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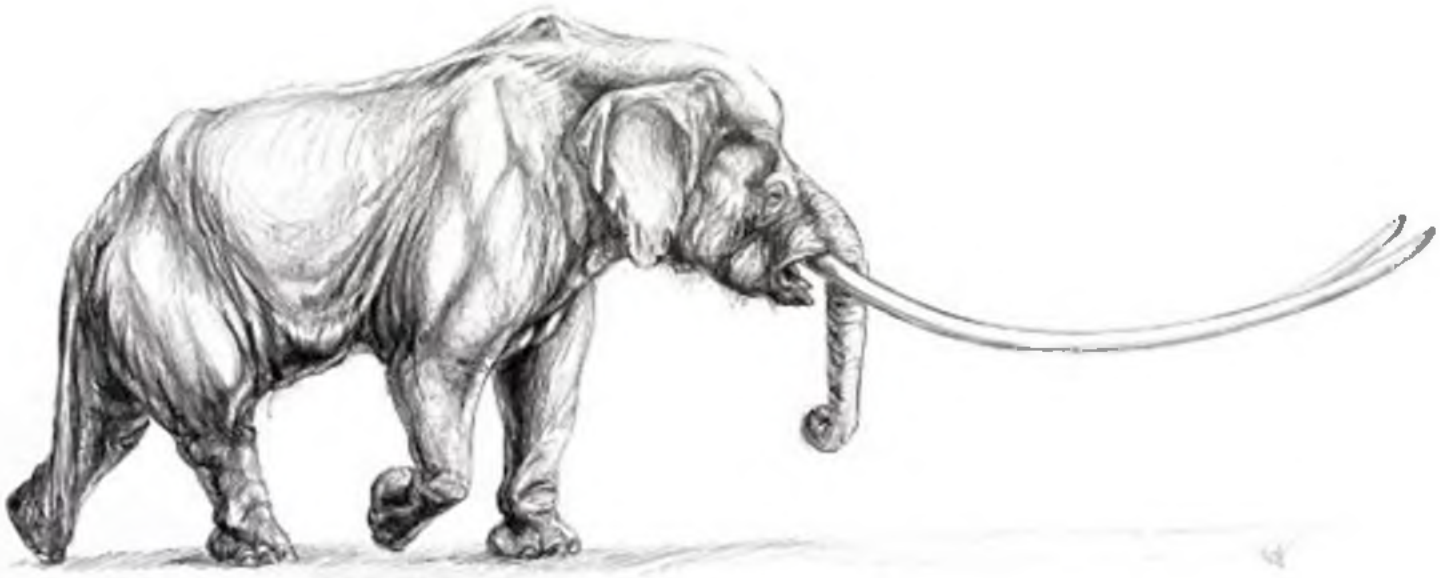

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ABSTRACT BOOK

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ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ
ΣΧΟΛΗ ΘΕΤΙΚΩΝ ΕΠΙΣΤΗΜΩΝ

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ΓΙΑ ΤΑ ΜΑΜΟΥΘ ΚΑΙ ΤΟΥΣ ΣΥΓΓΕΝΕΙΣ ΤΟΥΣ

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Tusks of woolly mammoth (*Mammuthus primigenius*) with abnormal growth found in Yakutia

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Woolly mammoth tusks with abnormal proliferative growth are extremely rare – even more rare than descriptions of them in the scientific literature. From the territory of Yakutia, only two mammoth tusks with such abnormalities have been reported previously; one (ZIN, Nr. 30) is from Bolshoi Lyakhovsky Island, and the other is from from Kotelnyi Island, collected on 02.16.1916 by V.V. Artamonov and now exhibited in the Yakutsk State Museum of History and Culture of the People of the North, named after Em. Yaroslavskiy (MYar, Nr. KP 7433, P 167).

Both discoveries were briefly described in prior articles (Vereschagin, 1960; Vereschagin and Tikhonov, 1986; Boeskorov, 2010). The specimen in the Yaroslavskiy Museum in Yakutsk is probably a left tusk. Wear that developed during the life of the animal is present on the tip of this tusk, and several convex areas of nodular growths occur on both upper and lower sides of the tusk. On the lateral side, near the base, there is a "digi-form-microtusk" with length 38.9 mm and width 15.7 mm. Surface colors range from beige to brown, and are mostly pale. Virtually the entire surface is smooth and covered with micro-cracks.

In 2013, on the middle branch of the Kolyma River near Irilyah-Siene, a Museum of Mammoth employee found a third abnormal woolly mammoth tusk (MM, Nr 1662) associated with remains of the mammoth fauna. Compared to the other tusks, this one is intermediate in mass and shorter in length, but its maximum width and height are greater (Table 1).

Apparently, this new specimen is also a left tusk. Its surface is rough and covered with an irregular network of cracks. Wear that developed during life is present on the tip of the tusk. When viewed from above, the tusk has an irregular shape, similar in profile to an equilateral triangle, with its mass produced through extensive proliferative growth. In other views, the specimen remains highly irregular. Its surface color is mainly yellowish with light brown and brown shades (especially near the base of the tusk).

Such abnormal proliferative growth is associated with a disease condition known as an odontoma. An odontoma is composed of wildly contorted, bulging and radially structured masses of dental tissues, sometimes including both enamel and dentine (Van Essen, 2004). Odontomas are a category of lesions that are united in their origin from cellular tissues related to tooth formation (Hunter and Langston, 1964).

Concerning abnormal conditions in bones and teeth, many researchers associate such diseases with influence of the environment (Musil, 1968; Garutt, 1990; Niven and Wojtal, 2003). Other potential causes of such pathologies include anomalies of individual development (Maschenko and Spansky, 2005), mineral starvation (Leshchinskiy, 2009) and adverse changes in the available nutrients (Kirillova, 2009). We conducted 3D scanning of the tusks from museum collections in Yakutsk (Fig. 1). We also plan a computed tomography scan of these tusks to determine their internal structure.

Table1. Size and weight of abnormal tusks from the territory of Yakutia

Specimen	Weight (gm)	Straight Length (mm)	Maximal width at the base (mm)	Height of the tusk (mm)
ZIN, Nr. 30	2100	370.0	140.0	75.0
MYar, Nr. KP 7433, P 167	4280	401.7	200.0	109.2
MM, Nr.1662	2920	245.4	216.9	113.9

Fig. 1. 3D scans of abnormal tusks. A: MYar, Nr. KP 7433, P 167; B: MM, Nr.1662.

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