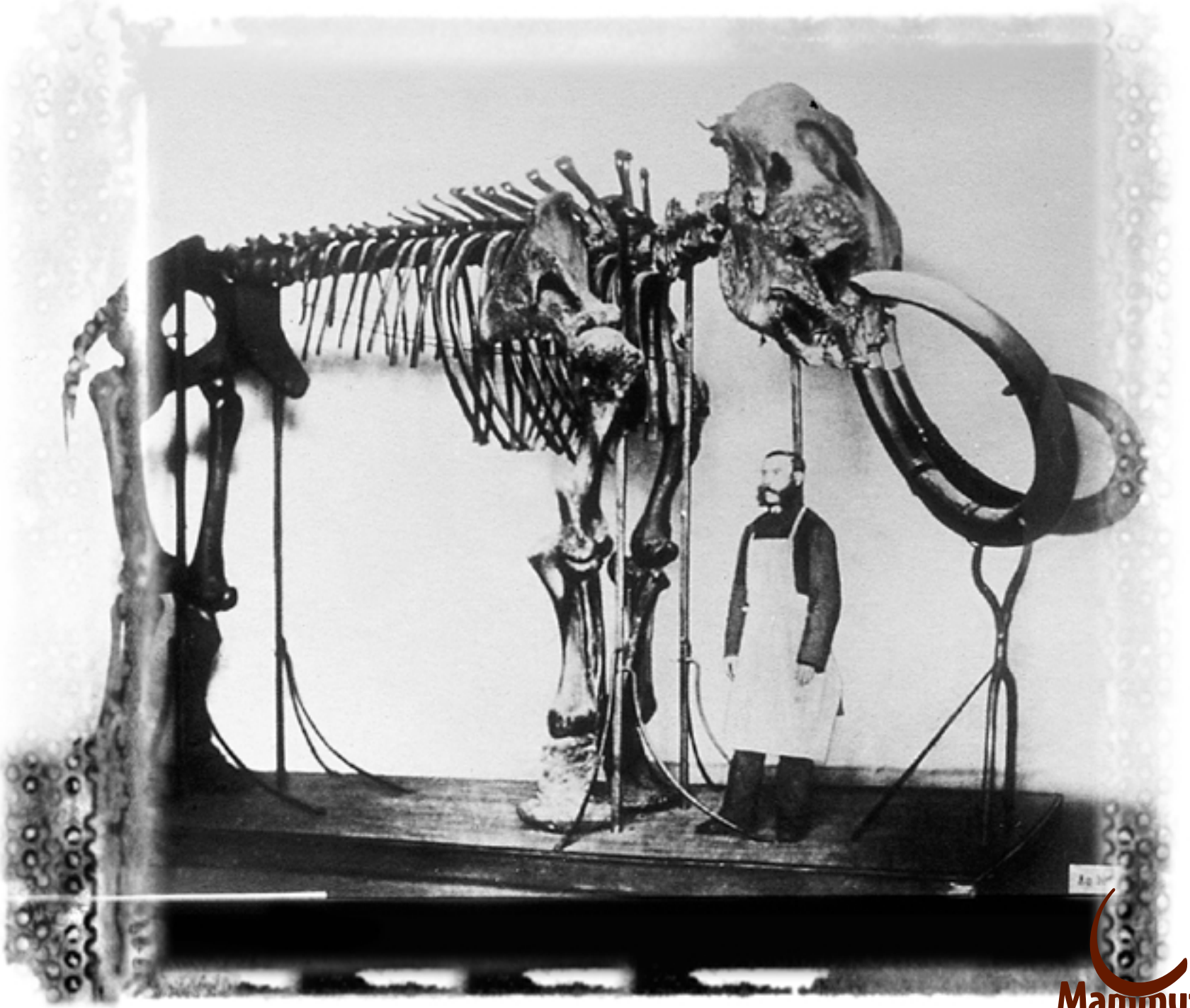

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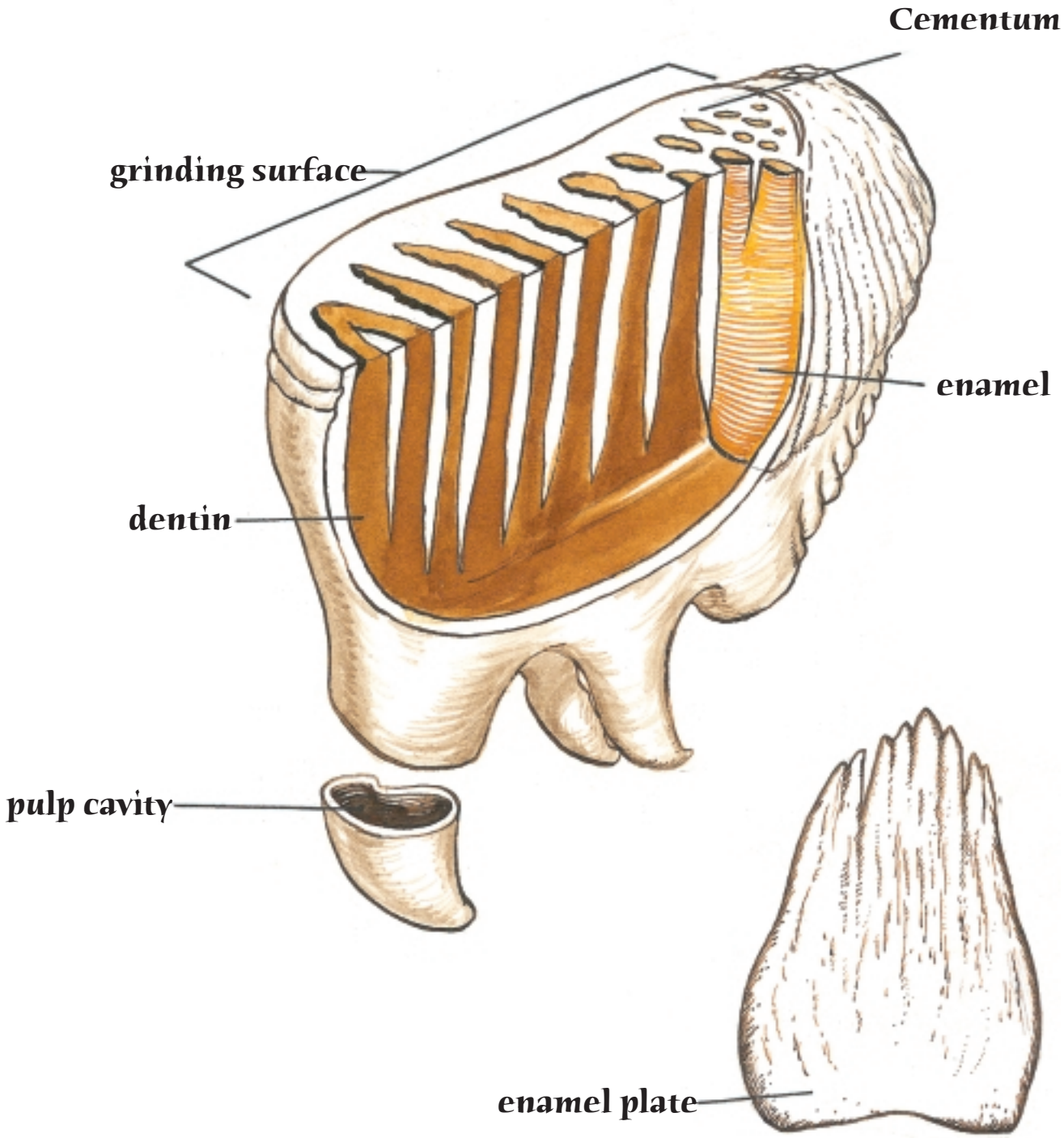

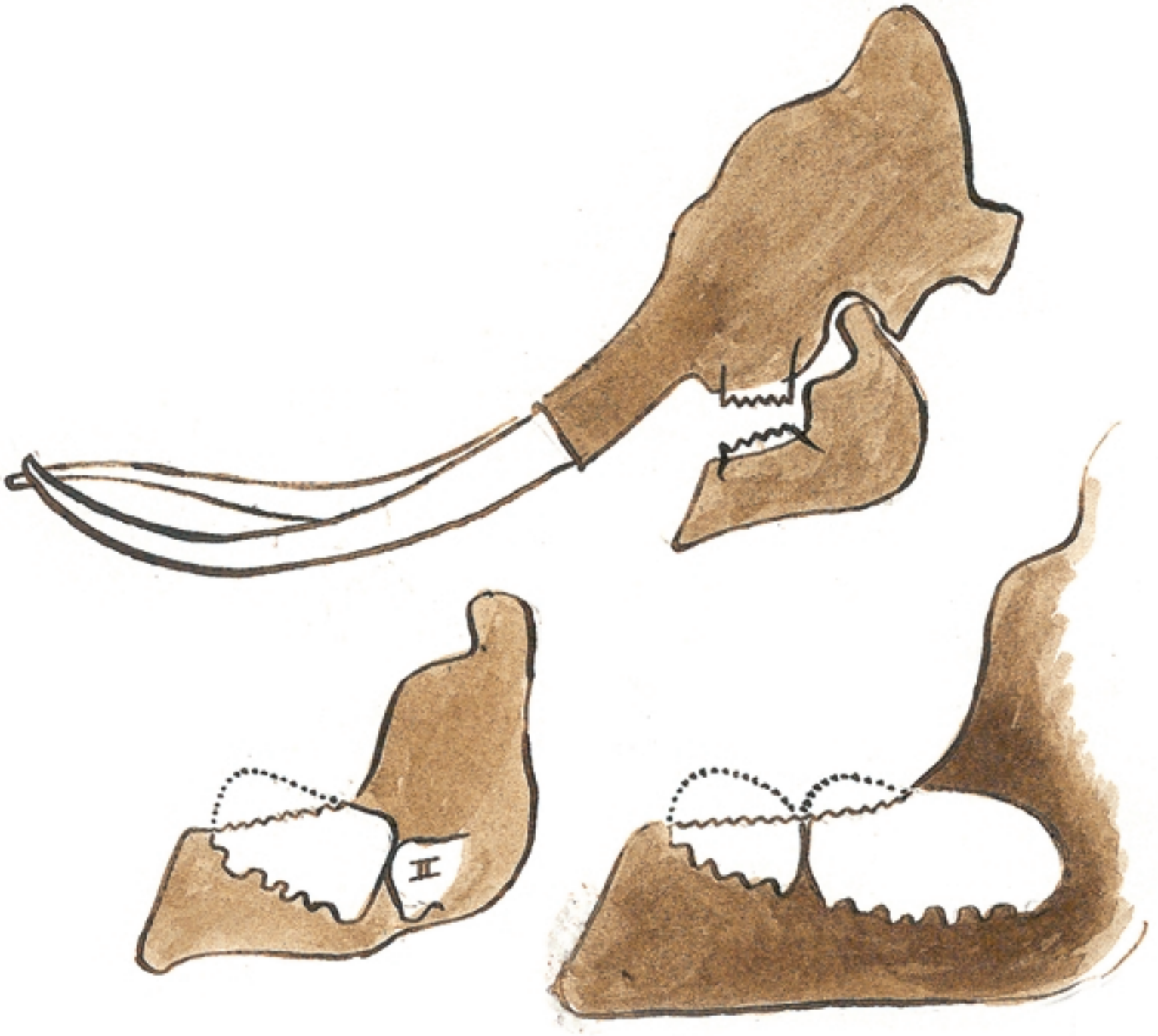

The Yukagir Mammoth

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Bernard Buigues

Bernard Buigues is indeed one of the rare persons that can be referred to as an "Arctic Entrepreneur", partaking in many expeditions in the Arctic and the Antarctic. He founded the firm "CERcles POlaires EXpeditions" (Cerpolex) that organizes expeditions from its outpost, the village of Khatanga, situated on the Taimyr Peninsula of Northern Siberia. Following the discovery of the Jarkov Mammoth, Bernard Buigues' passion for mammoths led him to set up a foundation for a long-term program entitled "Cerpolex/Mammuthus". In 1999, Bernard Buigues went one step further and created the Frozen Mammuthus Museum of Khatanga. Carved out of the permafrost, this most unusual institution naturally preserves all fossils discovered at a constant temperature of -17°C. With the exciting discovery of the Yukagir Mammoth in northernmost Yakutia, April 2002, true to his passion, he continues to organize on-site field investigations, and develop research activities focused on this extraordinary find. Fifteen years strong, "Cerpolex" continues to develop scientific, and cultural programs and expeditions.

Scientific team

Larry Agenbroad

Larry Agenbroad is the director of the Mammoth Site of Hot Springs, South Dakota, Inc. and Professor Emeritus at Northern Arizona University, Flagstaff, Arizona, USA. He began researching mammoths at the Murray Springs Mammoth Kill-Site, near Sierra Vista in Arizona; excavated at the Lehner Ranch Mammoth-Kill Site on the upper San Pedro River in Arizona and discovered the Corona Negros mammoth and mastodon site. Larry is the principal investigator of the Mammoth Site of Hot Springs, South Dakota and co-discoverer of mammoths and the mammoth dung deposits on the Colorado Plateau. He is also the principal investigator of pygmy mammoths on the California Channel Islands. He discovered a gomphothere (common name for extinct elephants of Central and South America, of the Miocene through Pleistocene) in the Verde Valley in Arizona and is also co-leader of a mammoth and gomphothere research team in Mexico. He is a member of the Jarkov Mammoth expedition, Taimyr Peninsula, Siberia. He has authored and co-authored numerous scientific papers, booklets, and one book on mammoths. Larry Agenbroad has been involved in the morphological investigations on the Yukagir Mammoth from the beginning.

Scientific team

Gennady Boeskorov

Gennady Boeskorov is a senior scientist at the Mammoth Museum of the Academy of Sciences of the Sakha Republic, Yakutsk, Yakutia. From 2001-2003 he was the director of the Mammoth Museum. He earned his PhD with the thesis "Systematics and Genetics of Caucasian Wood Mice (subgenus Sylvaemus)". He is a specialist in chromosome studies, systematics and morphology of mammals. He has been studying fossil mammals of Yakutia for over 20 years; most of them originated from the permafrost. He has published about 140 scientific papers, among them two monographic books. The main monograph is "Systematics and Origin of the Modern Moose" (published in Russian, its Monographic English translation published in The Netherlands). Gennady participated in two of the Yukagir Mammoth Expeditions, June and September 2004. He studies the taphonomic aspects and morphological features of the Yukagir Mammoth together with Russian and foreign scientists.

Scientific team

Mammuthus CLUB INTERNATIONAL

Daniel C. Fisher

Daniel Fisher is the Claude W. Hibbard Collegiate Professor of Paleontology and Curator of Paleontology at the University of Michigan at Ann Arbor. His faculty appointments are in the Museum of Paleontology, the Department of Geological Sciences, and the Department of Ecology and Evolutionary Biology. Michigan's Museum of Paleontology is one of the largest university-affiliated paleontological museums in the USA. Among other strengths, it has a large collection of Pleistocene proboscideans from the North American mid-continent. Daniel's research deals with both mastodons and mammoths and covers issues of skeletal anatomy, site formation (taphonomy), and analysis of tusk structure and composition, from which he reconstructs aspects of diet, behavior, reproductive life history, and environment. He has sampled the right tusk of the Yukagir Mammoth and will be reconstructing details of its life history (age at maturation, musth intervals, age and season of death), migration history, health status (tusk growth rate, dietary quality), and environment. He will be joined in this work by former student David Fox, now at the University of Minnesota; current student Adam Rountrey; and research assistant Scott Beld.

Scientific team

Christian de Marliave

Christian de Marliave (Paris, France) is a mathematician who has worked with Bernard Buigues for quite some time. He has visited the Arctic and Antarctic numerous times, and he is expert in the field of organizing expeditions in those regions. He brings tourists and scientists to the North Pole during the summer months, and participates in the research every year as soon as the Arctic Ocean is frozen over. Christian got involved in the Cerpolex/Mammuthus program 'Who or What Killed the Mammoths' in 1998 and now acts as its secretary. He participated in the excavation of both the Jarkov Mammoth and the Fishhook Mammoth. Thanks to his initiative and major contribution, Cerpolex was able to have 12 teams do the field campaign on the Taimyr Peninsula in 2006. This campaign resulted in the collection of tons of mammal remains from the Ice Age, including over 250 tusks. This material is used for a comprehensive study of the climate of Taimyr in the Ice Age. Christian has co-authored several popular and scientific publications about the megafauna of the Taimyr Peninsula during the late Pleistocene.

Scientific team

Bas van Geel

Bas van Geel is senior lecturer in Palaeoecology at the Institute for Biodiversity and Ecosystem Dynamics of the University of Amsterdam, The Netherlands. By analyzing plant remains (pollen, seeds, algae, fungi) in lake sediments and peat deposits, he examines the causes of environmental and climate change during the last Ice Age and the Holocene. Understanding the role of the Sun in climate change is his main interest. He also heads projects on environmental change as a consequence of human impact in the past. Together with his colleagues, Jan Peter Pals and Guido van Reenen, and in close cooperation with Dick Mol, he is involved in the studies of the environment of large herbivores during the last Ice Age. Plant remains found in the hairs of the Jarkov Mammoth have provided information about the cold and dry steppe environment of northern Siberia during the last Ice Age. The study of well-preserved intestinal contents of the Yukagir Mammoth is of great interest for Bas and his colleagues. His work has elucidated our understanding of the vegetation, the climate and the diet of the mammoth.

Scientific team

Peter Lazarev

Peter Lazarev is the head and founder of the Mammoth Museum of the Academy of Sciences of the Sakha Republic (Yakutia) in Yakutsk, Russia. He received his PhD with the thesis 'Anthropogenic Horses of Yakutia'. Peter has more than 45 years experience working on Quaternary mammals and their remains from the permafrost. He is the vice-president of the Mammoth Committee of the Russian Academy of Sciences and has published more than 70 scientific papers, among them 8 monographic books. Peter knows the woolly mammoths very well and has been involved in many international expeditions, which were held in the territory of the Sakha Republic. Due to his activities with Pleistocene mammals from the permafrost, he is well known in the scientific community of those studying Pleistocene vertebrates. Peter took part in three expeditions to salvage the Yukagir Mammoth remains. Currently he is interested in the topoanatomical aspects and morphological features of the Yukagir Mammoth.

Scientific team

Dick Mol

Dick Mol has been a specialist in the field of mammoths for almost three decades. He is a research associate at Rotterdam's Natural History Museum, with a primary focus on mammals of the Quaternary period, including mammoths, woolly rhinos and bison. For the past twenty-five years, Dick has catalogued fossil remains dredged from the bottom of the North Sea, and published over fifty papers on his finds. Since 1990 he has been associated with The Mammoth Site, in Hot Springs, South Dakota, collaborating with Larry Agenbroad on four papers dealing with field and laboratory research in paleontology, geology and paleoecology. In 1999, Dick contributed his expertise to the project for excavating the frozen remains of the Jarkov Mammoth led by Bernard Buigues, which was chronicled in the Discovery Channel's second highest-rated documentary, 'Raising the Mammoth'. Dick returned again in 2000 to continue the search for more Pleistocene remains on the Taimyr Peninsula and to begin the slow painstaking process of defrosting and studying the Jarkov Mammoth in an ice cave in Khatanga for the Cerpolex/Mammuthus program, 'Who or What Killed the Mammoths'. Its goal is to learn more about all of the Pleistocene fauna that lived on the Taimyr Peninsula. Dick Mol is a full-time coordinator of the scientific team.

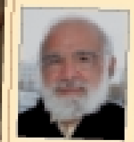
Scientific team

Albert Protopopov

Albert Protopopov, a manager at the Mammoth Museum of the Academy of Sciences of the Sakha Republic (Yakutia) has been involved in the Yukagir Mammoth project from the beginning. As a botanist, he focuses on the present-day tundra vegetation. He is an important member of the team for comparative studies of the Pleistocene vegetation of the cold steppe (mammoth- or megafauna steppe). His assistance is required by paleobotanists for identification of vegetative remains that have been discovered in the stomachs and intestines of extinct animals, such as the woolly mammoth and the woolly rhinoceros. Albert Protopopov was involved in the logistics of several Yukagir Mammoth expeditions and in the shipment of the Yukagir Mammoth remains to Japan in November 2004.

Scientific team

Hezy Shoshani



Hezy Shoshani lived on Kibbutz Maagan-Am (Upper Galilee, Israel) as a shepherd. Working and studying in the Tel-Aviv Zoo, he earned his PhD in 1986. His research focused on evolutionary relationships among mammals, especially the Proboscidea and its closest relatives. He established the "Elephant Research Foundation" (1977) to promote interest in elephants for research and conservation and he is the editor of its publication, "Elephant". Hezy has published over 150 papers on elephants and related species in the scientific and popular literature, including the editing of two books: The Proboscidea: Evolution and Palaeoecology of Elephants and their Relatives (1996) Oxford University Press - technical book and Elephants: Majestic Creatures of the Wild (2000) by Checkmark Books – a popular book. He has been conducting field research on African elephants in Eritrea since 1998. Hezy Shoshani took part in the June 2004 Yukagir Mammoth expedition and studied the Cerpolex/Mammuthus collections in the underground ice cave of Khatanga. His research on the Yukagir Mammoth includes external and internal gross morphology (with emphasis on the hyoid apparatus) and histological and molecular investigations. He plans a detailed natural history comparison of the extinct woolly mammoth to the living African and Asian elephants.

Scientific team

Naoki Suzuki

Naoki Suzuki is professor at the Jikei University School of Medicine in Tokyo, Japan. He is also the head of the Institute for High Dimensional Visualization Medical Imaging. He has been investigating woolly mammoths for many years, including Dima, the baby mammoth found in Magadan. From this well-preserved carcass he extracted the heart and examined it. Together with his colleagues Alexei Tikhonov, Nikolai Vereshchagin and Takashi Haraoka, he published a comprehensive paper on Dima's heart in 1992, which is referenced by many scientists worldwide. Naoki was involved in the Yukagir Mammoth project almost from the beginning. In Japan, he will examine the internal structure of the Yukagir Mammoth. He will carry out non-destructive measurements and do subsequent analysis of the head and other remains of this well-preserved carcass. For these investigations, he will use special X-ray Computer Tomography. In order to complete the investigations using the CT equipment with adequate space to accommodate the oversized Yukagir Mammoth head (including the left tusk), a scanning method with high spatial and density resolution for the entire head was specially developed just for this application.

Scientific team

Hans van der Plicht

Hans van der Plicht earned his PhD in Nuclear Physics, and works at the Center for Isotope Research, Faculty of Sciences of Groningen University, Groningen, The Netherlands. He is the scientific leader of the Radiocarbon Laboratory, employing both a conventional system based on proportional counters, and an AMS facility. He is also professor of Isotope Archaeology at the Faculty of Archaeology, Leiden University, Leiden, The Netherlands. His contributions to mammoth research concern 14C dating and stable isotope ratios (δ13C and δ15N) analysis of animal bone, skin, hair or other organic constituents. In cooperation with scientists from other countries, he has radiocarbon dated hundreds of Ice Age mammal remains.

Scientific team

Shin-ichi Sano

Shin-ichi Sano is a curator of the Dinosaur Museum of the Fukui Prefecture which is one of the largest geological and paleontological museums in Japan. He is working currently on the mammoth special exhibition for the World Expo 2005 (Aichi, Japan), and he is a staff member of the Japan Association for the 2005 World exposition. He was elected as team member and took the initiative to introduce the Yukagir Mammoth at the Expo. He contributes to the research with morphological and molecular biological analysis, radiocarbon dating and paleoenvironmental reconstruction. Shin-ichi Sano took part in some of the Yukagir Mammoth expeditions and worked partly in Yakutsk, Yakutia, preparing the shipping of the Yukagir Mammoth to Japan.

Scientific team

Alexei Tikhonov

Alexei Tikhonov is a paleontologist from the Zoological Institute of the Russian Academy of Sciences in Saint Petersburg, Russia. He has authored more than 50 scientific publications and he directs some projects investigating modern and extinct large mammals in Northern Eurasia, particularly in the Arctic regions. He headed or participated in over 20 expeditions to the Arctic resulting in mammoth discoveries like the Yamal baby mammoth and several mammoth skeletons with soft tissues, etc. He is the only mammoth expert who found parts of a mammoth carcass on Bolshoi Lyakhovsky Island (October revolution Islands). He has frequently visited Wrangel Island and Chukotka where the latest mammoths survived into the Holocene. His joint study with Dr. G. Vereshchagin (Saint Petersburg) is the most renowned of the mammoth studies. Alexei is the scientific secretary of the Mammoth Committee of the Russian Academy of Sciences, which united more than 100 specialists of different fields of mammoth study. He was the first to hear about the Yukagir Mammoth and shared it with the Cerpolex/Mammuthus team. He was also the first to examine the mammoth's head during the first Yukagir Mammoth expedition. Together with Dick Mol, he discovered the [illegible] opening on the head of the Yukagir Mammoth.

Scientific team

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The Yukagir Mammoth

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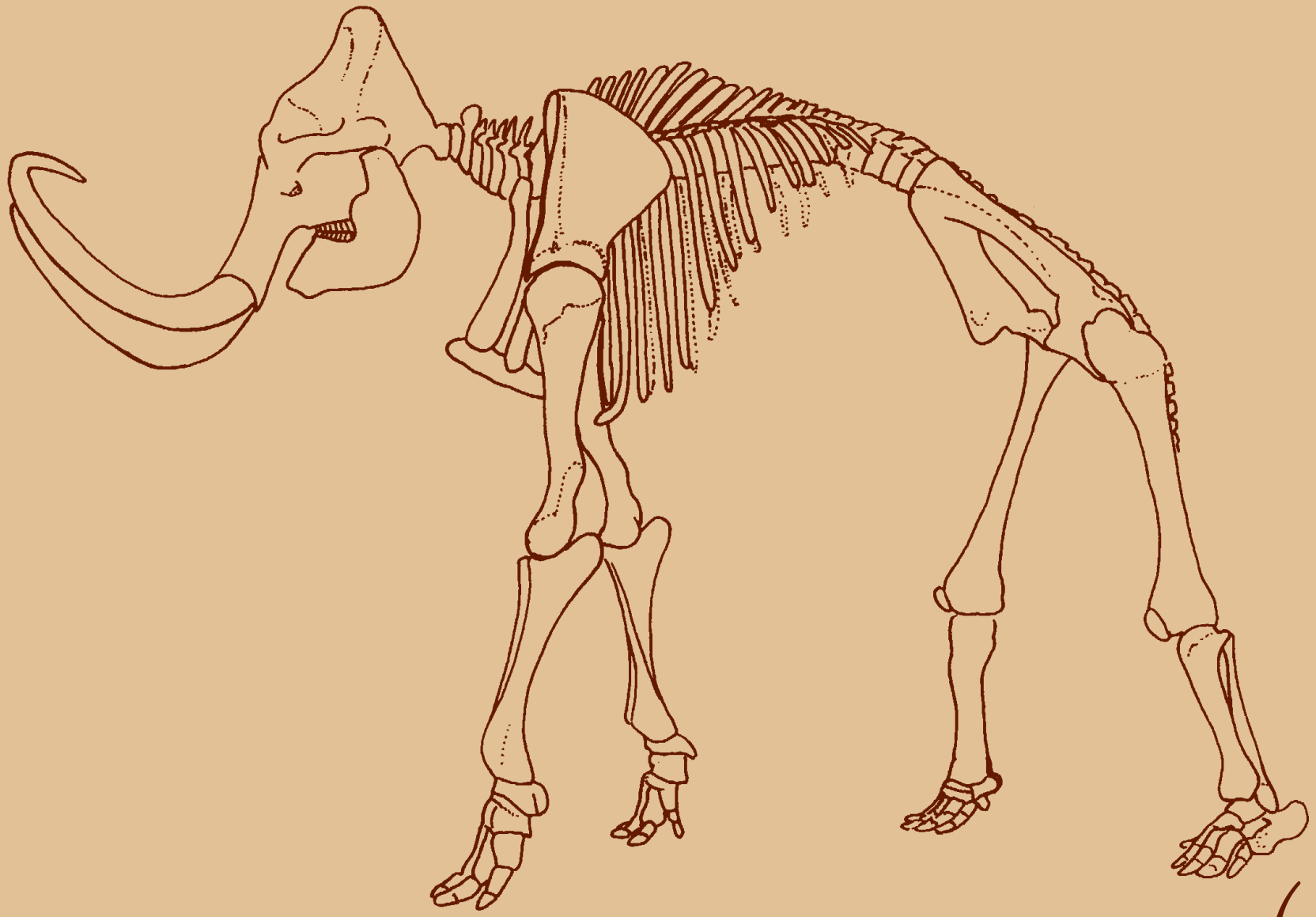

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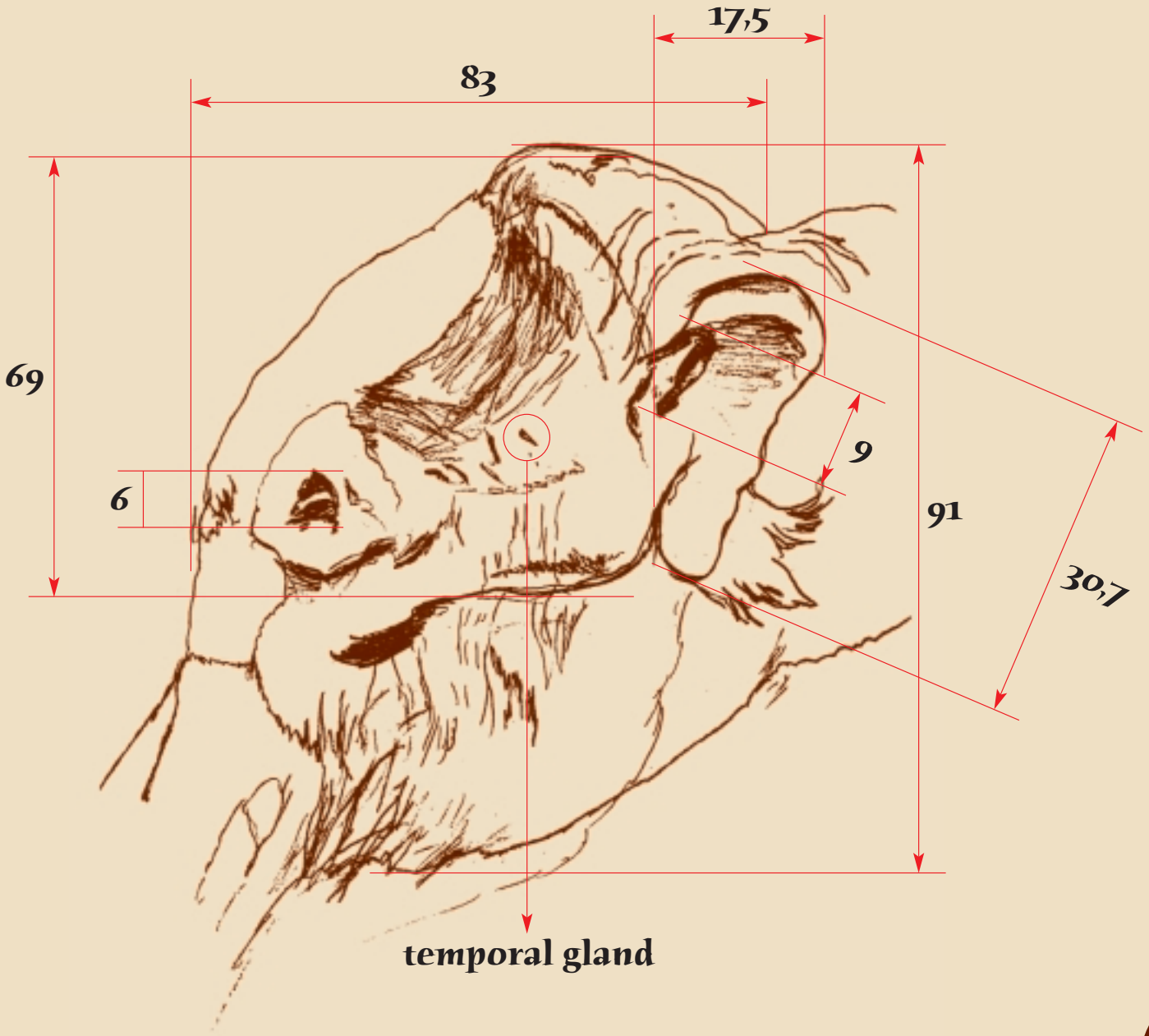

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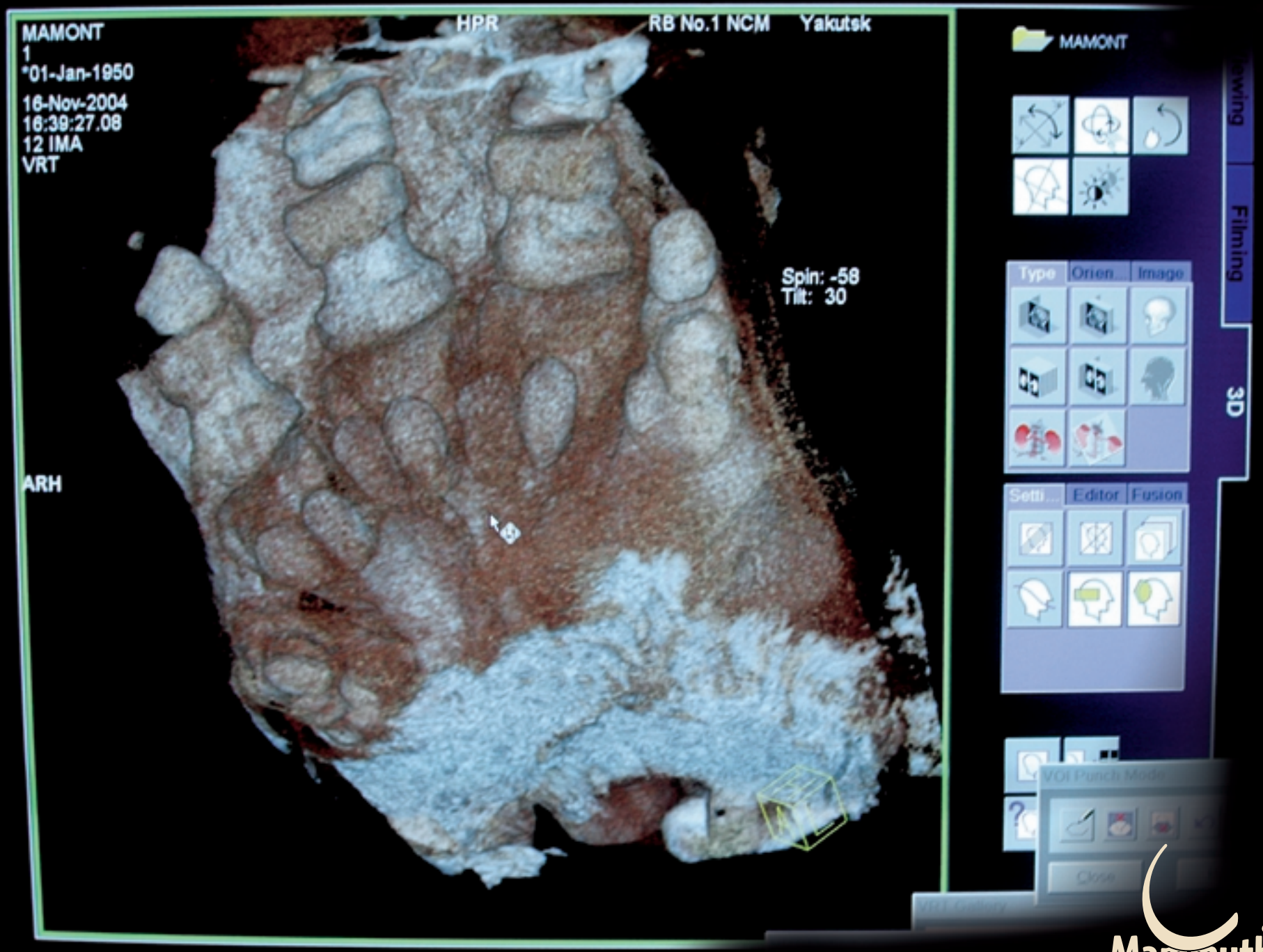

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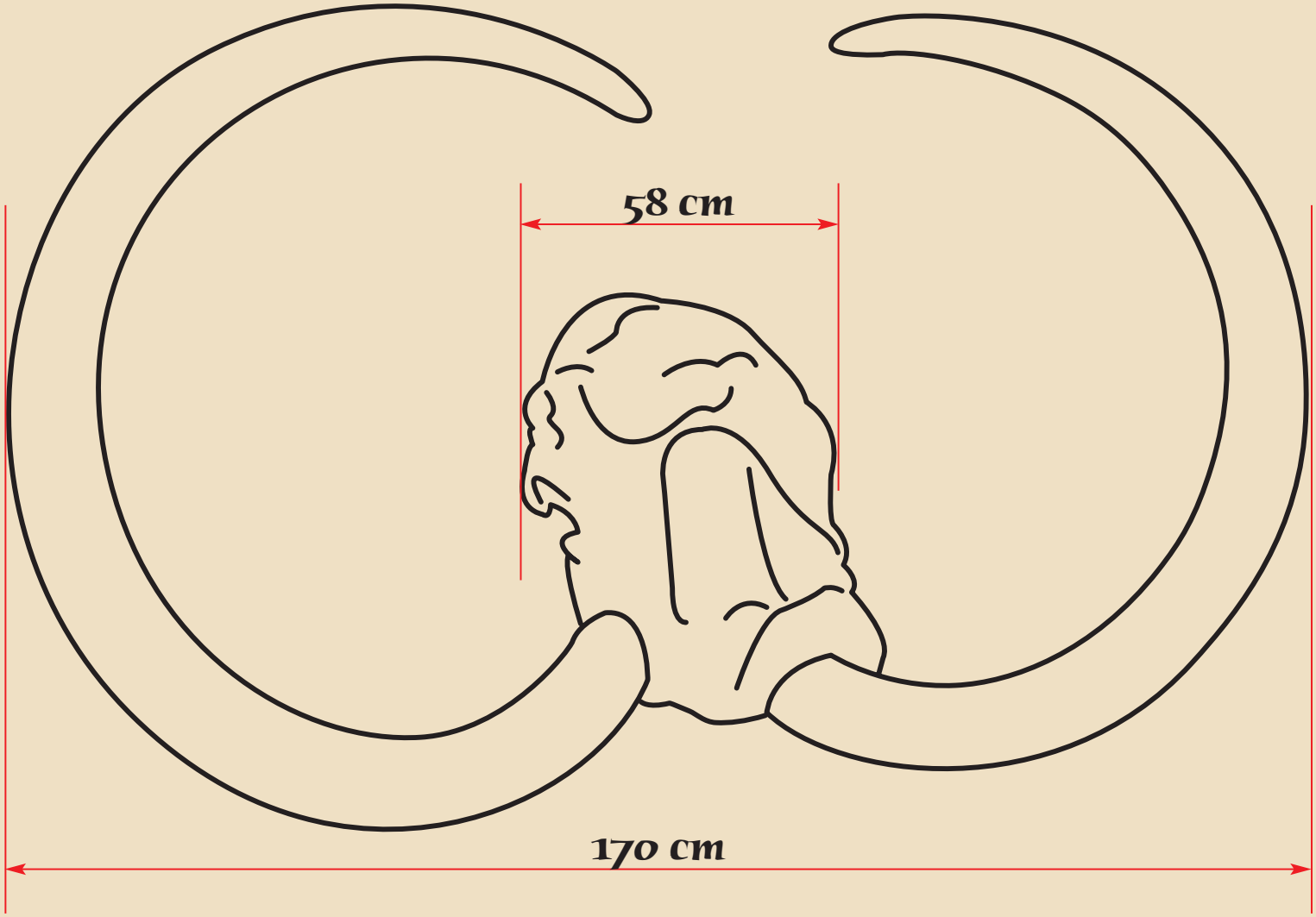

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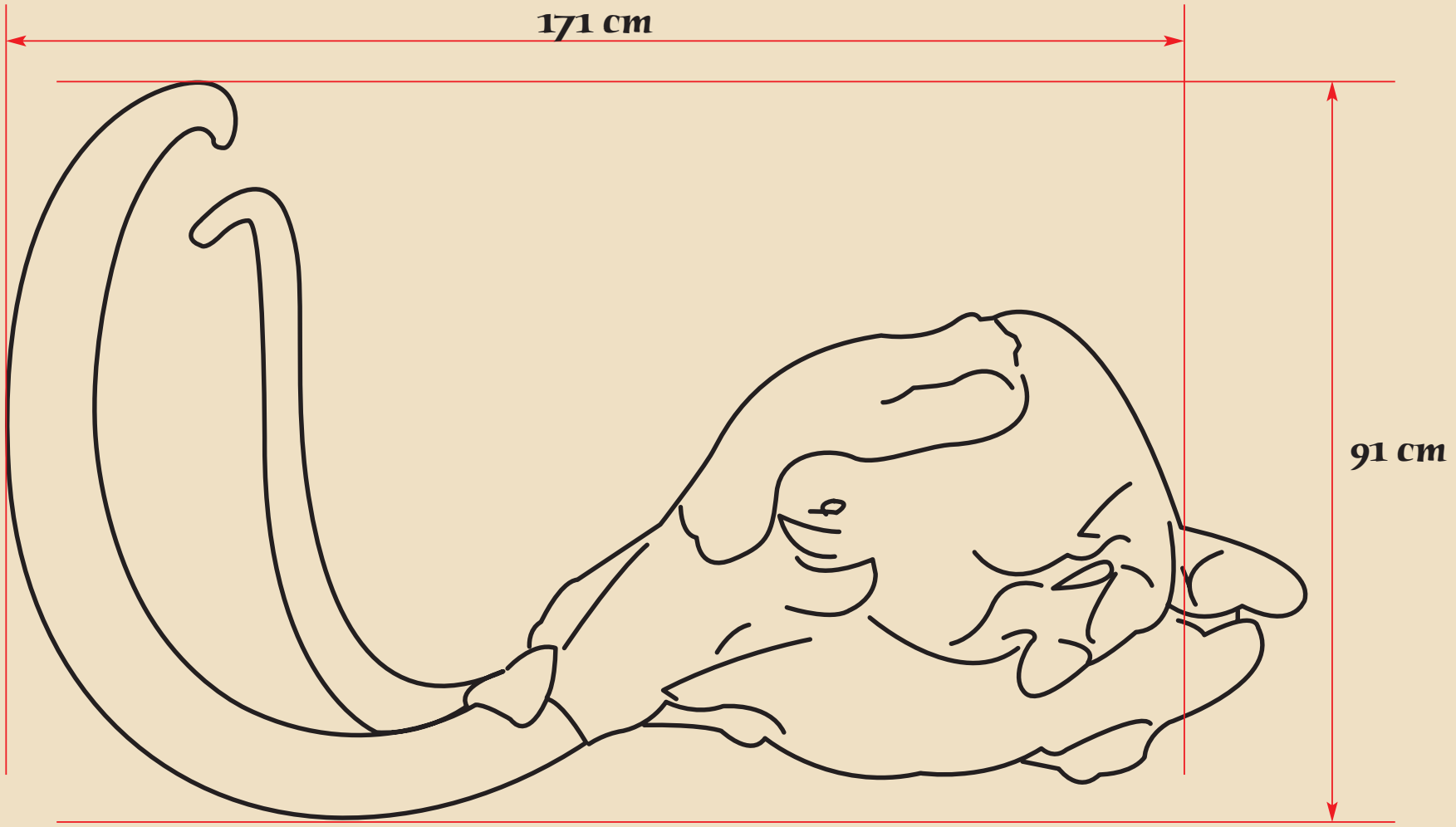

The Yukagir Mammoth

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The Yukagir Mammoth

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1 cm

2 cm

2 cm

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1 mm

1 cm

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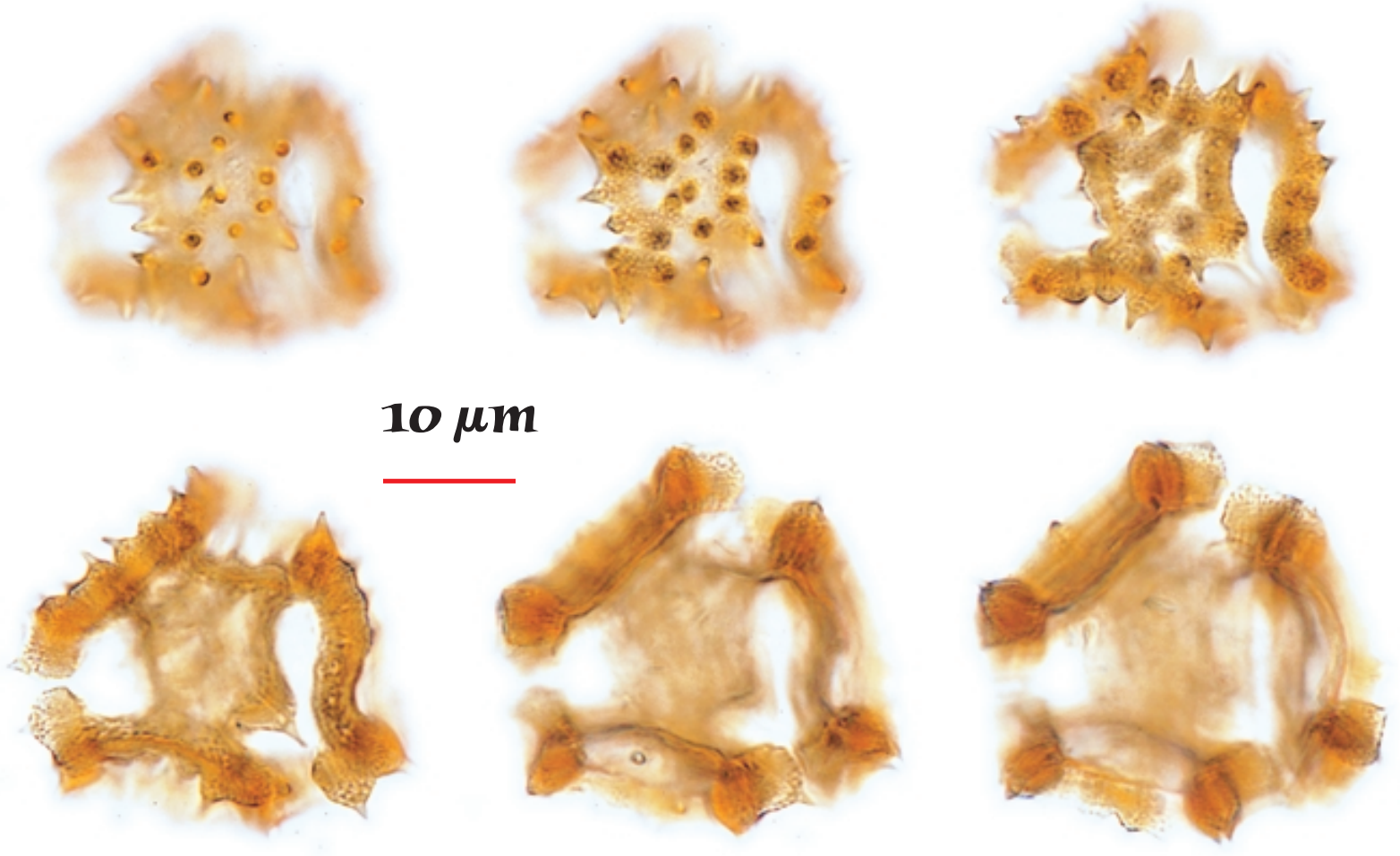
5 mm

0,5 mm

0,5 mm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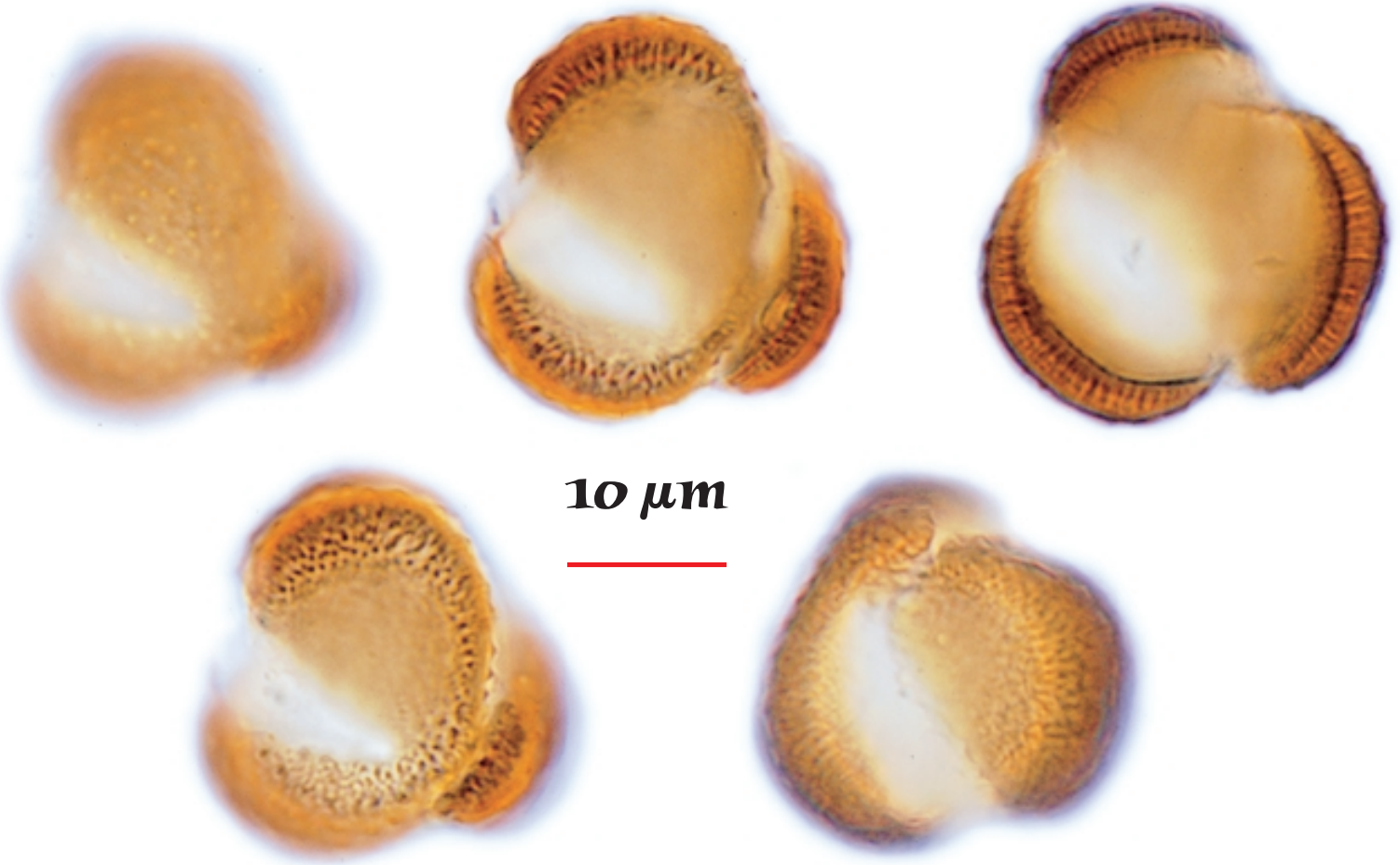
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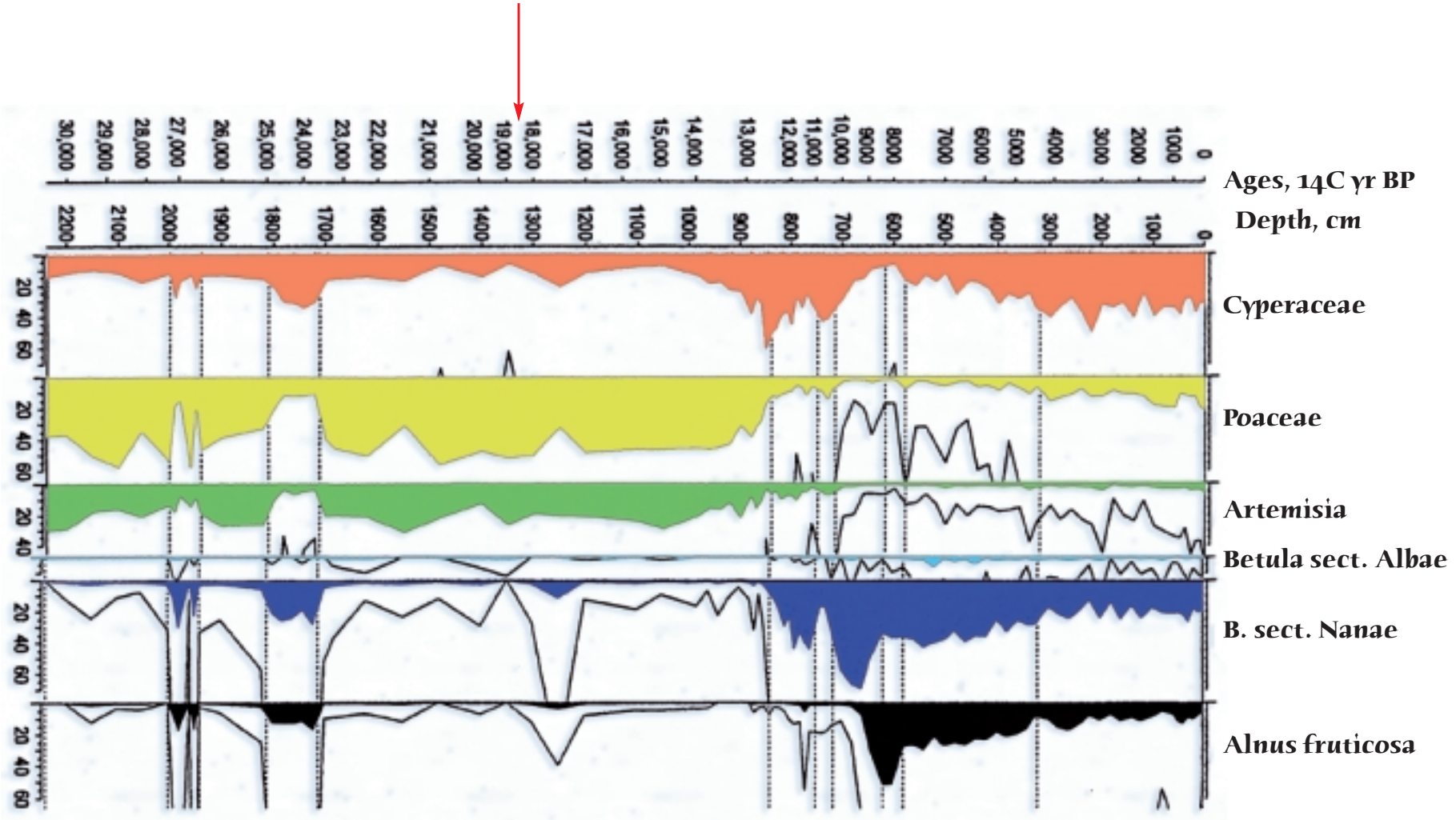

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10 µm

10 µm

The Yukagir Mammoth

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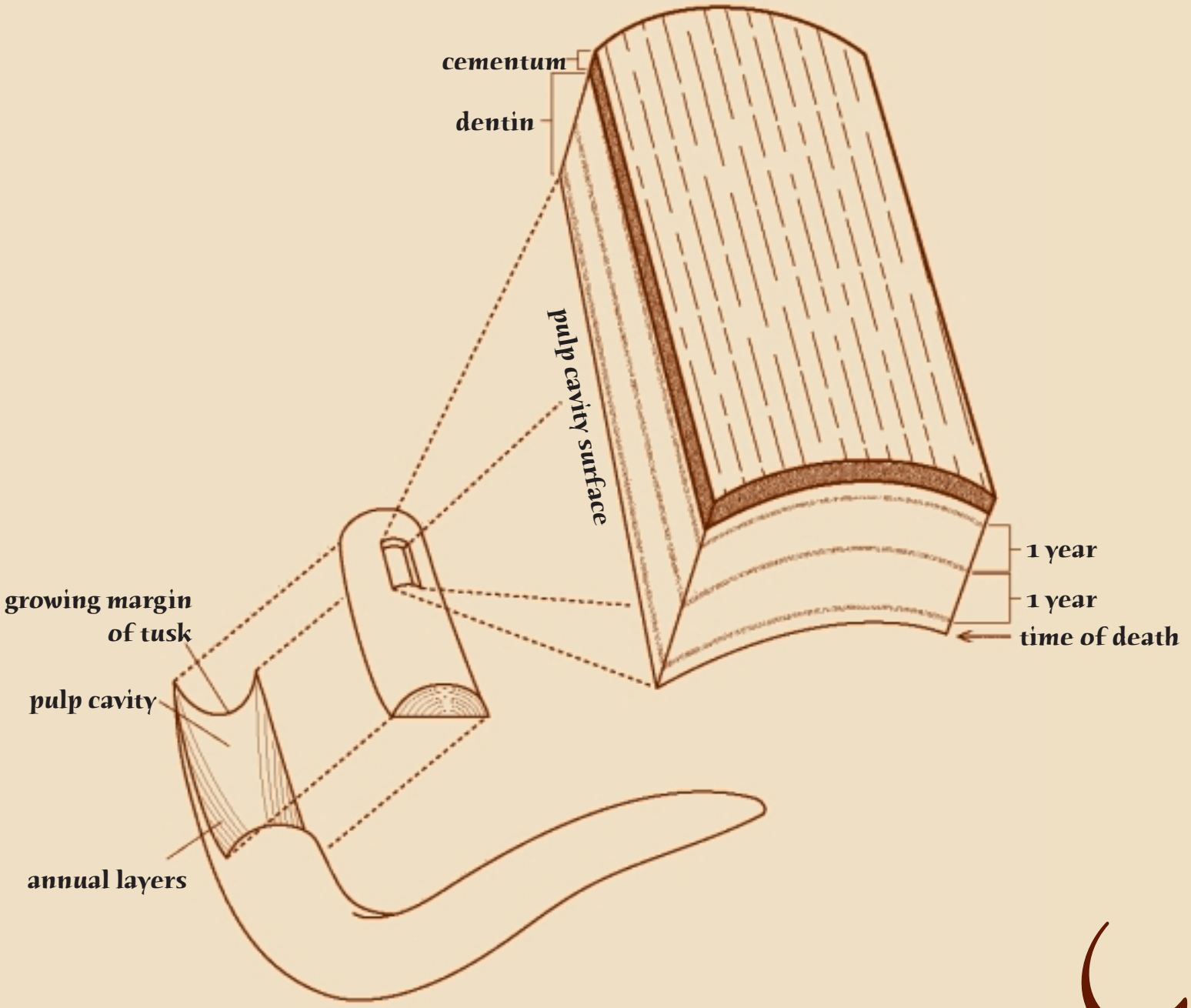

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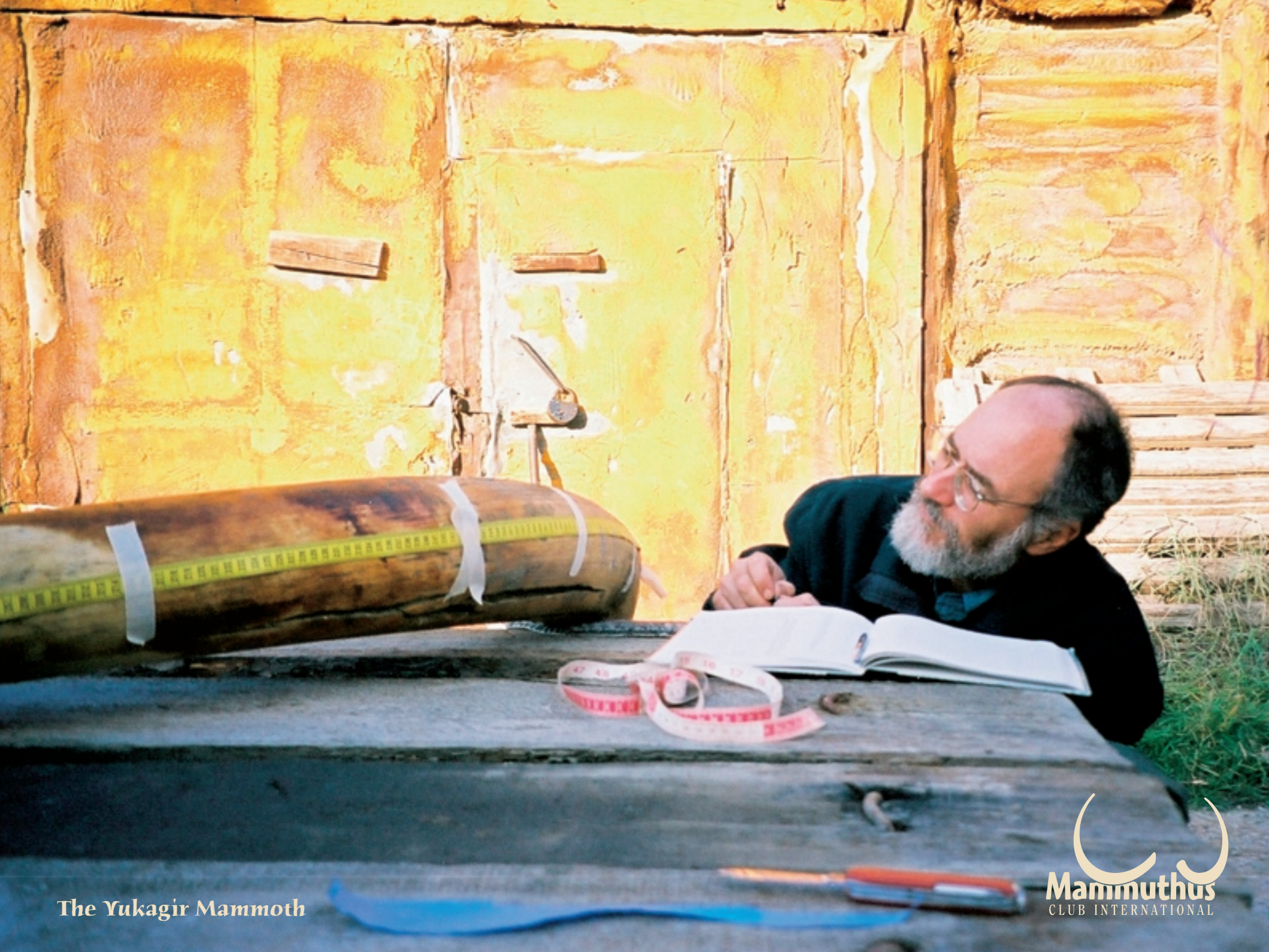

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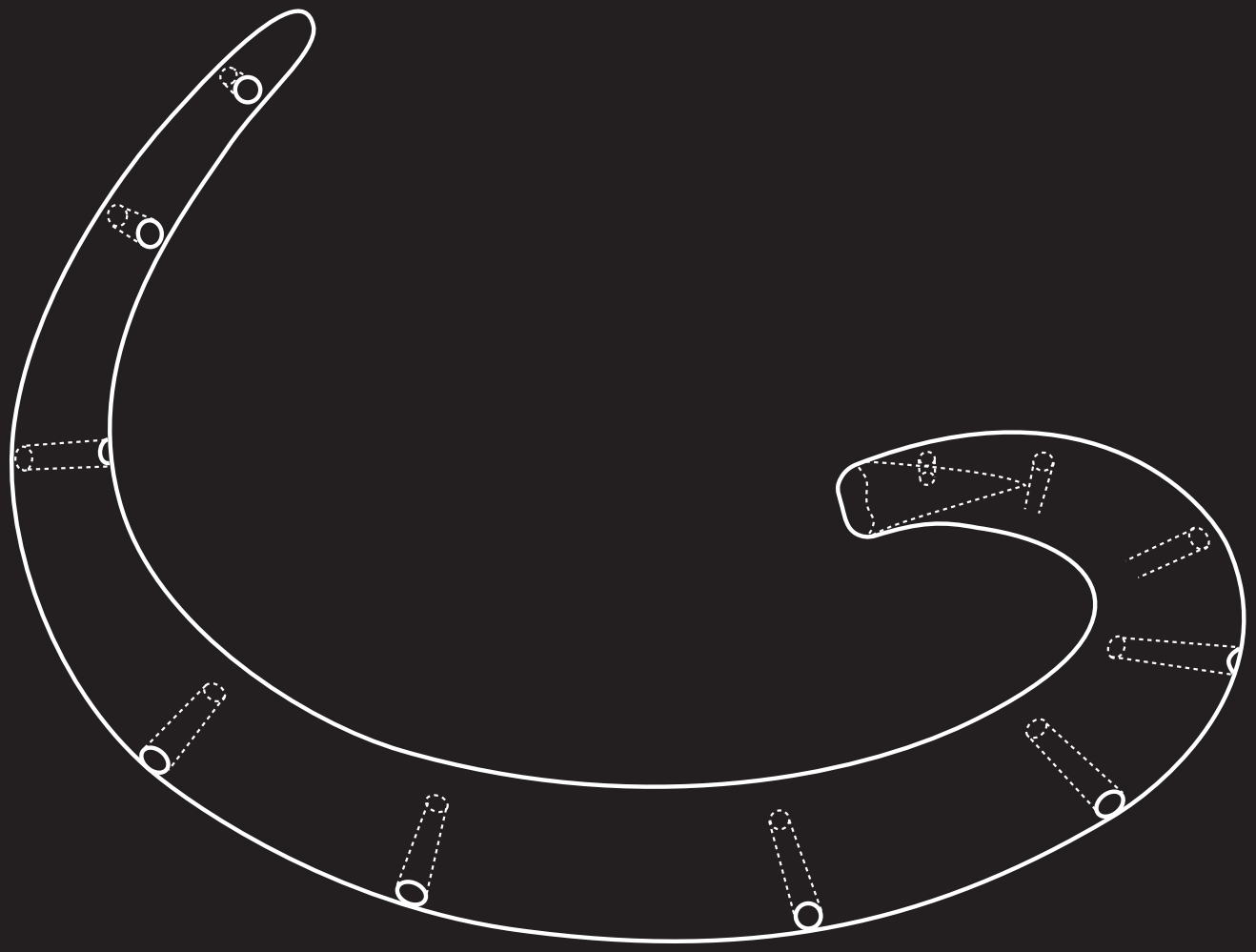

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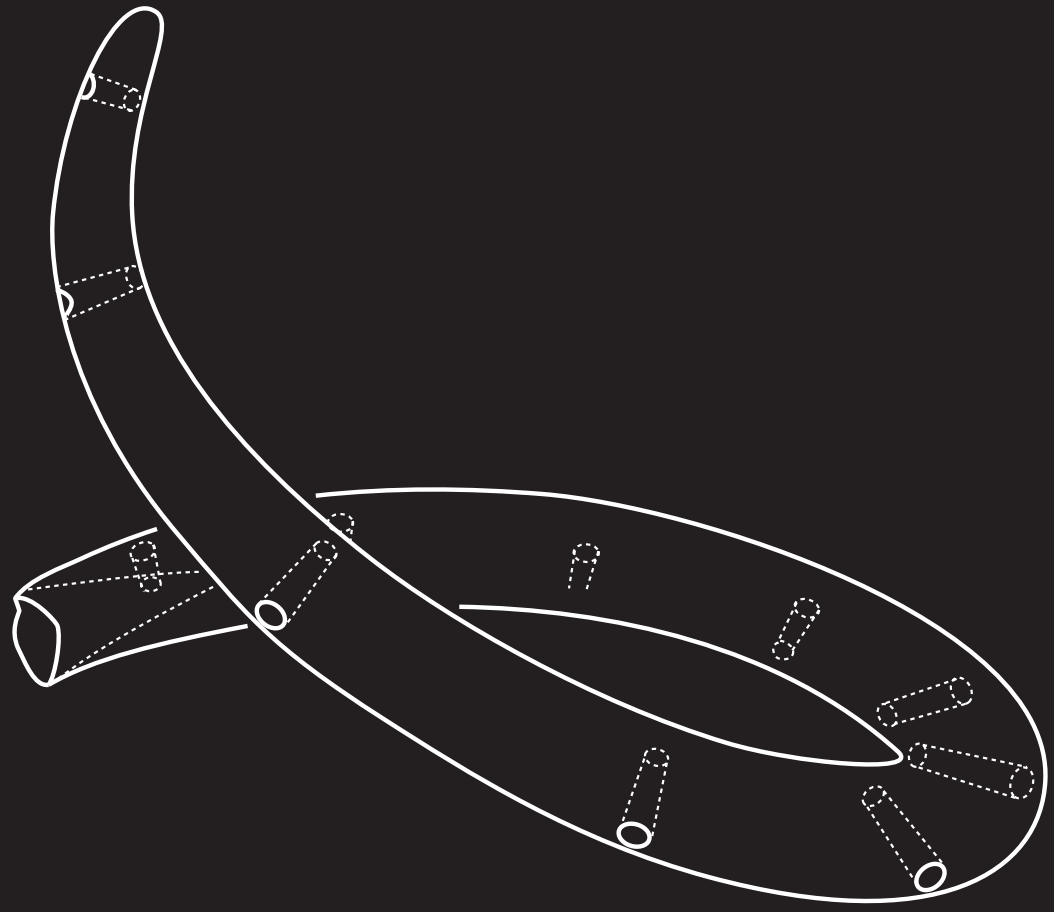

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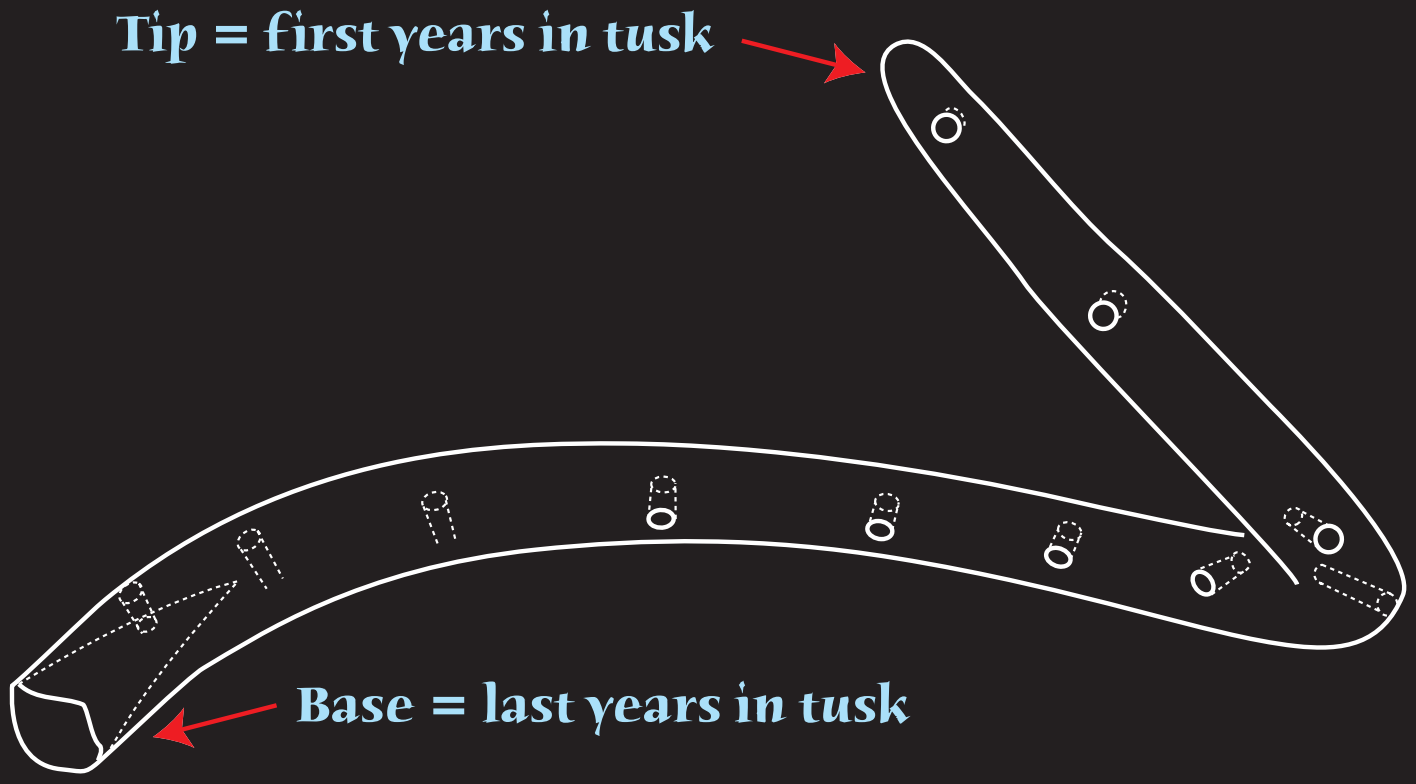

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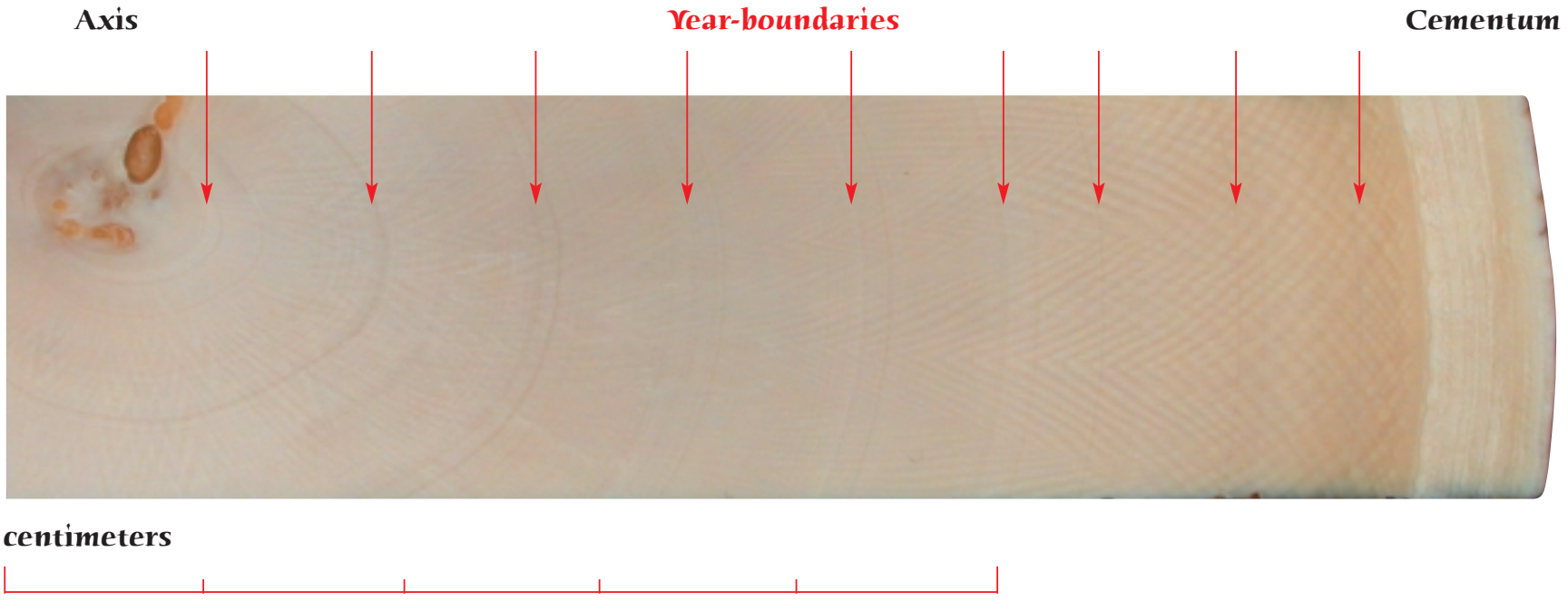

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Elephas primigenius

The Yukagir Mammoth

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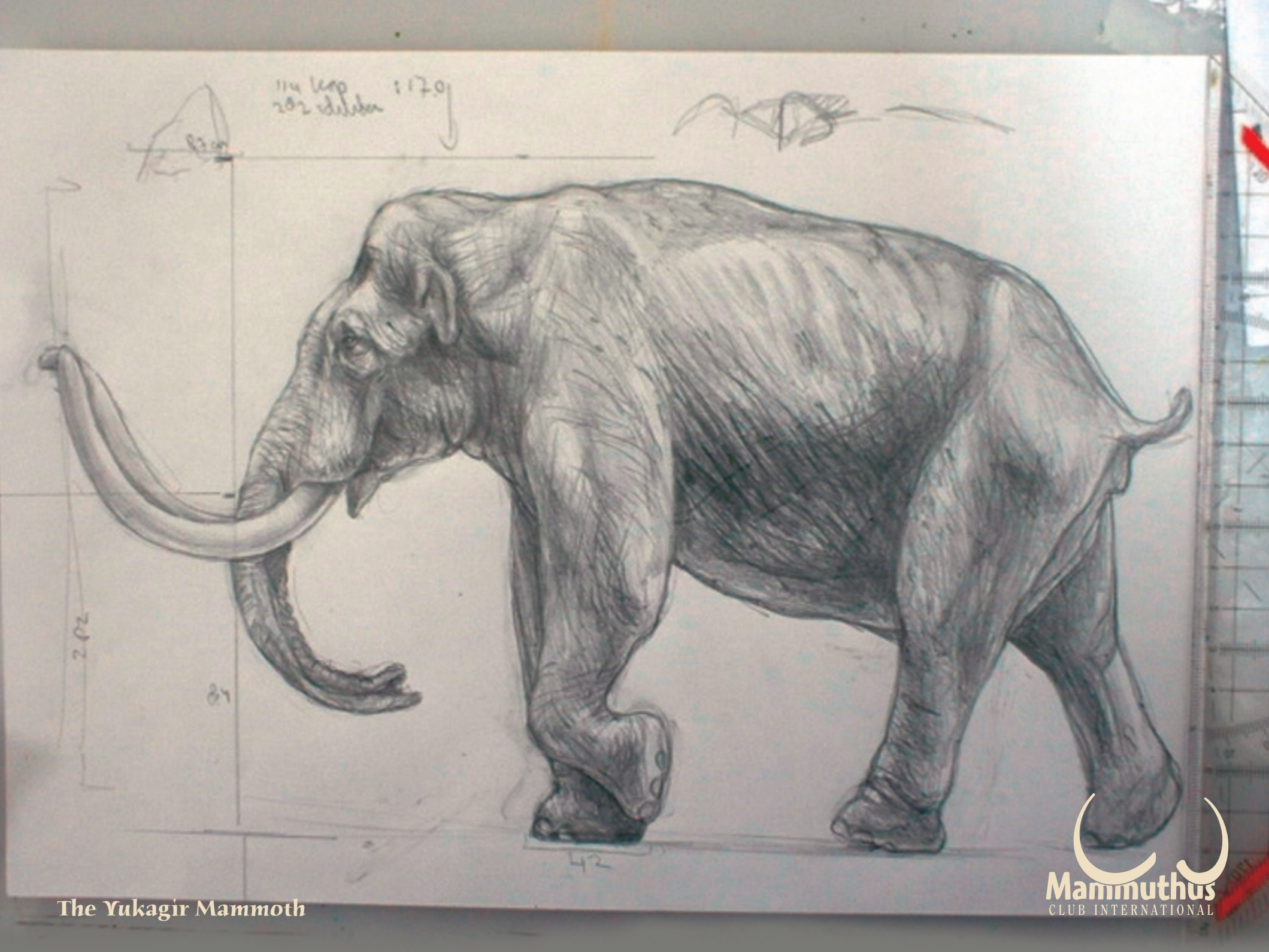

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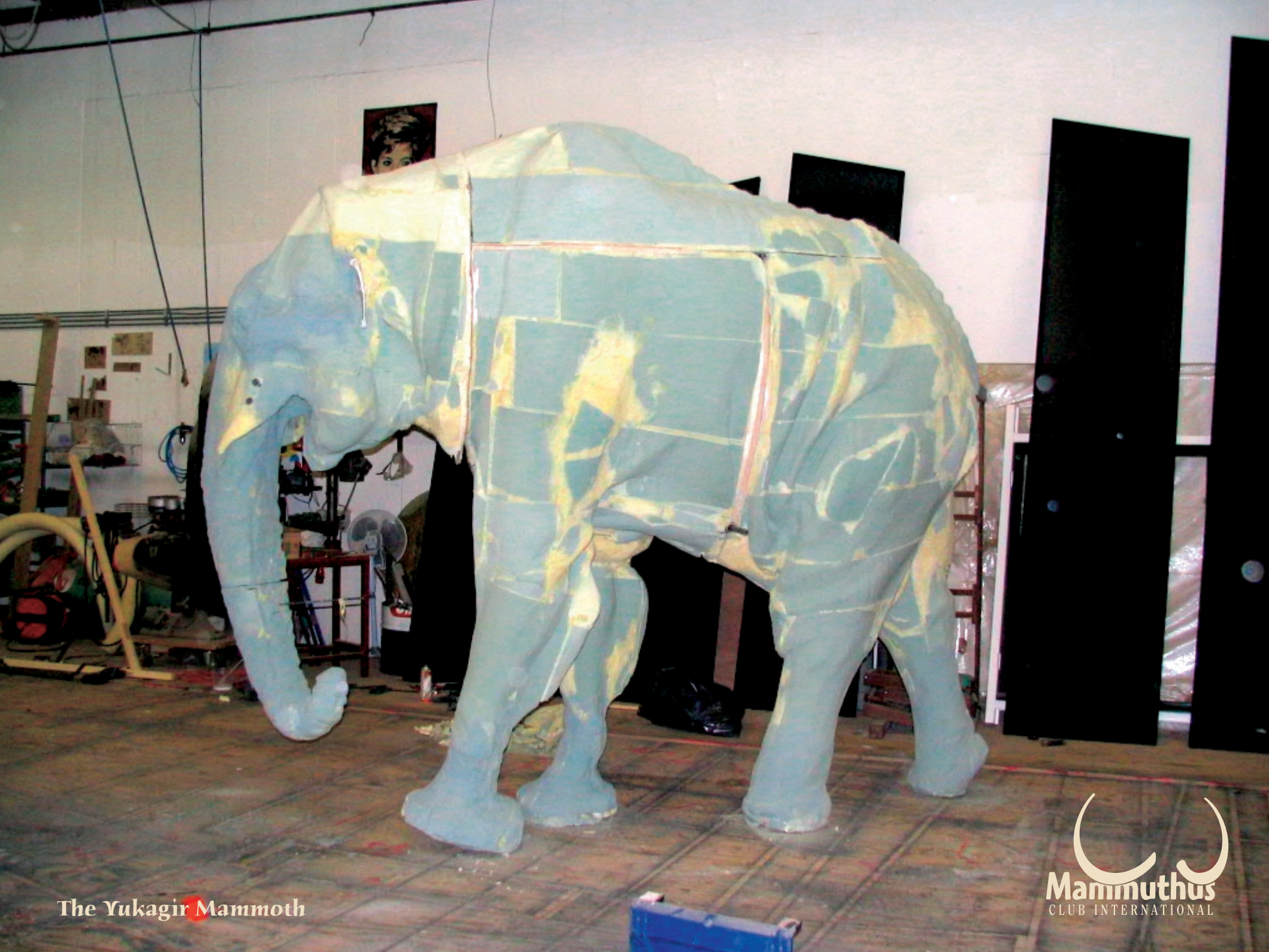

The Yukagir Mammoth

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Thanks for your attention!