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The ancient Nubian skeletal collection at Universidad Complutense de Madrid, Spain

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Introduction

Archaeological work in Sudan began during the Anglo-Egyptian colonial administration, with large scale projects like the Archaeological Survey of Nubia[1] (Reisner 1909; 1910; Firth 1912; 1915; 1927; Ahmed 2020), and continued after its independence in 1956, often carried out by foreign archaeological missions that usually viewed the country as a cultural extension of Egypt (Trigger 1994; Jakob and Khalid 2011; Lemos and Tipper 2021; Adam and Taha 2022). The first legislation regulating archaeological work in Sudan was issued in 1905 under the guidance of British archaeologist John Winter Crowfoot, and it was not until 1960 that the Sudanese people started taking part in archaeological work and legislation, with the first Sudanese appointed Commissioner for Archaeology, Thabit Hassan Thabit. After 1960, diverse foreign teams conducted archaeological excavations in Egypt and Sudan, and the construction project of the Aswan High Dam and the subsequent flooding of Lower Nubia sparked the organisation of the UNESCO *International Campaign to Save the Monuments of Nubia* (Hassan 2007). Several countries sent archaeological teams, including Spain, and this event can be considered as the beginning of the Africanist archaeological tradition in Spain (Zurinaga Fernández-Toribio 2017), if we exclude the research carried out in the territories then under Spanish control (Northern Morocco, Western Sahara and Equatorial Guinea) before their independence (Fernández 1997). Other international projects continued in later years, coordinated between the Sudanese government and foreign teams, to excavate and study numerous archaeological sites located in Upper Nubia, such as the archaeological survey carried out by the French Mission of the National Center for Scientific Research (C.N.R.S.), with the support of the Sudan Antiquities Service, in the Nile Valley south of the Dal Cataract in 1973 (Vila and Sherif 1975; Vila 1978). This survey discovered numerous Nubian sites and necropoles, including the Meroitic necropolis of Amir Abdallah, located near the modern northern town of Abri. The excavation of this necropolis by a Spanish team between 1978 and 1981, and the subsequent history of the exhumed human remains, is the subject of the present work (Fernández 1983; 1984a; 1984b).

The Sudanese legislation for archaeological material has been described elsewhere (Jakob and Khalid 2011). Human archaeological remains have been exported since the first excavations that took place during the colonial period in the early 20th century, up to the independence of the country, and into the 21st century. Legislation has changed considerably over this time, but only for archaeological objects, not human remains. The Sudan Antiquities Service was founded in 1905 during the colonial period, and in 1952 the Antiquities Protection Act was issued. This Institution changed its name in 1991 to the National Corporation for Antiquities and Museums (NCAM), and the 1952 Act was changed in 1999 to the Ordinance for the Protection of Antiquities, which is the legislation that currently regulates archaeological work in Sudan (OPA 1999). This ordinance states that all antiquities excavated in Sudan belong to the government. It forbids the export of archaeological materials, a common practice among international teams until

[1] In 2010, Rosalie David and Norman MacLeod from the University of Manchester began a project to review all the bone materials from the first Archaeological Survey of Nubia. The project intended to study the scattered materials founded on those excavations. They created an online database containing all the information about the human remains studied, intending to create a valuable resource for researchers interested in ancient Nubian populations. For further information, see https://sites.manchester.ac.uk/knhcentre/research/current/first-archaeological-survey-nubia/revisiting-the-archaeological-survey-of-nubia/.
For further info see also Metcalfe *et al.* 2014. *Palaeopathology in Egypt and Nubia: A century in review*.

then, except under a license from NCAM (OPA 1999). Regarding human remains, it was possible to export them with a license under the 1952 Act, although all human and animal remains prior to AD 1340 were considered antiquities.

During the UNESCO Campaign, many Nubian cemeteries were excavated, and the Egyptian and Sudanese governments allowed the export of human remains to the international teams' home institutions (for instance, the human remains excavated and exported by the USA team to the University of Colorado, Boulder; the Ghanaian Expedition; and the Scandinavian Joint Expedition) (Adams 1977; Buzon 2020). It is still possible to export human remains under licence according to the 1999 Ordinance if the human remains are not considered of national importance. For instance, the excavation of Cemeteries 3-J-10 (AD 1100–1400) and 3-J-11 (AD 300–1400) (Ginns 2006; Welsby 2006) on Mis Island, that took place between 2005 and 2007, saw human remains loaned from the British Museum to Michigan State University (Ginns 2006; Hurst 2013), where bioarchaeological research was carried out (Hurst 2013; Watson 2018). Skeletal collections from sites like Tombos (Schrader 2012; 2013; Buzon *et al.* 2016), Kulubnarti (Hummert and Van Gerven 1983; Adams *et al.* 1999), or the Royal Cemetery of Kerma (Bonnet 1992; Bonnet and Honegger 2020), among many others, are still being studied at European and North American Institutions. Before the outbreak of the current conflict in Sudan, several foreign archaeological and anthropological research teams were excavating at many important sites, always with at least one inspector from NCAM and abiding by Sharia law, which forbids the disturbance of Islamic graves. More recent archaeological projects have developed within the milieu of a global debate addressing both modern and historical epistemological, social, and political implications of archaeological practice, with interesting examples from Nubian archaeology (Kleinitz and Näser 2012; Kleinitz and Merlo 2014; Carruthers 2022; Lemos 2022; Matic 2023). There are also those that focus on recovering the history of the forgotten, such as displaced Nubian populations or the role of women in field sites (Zurinaga Fernández-Toribio 2022; in press).

Our paper outlines the beginning of a new project exploring the human skeletal material from the site of Amir Abdallah in the Universidad Complutense de Madrid, Spain, assessing what this consists of and why, as well as applying new analyses to this material. This bioarchaeological research project originally was planned as a joint effort with Sudanese colleagues; in 2019, the National Corporation of Antiquities and Museum (NCAM), with support from the British Museum and Institute of Bioarchaeology, formalised the M. Bolheim Bioarchaeology Laboratory in Khartoum, coordinated by one of the present authors (Saad and Antoine 2021). The facilities include an office, lab and storeroom dedicated to human remains and other biological materials. This facility was the first of its kind in Sudan and was planned to allow the analysis and long-term curation of ancient human remains recovered from Nubian sites, as well as providing a space to teach and apply bioarchaeological techniques with the goal of training a new generation of Sudanese bioarcheologists. Our original goal was to collaborate with this laboratory and contacts were made with professionals from NCAM in January 2023, to assess the possibilities of enrolling Sudanese archaeologists in doctorate programmes at UCM and establishing an exchange programme between institutions. Parallel conversations took place with the UCM authorities and with the Spanish Agency for International Development Cooperation (AECID by its Spanish initials) for obtaining funding and establishing an international agreement. Regrettably, conversations came to a halt when the current conflict broke in Sudan, and we are currently reorganising the research project with the objective of maintaining Sudanese partnership.

The necropoles of Abri - Amir Abdallah

The site this study is focused on, the necropolis of Amir Abdallah, is an example of the collaboration between the Republic of the Sudan and international archaeological teams. In 1977, archaeologist Martín

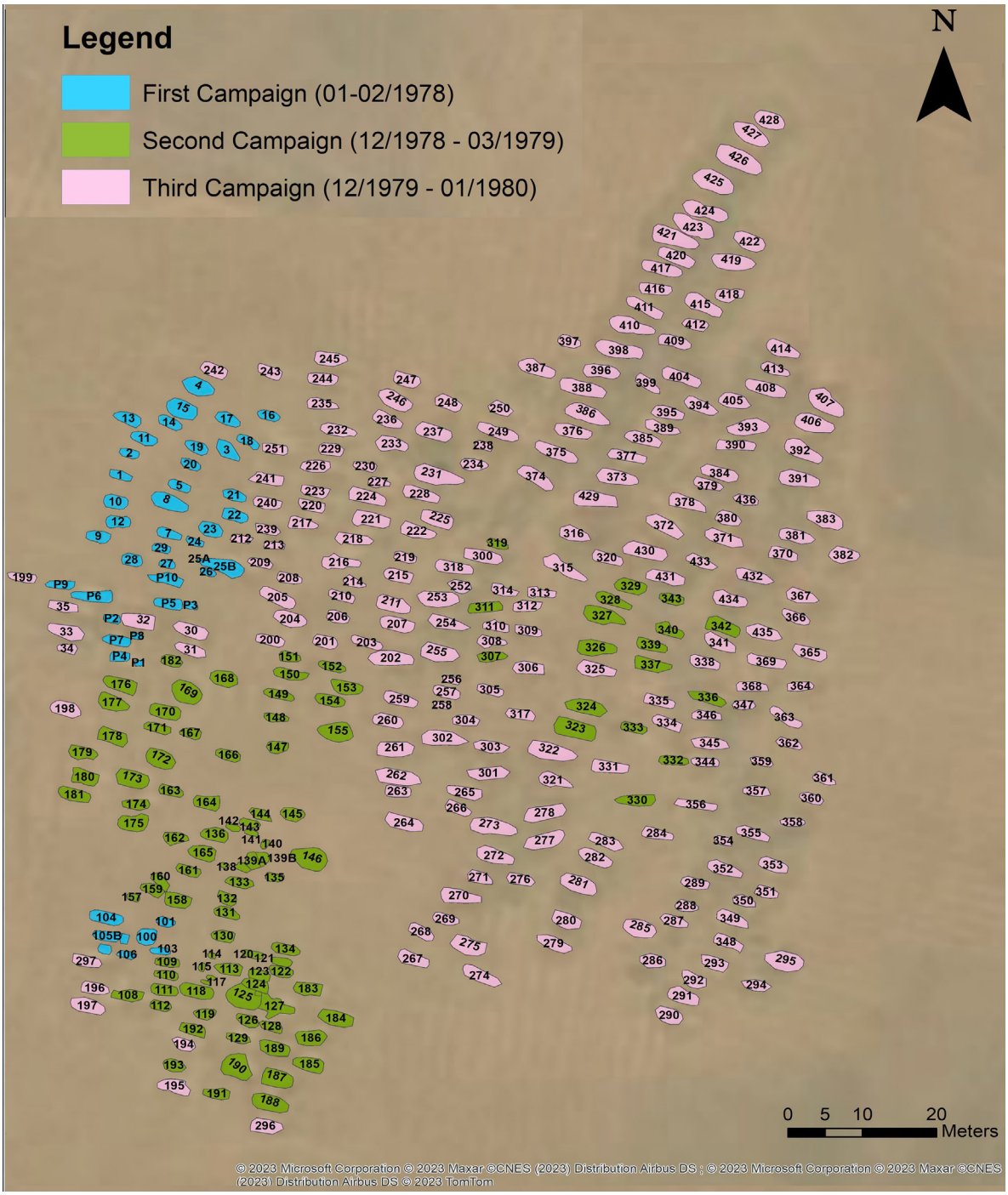

Figure 1. Aerial view of the AAMS necropolis with the georeferenced position of each burial. Colours show the distribution of the works done in the different campaigns and the tombs excavated in each one. The tombs excavated by Vila are included in the First Campaign as Tombs P1 to P10.

Almagro Basch, Director of the Spanish Museo Arqueológico Nacional, Chief of the Spanish Archaeological Mission in the Middle East, who directed the Spanish Archaeological Mission during the UNESCO project, contacted Spanish diplomats in Sudan and the Sudan Antiquities Service, then directed by Negm-ed-Din Mohamed al Sherif, with the purpose of establishing an archaeological excavation in Sudan. This would be financed by a private foundation, the Duran Vall-Llosera Cultural Foundation (Duran Vall-Llosera 2021; Conde Berdós 1995).

The Sudanese authorities granted permission for an excavation at two sites, Amara and Abri, in a document stating that 'all the antiquities found by the licensee will be divided between the Sudan

Government and the licensee as provided for in Section 15 of the Antiquities Ordinance'.

Four archaeological campaigns ran after the permission was granted, from 1978 to 1981, excavating the Meroitic necropolis Amir Abdallah at Abri (named AAM by the archaeologists, dated between the 3rd–1st centuries BC) and the Kerma cemetery at the same site (EAK, dated between *c.* 1800-1700 BC). This Sudanese town in the Northern Province is located between the 2nd and 3rd Cataracts (Figure 1). The field director of the first campaign was Fernando Fernández Gómez (Museo de Artes y Costumbres Populares de Sevilla), and for the 2nd to the 4th campaigns, the field director was Víctor M. Fernández (Departamento de Prehistoria, Universidad Complutense de Madrid). The Spanish team hired people from Abri, where they received great hospitality and kindness, and the archaeologists lived in a small hotel property owned by a local family during the campaigns, the Hussein Magazzi family (Fernández 1983; Fernández 1984a; Fernández 1984b). The first campaign took place between January and February 1978, when only a small area was excavated, next to the ten graves André Vila had discovered during the archaeological survey carried out by the French C.N.R.S. (Vila and Sherif 1975; Vila 1978), resulting in the discovery of 47 graves. A selection of the skeletal remains of these graves were taken to Khartoum, and the rest were left undisturbed in the necropolis. The remains in Khartoum were briefly analysed the following year by Víctor M. Fernández to identify the sex of the indivudals based on pelvic analysis.

During the second campaign, between December 1978 and March 1979, a larger area of the cemetery was excavated, including the areas surveyed, but not excavated, during the first campaign. Around 105 graves were excavated, and unlike the first campaign, the skeletal remains were completely exhumed and taken to Khartoum, and later to Madrid by airborne cargo after the end of fieldwork. Another small Meroitic necropolis was discovered north of the previous necropolis, with nine graves, out of which only four were excavated. This small cemetery was named Amir Abdallah Meroitic North (AAMN) and is thought to share the same chronological timeframe as the southern, bigger, cemetery, thus named AAMS (Amir Abdallah Meroitic South).

During the third and final campaign dedicated to the Meroitic cemeteries of Amir Abdallah, between December 1979 and January 1980, 230 graves were excavated, including the remaining five from the AAMN necropolis. Interestingly, due to the large number of excavated remains, it was decided that only the cranium, pelvis and leg long bones were to be exhumed and taken for study. During a survey around the AAMN necropolis, an additional tomb was found and identified as belonging to the earlier Kerma period.

The fourth and final campaign, in January-February 1981, was exclusively dedicated to the complete excavation of this Kerma cemetery, which was named EAK (Emir Abdallah Kerma) and consisted of 40 tombs (Fernández 1982; Trancho Gayo 1982).

Throughout this work, the names Amir and Emir were used interchangeably.[2] Emir was first used following the name of the Sudanese Antiquities Service as seen in the official documentation and in Fernández's first two publications (Fernández 1979; 1980). However, starting in 1982 this changed to the name Amir, which is still used today. Sheikh Amir Abdallah, who the necropolis is named after, was a local holy man for whom a *qubba* was erected in the vicinity of Abri, due to the belief that his tomb was located there (Fernández 1983, 67). The cemetery was thus linked to this historical figure by the local population,

[2] The use of both names has given rise to confusion due to the changing meaning they had over time. Both are correct spellings that come from the Arabic root 'amara', which means 'to command'. Therefore, they have a common origin, but represent different concepts and are used in different contexts. The title of 'emir' (commander or prince), more specific than that of 'amir', is associated with Muslim leaders and rulers of a specific territory who are appointed by an authority such as a sultan or a king to supervise and control a territory. They are also responsible for maintaining order, ensuring the safety of their people, and defending the values and traditions of their culture and religion. The term 'amir' refers to any type of military and political leader or chief, regardless of their cultural or religious origin. It has a broader and more general meaning (Britannica 2024; thecontentauthority 2024).

Necropolis	Excavated tombs	Identified individuals	Remains UCM	Remains Khartoum/Abri
AAMS (3rd-1st century BC)	377	389	337	48
AAMN (3rd century BC)	9	10	9	0
EAK (*c.* 1800-1700 BC)	40	40	35	0

Figure 2. Inventory of the human remains identified in the necropoles of Amir Abdallah.

and so this name was used by archaeologists.

The AAM and EAK sites were extensively studied by Víctor Fernández, and several radiocarbon dates were acquired from intact wooden coffins (Fernández 1984c; 1984d). This Meroitic necropolis provided the first insights into the material culture of the initial phase of the Meroitic culture, the Early Meroitic, dated to the 4th–1st centuries BC (the bulk of the Meroitic sites known before this excavation belonged to the Late, or Classic, Meroitic culture, dated to the 1st–4th centuries AD) (Fernández 2018; Fernández 1979; Fernández 1980; Fernández 1982; Fernández 1983; Fernández 1984a; Fernández 1984b).

Focusing on the human remains, the excavations resulted in the discovery of 377 tombs and 389 individuals (AAMS), nine tombs and 10 individuals (AAMN), and 40 tombs and 40 individuals (EAK) across all sites (Fernández 1983). The Sudanese government permitted the transportation of the skeletal remains to the Universidad Complutense de Madrid (UCM) in 1979, 1980, and 1981 for anthropological study. In total, the skeletal contents of at least 320 tombs were taken to the Physical Anthropology Unit of the UCM.

The remains were studied by Gonzalo Trancho for his doctoral dissertation, defended in 1987, which focused on the basic demography of the cemetery, cranial indexes and non-metric traits, and the ABO system from hair analysis (Trancho Gayo 1987). Mitochondrial DNA extraction was later tried successfully on a small sample of the cemetery (Lalueza Fox 1997), but beyond these works, no further research has been carried out. Currently, the collection is curated at the Osteology Laboratory, Unit of Biological Anthropology, Faculty of Biological Sciences, from the Universidad Complutense de Madrid, Spain, directed since 2021 by one of the authors (Luis Ríos), and a thorough review of the collection is underway. The number of skeletons that comprises the AAM and EAK collection is detailed in Figure 2.

During the excavation at AAMS, a total of 337 identified individuals, whose remains were relatively well preserved (seven of which are in a highly fragmented state), were exported to UCM. The difference between the number of individuals identified in the field and curated at UCM is due to three main reasons. Firstly, the remains from 46 tombs, with 48 individuals, were left in Sudan; some left in the necropolis (10 tombs previously excavated by the French Mission directed by André Vila), and some moved to the museum at Khartoum after the first Spanish field campaign (36 tombs excavated in January-February 1978). Secondly, several tombs contained more than one individual, including tombs with two skeletons buried simultaneously, and tombs with rearrangements (individuals whose remains were repositioned within the tomb to make room for another corpse (Schmitt and Déderix 2021)), and the identification, individualisation and numbering of these skeletons was not consistent during the different seasons. Finally, the lack of correspondence between the number of tombs and the number of human remains was mainly due to the fact that a considerable number of tombs (133 in total with different types of disturbance) had been plundered in ancient times by looters, especially for jewellery (possibly necklaces), that may have served as currency. This hypothesis, although unproven, comes from the observation that grave robbers in their disturbance of the remains concentrated on the area of the skull where most of the necklaces were located (on the neck), not only at Amir Abdallah but also at Karanog (Woolley and Randall-

MacIver 1910, 28-29; Adams 1977, 373; Fernández 1983, 547). The result of such thefts was often the mixing of tomb contents and subsequent destruction of some human remains.

As mentioned above, different decisions were made in the field regarding what parts of the skeleton were to be exhumed or even if they were to be exhumed at all. Only the best preserved parts of the skeletons were exhumed during the first campaign, while complete skeletons were exhumed during the second campaign, and then only the cranium, pelvis, femur, and tibia during the third campaign. This changing criterium about which bones to exhume was the result of different factors. Bioarchaeology, as understood and practiced today, is the result of recent technical and theoretical developments and debates that began in the 1970s and are currently ongoing (Larsen 2018; Cheverko *et al.* 2020). Before this, an emphasis on the cranium, pelvis and long bones dominated research in the study of archaeological human remains. In Nubian archaeology, the first physical anthropology studies were mainly focused on racial differentiation and population history (Binder 2019). Craniometric analyses were used to differentiate and characterise the various groups associated with each cultural phase, trying to distinguish the different 'racial' types, which were fundamentally based on the degree of 'negroid' influence on the 'Egyptian substratum' (Morton 1844; Smith and Jones 1910). Spanish physical anthropology was representative of this tradition and, as described by Zurinaga Fernández-Toribio (Zurinaga Fernández-Toribio 2017; 2020; 2021) in the UNESCO Spanish Archaeological Mission that worked in the 1960s, the decisions regarding what to do with the skeletons exhumed were erratic and sometimes dismissive. This was despite the efforts of some anthropologists like Emiliano Aguirre to convince the directors of the Mission of the importance of the study of the human remains, and of the need to take complete skeletons back to Spain for further study, as other archaeological missions were doing (e.g., the USA, Ghanaian and Scandinavian Missions) (Zurinaga Fernández-Toribio 2020). The increased appreciation of the importance of the human remains to the Spanish Mission changed during the period of their fieldwork, overlapping with an increasing number of articles discussing the biology of Nubian skeletal material developed by Dennis Van Gerven, George Armelagos and colleagues (for a summary, see Armelagos and Van Gerven 2017), important scholars in the development of modern bioarchaeology. Thus, it is not surprising that the decision was taken to exhume and transport human remains from the AAM necropolis for their study. What might be surprising is the changing criterium of first exhuming complete skeletons (second campaign), and then exhuming only the cranium, pelvis, femur, and tibia (third and fourth campaign). The lack of an anthropologist in the field was probably a factor in this changing criteria, but it is also interesting to note that, for instance, the selection of only cranium and mandible parts was not unusual, with this also occurring in excavations between the 1910s (e.g., Jebel Moya, 98 crania and 139 mandibles selected for study at the Natural History Museum, London (Mukherjee *et al.* 1955)), and excavations carried out in 1963 (e.g., Mirgissa, 354 skulls and 278 mandibles selected for study at the Musée de L´Homme in Paris (Billy 1976; Dastugue 1976)) and 1970 (e.g., Soleb, where 32 crania were selected for study at the Musée de L´Homme in Paris (Billy and Chamla 1981)). The infrastructure needed for organising the handling and transport of dozens of skeletons was also a factor. The aforementioned lack of an anthropologist, the large number of tombs exhumed, and the complex transportation of archaeological material and skeletons from Abri to Khartoum, and then to Spain, resulted in this selection of tombs and bones. In retrospect, although this treatment would not be possible today, it represented a change in perspective in the management of human remains when compared to the previous UNESCO campaign in Nubia (Zurinaga Fernández-Toribio 2017; 2020).

The necropolis in the future

The excellently preserved skeletons from Amir Abdallah contain fundamental information about the lives of these individuals. Currently, we can access this information with a plethora of different techniques

(Larsen 2015; Larsen 2018; Schrader *et al.* 2019; Sirak *et al.* 2021). Ongoing research is focused on the patterns of dental and skeletal growth and maturation, that will allow us to assess the biological living standards of this population. Some preliminary results about linear growth in long bone length, and bone maturation during adolescence, have been presented in scientific meetings (Casquero *et al.* 2024). A future step will be comparison with other growth studies from Nubian samples from Mis Island (Hurst 2013), Kulubnarti, and Wadi Halfa (Armelagos and Van Gerven 2017), as well as Egyptian samples from Amarna (Dabbs 2023). The study of physical activity patterns is another focus of ongoing study, again with preliminary results already presented elsewhere (Casquero and Ríos 2023). This research project is based on virtual anthropology, through the analysis of cross-sectional properties of long bones obtained from 3D surface scan and CT scan images, a technique that has been successfully applied to other human remains from Nubia (e.g., Stock *et al.* 2011; Watson 2018). In addition, a qualitative study of bone topography, in the model of those conducted by Schrader (Schrader 2012; Schrader 2013) and Carballo-Pérez and Schrader (Carballo-Pérez and Schrader 2023) is also planned. The emerging pattern will inform us about the distribution of physical activity in this Meroitic population. The study of past diseases is fundamental for understanding health patterns of the population, and in particular, the traumatic, infectious, metabolic and congenital diseases present, as has been successfully studied in other Nubian and Egyptian skeletons (Wapler *et al.* 2004; Buzon 2006; Herrerín *et al.* 2010; Smith-Guzmán 2015; Molto *et al.* 2019; Davies-Barrett *et al.* 2019). We have started the paleopathological analysis of the skeletons from Amir Abdallah with the objective of obtaining diverse paleopathological data representative of this site, combining this population approach with case reports of skeletons (see Casquero and Ríos 2024). Another line of research is the study of diet and mobility through isotopic analysis of teeth and bone. Carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotopes provide basic information about dietary patterns, and currently we are testing collagen extraction from bone fragments. Strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O$) isotopes from tooth enamel formed at different ages (first molar and third molar) provide information about the geographical mobility of these people throughout their first two decades of life, and we are performing an inventory of available teeth per skeleton to estimate the sample of the skeletons and the number of teeth per skeleton (either one or two teeth formed in different periods of life) from which we can obtain information. The intra-cemetery variation of isotopic composition might offer a view of social organisation from mobility and diet, while an inter-site comparison will be possible due to the mobility results previously obtained from other Nubian sites (Schrader *et al.* 2019; Buzon *et al.* 2023; Ciesielska *et al.* 2024), and diet (Schrader *et al.* 2018; Ciesielska *et al.* 2021; Lotze 2022; Diaz 2023). Finally, genetic studies have opened up new avenues of research in population history and paleopathology, and some tests were carried out to determine the feasibility of obtaining genetic material from Nubian sites (Lalueza-Fox 1997; Cherifi and Amrani 2020), similar to the work led by Sirak *et al.* (2021) in the Kulubnarti cemetery, where the genome-level data provided information on the history of that population as well as the relation between the skeletons from the two cemeteries from the site. The team currently are exploring the possibility of similar genetic studies on the Amir Abdallah material.

Conclusion

Our objective is to develop a wide-ranging bioarchaeological study of the skeletons from Amir Abdallah, and to combine this information with the detailed archaeological studies published to date (Fernández 1979; Fernández 1980; Fernández 1982; Fernández 1983; Fernández 1984a; Fernández 1984b; Fernández 2018). Through this, we hope to obtain a detailed understanding of the social structure and dynamics of this particular Early Meroitic population. Furthermore, in the general context of Sudanese and Nubian archaeology, this cemetery is also interesting as the area in which the cemetery is located, between the 2nd and 3rd Cataracts of the Nile, as well as its chronology (3rd–1st centuries BC), have not been as thoroughly

studied as other locations and periods of Nubia (Buzon 2020). This project hopes to contribute to an increased understanding of this region and time period.

The excavation of the Amir Abdallah Meroitic and Kerma cemeteries forms a key part of the history of Nubian archaeology and constituted an important milestone for Spanish Africanist Archaeology. Looking to the future, the research potential of the human remains is yet to be explored, and we are hopeful that this future can be written between Sudanese and Spanish scholars.

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Obituaries

Biographies

Miscellanies

Front cover. General view of Site WNP-J-22\1, Al-Jabalain, White Nile State. Photo by Hamad Mohammed Hamdeen.