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Short fieldwork report

Human remains from the TT65 Project, Luxor, Egypt, 2014

Robert J. Stark*[1,2], Tamás A. Bács[3]
[1] Polish Centre for Mediterranean Archaeology, University of Warsaw, 69 Prosta st., 00-838 Warsaw, Poland
email: r.stark@uw.edu.pl (corresponding author)
[2] McMaster University, Chester New Hall Rm. 524, 1280 Main Street West, Hamilton, Ontario L8S 4L9, Canada
[3] Department of Egyptology, Institute of Ancient Studies, Eötvös Loránd University, Múzeum krt. 4/B, Budapest, 1088 Hungary

During the 2014 field season of the Hungarian Archaeological Mission in Thebes, TT65 Project (25.736024N, 32.606655E; ca. 123masl), the fragmentary mummified and skeletonised human remains of individuals recovered from contexts in the area between TT65 and TT67 and below TT66's forecourt were documented. The TT65 project, begun in 1995 (Bács 1998) and ongoing (Bács 2017, 2020), focuses on the excavation of Theban Tomb 65 (TT65) (Imiseba/Nebamun) and contexts in the vicinity of neighbouring tombs TT66 (Hepu) and TT67 (Hapuseneb), all of which are located in the Sheikh Abd el-Qurna section of the Theban Necropolis across the Nile river from Luxor, Egypt (**Figure 1**).

The original development of TT65 dates to the time of the New Kingdom, having first been constructed by an 18th Dynasty official, Nebamun, in the later years of the reign of Hatshepsut (1473–1458 BCE), before being re-used in the 20th Dynasty by Imiseba and subsequently occupied as part of a Coptic monastery associated with Cyriacus the Anchorite. TT66 and TT67 were both cut during the 18th dynasty, with TT66 dating to the reign of Thutmose IV (1401–1391 BCE) and TT67 to the reign of Hatshepsut (Bács 2015, 2020). A hitherto unknown *saff* tomb (*Saff*-tomb 1) was also documented in proximity to TT66. *Saff* tombs were common in the Middle Kingdom and are typified by columns along the front, the designation "saff" deriving from an Arabic term denoting rows of columns. The *saff* tomb, situated lower down the slope, east of the forecourt of TT66, was reused continuously from the early New Kingdom on, during which it was compartmentalised into smaller tombs and where several shafts were additionally sunk to accommodate further burials. At some point, likely in the early New Kingdom, the shared wall between it and a tomb lying to its north was breached (Bács 1998, 2000, 2009, 2013:67, 2015, 2017; Kampp 1996; Reeves & Wilkinson 1996). This latter tomb was already entered and partly explored by the Mond expedition in 1905/06, hence it is now referred to as the "Mond Tomb".

Figure 1. A) general view of the area around TT65 with the section outlined in yellow showing aspects of the site from which human remains were assessed during the 2014 field season (photo by F. Pfeffer); B) topographical view showing the locations of TT65, TT66, TT67, *Saff*-Tomb 1, and the Mond Tomb (Drafted by M. Nagy).

A substantial amount of human remains recovered as part of the TT65 project come from decontextualised locations, the original proveniences having been altered during tomb robbing events, site reuse, and particularly during excavations in the early twentieth century, namely those of Newberry in 1900–1901, Mond in 1904–1906, Weigall in 1908, and the Metropolitan Museum of Art in 1914 (Bács 2017; see also Cybulski et al. 2015).

During the 2014 field season, a series of human remains, many with varying amounts of mummified soft tissue and wrappings (referred to in this report as 'mummified torsos' and 'mummified heads'), and some represented only by skeletal remains (referred to here as 'skeletonised remains'), were examined. These human remains were recovered from secondary contexts in proximity to the edge of TT66's forecourt and the façade of the previously mentioned *Saff* -tomb 1, having been recovered between 2010 and 2014 during removal of accumulated soil overburden and spoil bank deposits from previous excavations in the area (**Figure 2**) (Bács 2017). Given this information, and the context of recovery in the area of TT66 and the *saff* -tomb, the

Figure 2. A) excavation of decontextualised remains; B) mummified remains from TT66/1 L. 5; C) mummified and skeletonised human remains from TT66/1,3 L. 5; D) mummified torsos and heads collected from before the façade of *Saff* -tomb 1 and stored in the chapel of TT65. Photos by T.A. Bács.

mummified remains presented herein have been proposed to most likely date to the New Kingdom, the Third Intermediate Period, and the Late Period.

Osteological assessments of age and sex were conducted following the methods presented in Buikstra and Ubelaker (1994) and Schaefer et al. (2009). Where femoral head size was used for sex estimation, males were assessed at $\geq$48 mm and females at $\leq$43 mm; values from 44 to 47 mm were considered indeterminate (see Ubelaker 1999; Milner & Boldsen 2012). Stature was estimated following the methods presented in Raxter and colleagues (2008) for ancient Egyptians.

Age categories were estimated in approximate years following the approach utilised in Cybulski (1992:227), where Infant (Inf.) reflects ages 0–2 years; child (Ch.) reflects ages 3–6 years, juvenile (Juv.) reflects ages 7–12 years, adolescent (Ado.) reflects ages 13–16, and adult reflects ages 16+, with further adult specifications according to Gilchrist and Sloane (2005) where young adult (YA) reflects ages 16–25 years, mature adults (MA) reflects ages 26–45 years, and old / elderly adult (OA) reflects ages over 46 years. The term "adult" has been used for developmentally adult individuals for whom more precise age categorization could not be determined; the term "non-adult" has been used to encompass all individuals below the age of adult, while "n/a" has been used where an assessment, for either sex or age, could not be made.

Given the decontextualised nature of the recovered human remains, a minimum number of individuals (MNI) approach was adopted. The MNI approach employed a modified format to take into account the nature of preservation. Human remains were recorded according to three categories: mummified torsos, mummified heads, and fully skeletonised materials. While such a count may unintentionally artificially inflate the ultimate MNI (i.e., as it is possible there are mummified heads and torsos and skeletonised elements from the same individual present), such a count was utilised so as to not conversely underrepresent the sample in the case that the human remains recovered reflect different individuals (i.e., the mummified torsos, mummified heads, and skeletal elements are not from the same individuals).

Radiological analyses and other imaging approaches, as well as sampling, were not possible. All human remains were analysed on site and stored within TT65, with mummified remains stored on wooden planks and skeletonised human remains stored in numbered bags labelled with their proveniences.

Upwards of 60 individuals were examined in 2014 including 26 mummified torsos, 12 mummified heads, the co-mingled skeletonised remains of at least 22 individuals represented among the contents of the labelled bags, and the skeletonised remains of four individuals excavated from more clearly defined contexts.

Of the 26 mummified torsos examined, nine were assessed as adult females or probable females and seven were assessed as males or probable males. The sex of seven other adults could not be confidently assessed. There were also non-adults among the

Table 1. Osteobiographic data for Mummified Torsos. M – male; M? – probable male; F – female; F? – probable female; n/a – not available; Ch. – child; Ado. – Adolescent; YA – young adult; MA – mature adult; OA – old/elderly adult.

No.	Sex	Age	Stature (cm)	Provenience
1	F	MA	–	TT66-*Saff* 1 Forecourt
2	F	YA	157.4±2.7 ($humerus_m$, 30.6cm)	TT66-*Saff* 1 Forecourt
3	F	n/a	–	TT66/1 L.7
4	F	Adult	154.6±2.5 ($femur_m$, 41.7cm)	TT66/1 L.7
5	M?	Adult	163.5±3.2 ($femur_m$, 44.1cm)	TT66/1 L.6
6	M?	MA	167.3±3.2 ($femur_m$, 45.8cm)	TT66/1 Entrance
7	M	MA	–	TT66/1 Entrance
8	F?	Adult	–	TT66/1 Entrance
9	n/a	YA	–	TT66/1 Entrance
10	n/a	Adult	–	TT66/1 Entrance
11	n/a	Adult	–	TT66/1 Entrance
12	–	Ado.	–	TT66/1 Entrance
13	F	MA	–	TT66/1 Entrance
14	M	Adult	–	TT66/1 Entrance
15	F?	YA	–	TT66/1 Entrance
16	n/a	n/a	–	TT66/1 Entrance
17	F	Adult	–	TT66/1 Entrance
18	n/a	Adult	–	TT66/1 Entrance
19	n/a	Adult	–	TT66/1 Entrance
20	F?	MA	–	TT66/1 Entrance
21	M	MA	–	TT66/1 Entrance
22	M	Adult	–	TT66/1 Entrance
23	n/a	Adult	–	TT66/2/5 L.3-4-5
24	M	n/a	–	TT66/1 L.7
25	–	Ch.	–	TT66/1 L.6
26	n/a	Adult	–	TT66/1 L.6

mummified torsos: a child, an adolescent, and one young adult individual (Mummified Torso 9) whose sex could not be estimated due to developmental immaturity (**Table 1**).

Twelve isolated mummified heads were documented, all of adult development. They included one female, three probable females, one male, three probable males, and four individuals who lacked sufficient preservation to estimate sex. Of the 12 individuals, three appear to have been mature adults, while the remaining nine could not confidently be placed in an age bracket beyond being identifiable as adults, although none appeared to be young adults (**Table 2**).

Individuals 1–3 reflect the skeletonised remains of three individuals identified from an MNI assessment of skeletal remains recovered from a secondary burial context

Table 2. Osteobiographic data for Mummified Heads. M – male; M? – probable male; F – female; F? – probable female; n/a – not available; MA – mature adult; OA – old/elderly adult.

No.	Sex	Age	Provenience
1	F?	Adult (MA/OA)	TT66 Exterior
2	M?	Adult (MA/OA)	TT66 Exterior
3	F	MA	TT66 Exterior
4	F?	Adult (MA/OA)	TT66/II Entrance
5	F?	Adult (MA/OA)	TT66/II Entrance
6	M?	MA	TT66/II Entrance
7	M?	Adult (MA/OA)	TT66/II Entrance
8	M	MA	TT66/II Entrance
9	n/a	Adult (MA/OA)	TT66/3 L. 5
10	n/a	Adult (MA/OA)	TT66/3 L. 6
11	n/a	Adult (MA/OA)	TT66 Exterior
12	n/a	Adult (MA/OA)	TT66 Exterior

Table 3. Individuals 1–3 from TT 65 Secondary Burial F II/I Bones 21.11.1999. M? – probable male; F – female; n/a – not available.

No.	Sex	Age	Stature
1	n/a	Adult	–
2	F	Adult	156.9±2.5 ($femur_m$, 42.7cm)
3	M?	Adult	168.1±4.2 ($humerus_m$, 32.5cm)

in the vicinity of TT65 and stored in a single bag. All three individuals were adults, comprising one female, one probable male, and one individual of indeterminate sex (**Table 3**).

Similar to the case of Individuals 1–3, the remains of one individual were recovered from a single depositional context at *Saff*-tomb 1. The skeletonised remains included the right neural arch of a first cervical vertebra, the proximal three-fourths of a right ulna, the right os pubis (maximum length of 31mm), and the left first rib. The remains were estimated to have belonged to an infant aged at ca. 3 to 6 years according to the length of the os pubis (Rissech & Malgosa 2007).

Thirty-six bags containing co-mingled skeletonised human remains and associated materials (i.e., mummification shrouds and resin) were analysed during the 2014 field season. From these bags a minimum number of 18 adults, based on proximal right femora, and four subadults, based on right ilia, were identified. Among the 18 adult proximal right femora documented, 13 femoral heads were preserved well enough to allow for sex estimation, resulting in the identification of five females, four males, and four individuals of indeterminate sex.

Table 4. Stature estimations from co-mingled adult skeletonised human remains. In the cases of individuals with an indeterminate sex estimation, both female and male stature estimates have been provided.

Sex	Femur maximum length (cm)	Stature
Male	48.7	173.8±3.2cm
Female	41.5	154.1±2.5cm
Female	40.7	152.2±2.5cm
Female	40.6	152.0±2.5cm
Indeterminate	42.6	156.7±2.5cm (F), 160.1±3.2cm (M)
Indeterminate	40.6	152.0±2.5cm (F), 155.6±3.2cm (M)

Estimates of stature were possible for 12 adult individuals: six females or probable females, four males or probable males, and two individuals of indeterminate sex. Male statures ranged from 163.5±3.2cm ($femur_m$=44.1cm) to 173.8±3.2 cm ($femur_m$=48.7cm) and averaged 168.2cm; female statures ranged from 152.0±2.5cm ($femur_m$=40.6cm) to 157.4±2.7cm ($humerus_m$=30.6cm) and averaged 154.5cm (see **Tables 1**, **3**, and **4**).

It is probable that most, if not all, of the human remains examined in 2014 were originally mummified to some extent. Given the decontextualised nature of the individuals recovered it is most likely that post-depositional alteration primarily accounts for the removal of mummification textiles and progressive skeletonization.

Insofar as macroscopically possible, the mummified heads and skeletonised skulls were examined for signs of hardened resin and/or transnasal craniotomy. Such signs are considered in mummy studies to be indicators of excerebration (i.e., brain removal) (Wade et al. 2011).

A fragmented skull recovered from TT66/1 L.9 (stored in Bag 13) displayed evidence of resin having been introduced into the skull via the nostrils, with pronounced resin within the nasal cavity and the right nare fully blocked. Such introduction of a foreign substance within the skull suggests excerebration, though it is also possible such staining could reflect other non-excerebration related substances (see Eladany 2011).

Mummified Head 9 has a large hole, predominantly on the right side, penetrating through the area of the hypophyseal fossa-tuberculum sellae-posterior clinoid process-dorsum sellae region. There is evidence of damage to both nares, with the nasal conchae being largely absent. Alteration of the ethmoid is not apparent, though damage to the cribriform and perpendicular plate may be present. It is possible that while aiming to penetrate the ethmoid superiorly, the embalmer inadvertently deviated and

broke straight through the back of the nose, a potentiality partly substantiated by Wade (2012) who observed that the sphenoid is often hit during the transnasal craniotomy (TNC) process.

The nature of preservation among the individuals examined, absence of damage to the nasal cavities and/or foramen magnum suggestive of transnasal craniotomy (TNC) or transforaminal craniotomy (TFC), and the presence of preserved brain matter in several individuals suggest that excerebration was not undertaken in all cases among the individuals documented in 2014. Such variable macroscopic evidence of excerebration might also reflect the declining or varied use of excerebration during the Third Intermediate Period or may simply reflect a cost reduction through not having an individual excerebrated (see Wade et al. 2011; Fanous & Couldwell 2012).

Evidence of the use of resinous material in the mummification process was ubiquitous among the individuals examined (**Figure 3a**). Appearing as a honey-like black substance, the composition of the identified resinous material could not be ascertained at the time of analyses and samples could not be obtained for chemical analyses (see Buckley & Evershed 2001).

Figure 3. Materials identified from analyses of mummified and skeletonised human remains during the 2014 field season, A) honey-like, black resinous material utilised in the mummification process; B) right *wadjet* eye "plate for the flank" from Mummified Torso 10; C) evidence of DISH from Mummified Torso 10; D) example of textile with greenish dyed bands utilised for wrapping mummified individuals. Photos by R.J. Stark.

The density of resin used varied from individual to individual, with some individuals having only a small amount of resin while others evidently had significant amounts introduced into the internal cavities of the torso, such as Mummified Torso 11, which preserves a resin deposit of ca. 50–55mm in thickness, being almost flush with the anterior margin of the preserved vertebrae. According to Wade (2012), this type of abundant resin use is typical of the Third Intermediate Period.

Mummified remains were wrapped in similar textiles of a light brown / beige colour, comprising several large layers wrapped around the body and bound with fabric tape strips approximately 90mm in width. Several of the large wrappings featured greenish dyed bands. A band pattern like this is known to have been a common design among 21st Dynasty and later burials (Salima Ikram, pers. comm.). The preserved green bands varied in size, often getting thicker towards one end, with the example shown in **Figure 3d** having six bands each about 1mm in width and a seventh, apparently terminal, band about 2mm in width. In one case, a thicker greenish band about 5mm in width was also noted. Evidence of alternating rows of fulvous and black coloured stripes, each around 1mm in width, was also documented (cf. Barber 1982).

The same variety of fabric was also utilised, often in conjunction with resin impregnation and the use of organic material (e.g., straw), for insertion within the cavities of the mummified bodies, ostensibly for the purpose of ensuring a life-like form of the embalmed body after mummification and potentially for wrapping and inclusion within the torso of removed organs. In the case of Mummified Head 10, resin impregnated linen was stuck in the left ear, a practice also documented in the case of Padiamunet (iii), a 25th Dynasty priest of Montu (Sheikholeslami & Ikram 2017:28).

Given the highly decontextualised proveniences and post-deposition disturbances of the human remains analysed and their variable preservation, it was not readily possible to associate the mummified heads with the torsos or the skeletonised elements. With that said, Mummified Torso 26, an adult of undetermined sex, and Mummified Head 10, a mature or old/elderly adult of undetermined sex, were recovered from the same depositional context (TT66/3 L.6), which may suggest an association. Similarly, Mummified Torsos 7 through 22 and Mummified Heads 4 through 8 were all recovered from the same context (TT66/II Entrance), suggesting probable associations within these groups.

A right *wadjet* eye was inscribed on a piece of leather, ca. 15mm in height by 25mm in length and placed over the right side of the pelvis of Mummified Torso 10 (TT66-*Saff* _1), an adult of undetermined sex (**Figure 3c**). While signs of an incision for organ removal could not be confirmed due to poor preservation, this placement almost certainly reflects a "plate for the flank" (Janot 2008) and is the first, and to date, only such object identified among the human remains studied as part of the

TT65 project. The depiction of the right *wadjet* eye is traditionally associated with the solar eye of the sun god Re, being connected with vengeance and protection of the bearer, and likely having an apotropaic function (Foley 2021). In the case of their use on a "plate for the flank", such *wadjet* eyes are interpreted as serving to protect from evil as well as to restore the physical integrity of the body after violation by the embalmer's knife. Numerous examples of such coverings are known among preserved mummies, with examples in gold known from the mummies of Yuya, Tutankhamun, and Merneptah, among others; for ordinary people, silver, copper, bronze, and wax were commonly utilised (Smith 2000 [1912]; Janot 2008; Hawass & Saleem 2016).

Mummified Torso 10 is a partially skeletonised torso with desiccated soft tissue. There is an apparent absence of resin and packing materials, suggesting that the deceased may not have been fully embalmed or, at the least, resin was not utilised internally. The presence of preserved linen, however, indicates that Mummified Torso 10 had at the least been wrapped for burial. Though clearly adult in development it was not possible to confidently estimate the biological sex of this individual. The degree of bony changes documented in the vertebral column indicates that this individual lived for an extended period of time with a chronic pathological condition (**Figure 3d**). The vertebral column presents characteristic features that have been associated with DISH (see Resnick & Niwayama 1976; Ortner 2003:558-560). They include, in particular, the appearance of melted candle wax flowing along the right anterolateral aspect of the vertebral column, in this case extending from the second to eleventh thoracic vertebrae (T2–T11), with pronounced bumpy nodules developed at the sites of the intervertebral discs. Ossification was especially pronounced from T5 to T8. Osteophytes could be seen along the anterior margins of the lumbar vertebrae, suggesting possible involvement with and/or stress-related reaction to the thoracic changes. Gross observation indicates preservation of the disc spaces and an absence of intervertebral syndesmophytes (cf. Rogers & Waldron 2001).

The human remains, most with varying amounts of preserved mummified tissues and others skeletonised, analysed during the 2014 field season at TT65 reflect a mixture of male and female adult individuals as well as a smaller proportion of non-adults and poorly preserved individuals for whom it was not possible to generate full osteobiographic information. Dating roughly to the New Kingdom and Third Intermediate periods, the decontextualised nature of the remains makes direct associations challenging. Some evidence was found for excerebration along with evident variation in approaches to mummification and the embalming process, as well as a probable case of DISH.

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