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ABSTRACT BOOK

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The partial carcass of the mammoth "Zhenya" (*Mammuthus primigenius*) from western Taymyr Peninsula, Russia: preliminary analysis and results

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The partial carcass of a male woolly mammoth, *Mammuthus primigenius* (Blumenbach, 1799) was found on August 28, 2012 by a young member of the Dolgan tribe, Evgeny Solinder, and named "**Zhenya**" after him. The site is located on the right bank of the Yenisei River Gulf, about 3 km north from the polar meteorological station "Sopochnaya Karga" on Sopochnaya Karga Cape (hence the second name, the "Sopkarga" mammoth), western Taimyr Peninsula, Western Siberia, Russia. In September 2012 the team headed by one of the authors (AT) excavated the specimen and transported it by helicopter to the town of Dudinka. From there, on April 17, 2013 the mammoth carcass was delivered by a special flight to St. Petersburg, and placed for storage and studies at the Zoological Institute, Russian Academy of Sciences.

The excavated mammoth carcass was discovered in a steep, 9 m high slope of the river bank composed by Pleistocene (~7.5 m) and overlaid by ~1.5 m-thick Holocene deposits. The cross-bedded sandy alluvial sediments contained the carcass ~4.5 m below the bank surface, immediately overlaid by ~1m-thick peat deposits, which completely filled the mammoth rib cage and abdomen area.

The site is located within the Quaternary coastal deposits

of the lower Yenisei River, well known for established stratotypes of the Sanchugovskaya, Kazantsevsky, Zyrianian and Karginian (Karginsky) suites that are used for section references in entire Siberia. The age, genesis and position of the suites, including Karginsky stratotype located on Karginsky Cape and Malaya Kheta River, were recently questioned and their ages significantly reconsidered being supported by numerous OSL and AMS radiocarbon dates (Astakhov, et al. 2005; Astakhov, 2006, 2010). As a result, being inconsistent with its MIS 5e date, the Karginsky stratotype section was renamed into Kazantsevsky suit (Astakhov, 2009). Similar reconsideration was applied to the sediments correlated with the Karginsky "stratotype" and located between Shaitansky and Sopochnaya Karga Capes, revealing their Kazantsevsky age (Gusev et al., 2009; Streletskaya et al., 2009). However, the dates of the sites north from Sopochnaya Karga Cape, on Shaitanskii Cape (section E-0411: OSL 45,800+/-3,200, RLQG 1796-048; OSL 57,200+/-3,900 RLQG 1797-048), the site 800 m north from section E-0409 (14C 40,100 ± 500 yr BP, GIN-3748) (Gusev et al., 2009; Streletskaya et al., 2009) and the new mammoth "Zhenya" dates, which is consistent with the

Samples	Material	¹⁴ C age, years BP	δ¹⁵N (permil)	δ¹³C (permil)
UGAMS- 12565	Bone collagen, left ilium	37,830 (+/- 160)	7.8	-22.6
UGAMS- 12566	Muscle tissue	43,350 (+/-240)	9.1	-22.5
UGAMS- 12567	Hair	41,100 (+/-190)	6.0	-22.8
GrA-57723	Bone collagen, tibia	44,750 (+950/-700)	6.84	-22.09

Table 1. 14C ages, Stable Isotope Ratio δ^{13} C and δ^{15} N analyses of the "Zhenya" mammoth.



Fig. 1. Geographical location of the "Zhenya" mammoth. A - map of the site area, B - the Yenisei River bank slope with the excavated mammoth carcass in situ (arrow). Scale bar 1 m.

MIS 3. The collected samples provided the results of ^{14}C , and Stable Isotope Ratio $\delta^{13}C$ and $\delta^{15}N$ analyses, which are shown in Table 1.

The recovered in situ mammoth carcass was on its right side, oriented slightly across the bank edge, with most of the torso and hind legs exposed from the slope wall. When exposed after excavations, the frontal part of the body, and particularly, the skull appeared to be at higher (~ 0.3 m) elevation than the sacrum. The bones below femur were detached and scattered on the bank scree.

The carcass preserved a certain amount of soft tissues on the backbone (ligaments), and the unexposed right side of the body: ligaments and muscles of the right fore- and hind limbs, and the torso hide. Most of the hair was detached from the hide. Soft tissues of the head (skull and mandible), except a small skin patch in temporal area, were gone. The left side retained soft tissues only on distal parts of the limbs, down from the proximal carpal and tarsal articulations. Most of internal organs were gone, but fragments of the heart, liver and majority of the penis soft tissues were found in a relatively good state. The damages comprised the cleaved tusk tip and gnaw-marks on the femur caused by a mediumsized predator (possibly arctic fox).

The skull had only right permanent tusk with the outer curvature length of 1,600 mm and diameters at the alveoli are 86.5 (minimum) and 93.0 (maximum) mm. The left tusk alveolus was under-developed (slightly smaller than the right one) with a small opening remaining on its distal end. The analyses of the morphology and size of the left alveolus allowed concluding that the left permanent tusk was not developed at all.

The specimen had all erupted check teeth in place, which were (preliminary) identified as DP4/M1. The upper and lower DP4 on the left side retained the last 7 and 4 distal plates correspondingly. The upper and lower M1 contained 18 and 19 plates, with 11 and 14 proximal plates in wear. The un-erupted molars M2 appeared to be under-developed: only few, with reduced size plates in the jaw alveoli were present. Based on identified dentition (if

correct), compared with the Asian elephant studied by the individual age of the specimen is around 13-16 years. The young age of the specimen is also supported by presence of all un-fused bone's apophyses and epiphyses preserved in the skeleton.

The mammoth Zhenya had almost complete set of skeletal elements. Only proximal epiphysis and diaphysis of the right fibula, distal epiphysis of left fibula, tail vertebra ##10-12 and second phalanges of the front and hind limbs were missing.

The body height in shoulders measured (along each limb section) before fleshing the right side of the body with front limb, with added estimated thickness of withers tissues and skin, was about 235 cm.

The cause of the mammoth death was not yet established. Neither the skeleton or preserved soft tissues have any visible lifetime injuries. Large amounts of fat discovered in the withers area of the animal rule out the death from starvation.

References

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