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Exceptional preservation of a prehistoric human brain from Heslington, Yorkshire, UK

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ABSTRACT

Archaeological work in advance of construction at a site on the edge of York, UK, yielded human remains of prehistoric to Romano-British date. Amongst these was a mandible and cranium, the intra-cranial space of which contained shrunken but macroscopically recognizable remains of a brain. Although the distinctive surface morphology of the organ is preserved, little recognizable brain histology survives. Though rare, the survival of brain tissue in otherwise skeletalised human remains from wet burial environments is not unique. A survey of the literature shows that similar brain masses have been previously reported in diverse circumstances. We argue for a greater awareness of these brain masses and for more attention to be paid to their detection and identification in order to improve the reporting rate and to allow a more comprehensive study of this rare archaeological survival.

1. Introduction

In August 2008, a human skull containing the remains of a brain was discovered in a waterlogged pit at Site A1, Heslington East, York, UK (Fig. 1). The excavation, directed by Mark Johnson of the York Archaeological Trust (YAT), was undertaken for the University of York ahead of construction of their new campus (Johnson, 2008; Dean, 2008). A multi-disciplinary team was brought together to investigate the brain and the circumstances of its preservation. The survival of brain tissue in human remains may be expected where the biodeterioration of soft tissues has been inhibited, whether through deliberate mummification or particular conditions of the burial environment (Cockburn et al., 1998; Aufderheide, 2003). Familiar examples include the desiccated sand burials and embalmed mummies of Ancient Egypt (David, 1997; Karlik et al., 2007; Lewin and Harwood Nash, 1977); the deeply frozen bodies of the Franklin expedition (Beattie and Geiger, 1987; Notman et al., 1987), the 5000 year-old Tyrolean Ice Man (Hess et al., 1998; Spindler, 1993) and Inca mummies of the high Andes (Ceruti, 2004); the tanned bog bodies from across Northern and Western Europe (Brothwell and Gill-

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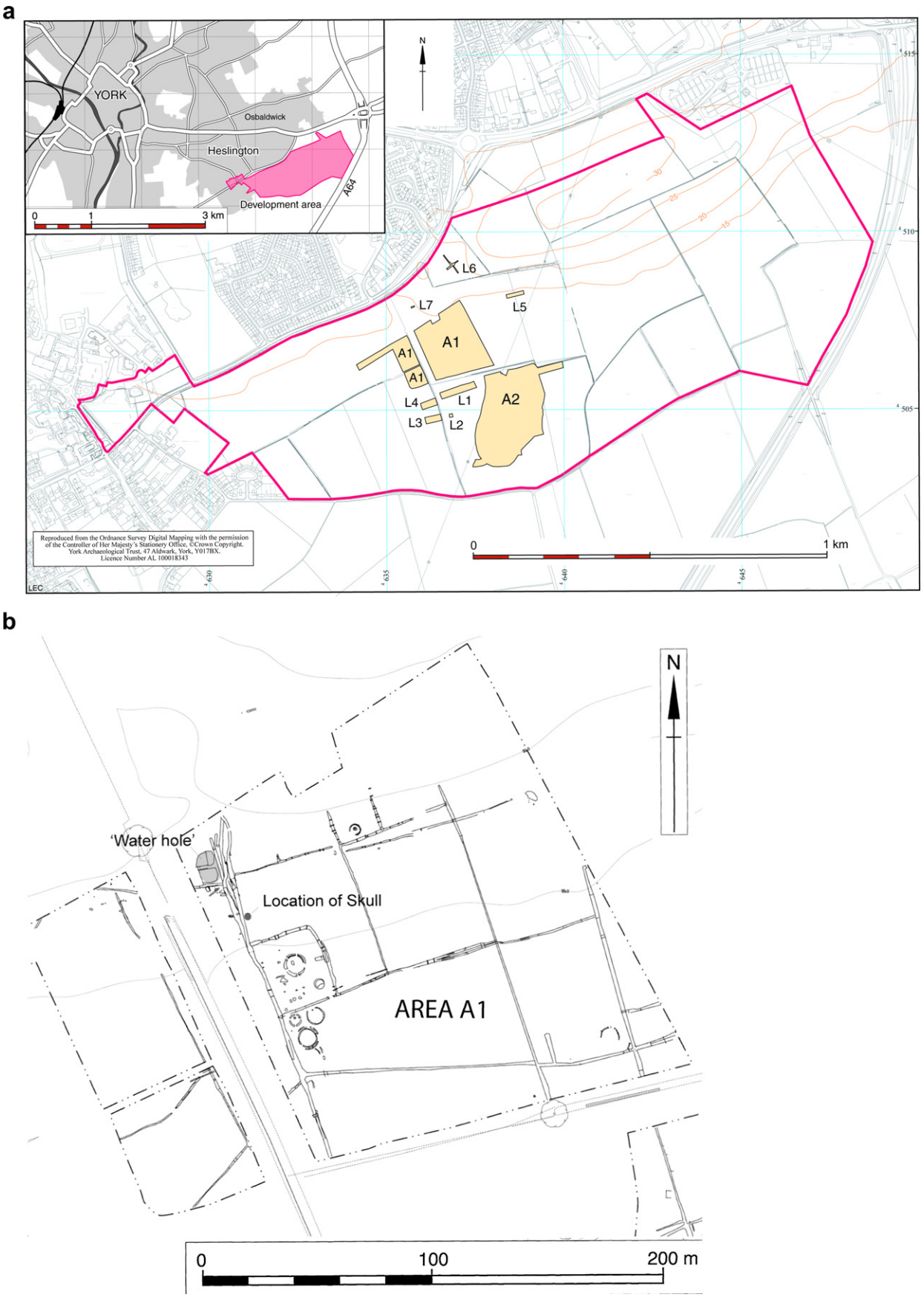

Fig. 1. Heslington East. a, Location of the campus development and excavations, and b, detail of Area A1 and the pit containing the skull (York Archaeological Trust).