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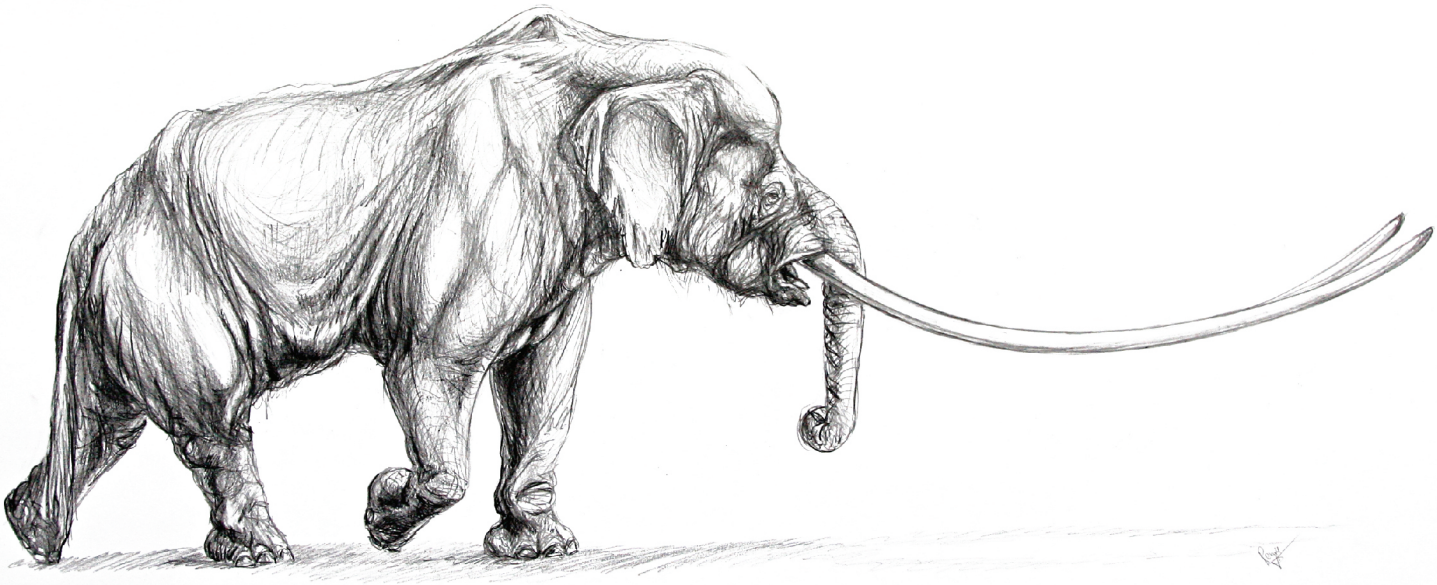

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ABSTRACT BOOK

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The studies of the Yuka mammoth (*Mammuthus primigenius*) from northern Yakutia, Russia: the goals and overview of the first analyses and results

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A partially frozen and mummified carcass of woolly mammoth, *Mammuthus primigenius* was found on the continental coast of the Dmitry Laptev Strait, Yakutia, Russia, by the Yukagir community members in 2010. The site was discovered in the rich bone-bearing Pleistocene yedoma (permafrost) deposits of the Oyagossky Yar, approximately 30 km west from the mouth of Kondratieva River. The calibrated radiocarbon date of the rib is 39,440-38,850 calBP (1950) (GrA-53289) which corresponds to the Marine Isotope Stage 3 (MIS-3, or Karginski Interstadial) (Boeskorov et al., 2013).

The body of the mummy was discovered lying on its belly, with the right leg tucked under it, resting on the ice ledge in the upper part of thawing slope. It was established that the mummy was incomplete, missing most of its vertebral spine, ribs, both femora and left humerus, and all the muscles and inner organs of the torso. The hide with fur coloration varying from very light tan (lower legs) to light ochre – dark brown (upper legs and lower flanks) missed two large parts of the skin on the back and neck and bore rugged cuts that were not compatible with cut marks produced by Paleolithic or Mesolithic tool blades (Maschenko et al., 2012a).

The examination of exterior and interior morphology that we performed in 2012-2013 revealed that no bones (cranium, mandible, neck vertebra, few ribs, scapula, humerus, etc.) had any signs of pathologic or abnormal growths. The Yuka mammoth has, however, a combination of characters that could be unique in comparison to other known specimens, thus, significantly expanding our knowledge on the individual variation of woolly mammoth. These features include the brain anatomy, rates of the molariform teeth and tusks development, body size, number of the nail plates on the feet, trunk morphology, hide fur coloration and others.

Despite the revealed damage, the Yuka mammoth had intact trunk, lips, tail, and left ear, as well as breast nipples and a temporal gland on the left side of the head, available for the study. The trunk with long dorsal and ventral processes, which are characteristic for M. primigenius, appeared to be complete, thus allowing its comparison with a few other specimens.

The cranium and mandible CT scan performed in Yakutsk, Russia, confirmed the initial identification of the teeth as DP4/M1 in wear and presence of the un-erupted M2 in alveoli, which corresponds to 8-9.5 years old Asian elephants studied by Roth and Shoshani (1984). Taking into consideration the fact that mammoth DP2-DP4 replacement occurred at much younger age than in the African and Asian elephants (Maschenko, 2002), the Yuka mammoth age could be lowered down to approximately 6-8 years (Maschenko et al., 2012b). The immature state of the long bones, scapulae and pelvis, none of which have fused epiphysis (or apophysis) indicate that the animal was very young.

The small, permanent tusks protruding from the bony alveoli for just about 3 cm retained "two nested in cones" configuration, which was observed in very young mammoth individuals. Considering occurrences of bilateral tusklesness in female Asian elephant, this case of relatively "late" tusk development might be common in the woolly mammoth females, and can be attributed to the dimorphism within the species. This under-development of the tusks, along with presence of the genital opening in the Yuka mammoth hide and the morphology of the skin folds around it, supports the initial identification of the Yuka mammoth as a female.

The CT scans performed in Yakutsk and the National Research Centre "Kurchatov Institute" in Moscow, Russia, in 2012-2013 revealed a relatively good condition of the Yuka mammoth brain and at least one anatomical feature, ramification of the arteria basilaris, separating it from the African elephant (Kharlamova et al., 2013). A careful brain conservation procedure carried out by the research team in 2012 (Kurtova et al., 2012) allowed analysis of the brain gross morphology.

This analysis showed that the brain of the Yuka mammoth was similar to that of the modern elephants. It had slightly asymmetrical hemisphere volumes and weight and size corresponding to those of a 9-11 years old female African elephant. These findings indicate that the teeth development and replacement rates were accelerated in relation to the body growth, which was accompanied by a normal, similar to the African elephant growth of the brain.

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