

Aegyptus et Pannonia VI.



Acta Symposií anno 2019

B U D A P E S T

Aegyptus et Pannonia VI.

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AEGYPTUS ET PANNONIA VI.

Health and Life in Ancient Egypt. Mummies in Focus

Proceedings of the Conference held 27-29th

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CONTENT

Hedvig, Gyóry Introduction to the “Health and Life in Ancient Egypt” conference-volume included The Nephthys Project by Enikő Szvák	9
UNIT 1	17
Donoghue, Helen D. Research history and ancient DNA from Dr Granville’s Egyptian Mummy.	19
Gee, John Hypocephali and Gates.	25
Minnikin, David E. – Oona Y-C. Lee – Houdini H. T. – Wu, Gurdyal S. – Besra, Ian D. Bull – Taylor, John A. – Spigelman, Mark – Donoghue, Helen D. New lipid biomarker data confirm the diagnosis of tuberculosis in the Granville mummy.	37
Nerlich, Andreas G. – Panzer, Stephanie – Schneider, Philipp – Lehn, Christine – Peschel, Oliver – Hamann, Christian – Bicker, Roxane – Schoske, Sylvia An unusual ancient Egyptian mummy skull within a Roman period stucco head	45
Pálfi, György – Cuvigny, Hélène – Bereczki, Zsolt – Brun, Jean-Pierre Partially mummified remains from Egypt: special burial conditions and a rich paleopathology	53
Piombino-Mascali, Dario – Kozakaitė, Justina – Jankauskas, Rimantas Advances in the study of Lithuanian mummies.	61
Szikossy, Ildikó – Molnár, Mihály - Major, István – Schanandor, James – Morrison, Denise – Sklánitz, Antal – Westrich, Donna – Szvák, Enikő – Pap, Ildikó Roommates. Who are in the mummy bundle from South-America?	69

UNIT 2 73

Győry, Hedvig – Horváth, Balázs Zsigmond – Blázovics, Anna

Esthetical Solution or useful prosthesis 75

Abstract

1. Introduction 75

1.1. Losing a limb or body part 76

1.2. Written sources 77

2. Deficient human remains 78

2.1. Deficiency without known reason 78

2.2. Innate deficiency 79

2.3. Deficiency caused by illness and/or accident 80

2.3.1. Giza, Old Kingdom necropolis 80

2.3.2. Sedment, First Intermediate Period Case 82

2.3.3. Deir el-Bersha, Old and Middle Kingdom Cases 82

2.3.4. New Kingdom 86

2.3.5. Thebes, Third Intermediate Period 87

2.3.6. Thebes, Late Period 88

3. Replacements 89

3.1. Funeral device 89

3.2. Funeral and/or cosmetic device 91

3.3. Cosmetic and/or functional device 92

3.3.1. Suggested by healing pattern on anthropological material 93

3.3.2. Actual prosthetics 93

3.3.2.1. The big toe in the British Museum collection 94

3.3.2.2. The Cairo Museum big toe prosthesis, originating also from Thebes 95

4. Discussion 95

4.1. Healing pattern on anthropological material 98

4.2. Artificial devices 99

4.3. Real prosthetics 100

5. Conclusion 102

Acknowledgements 104

Bibliography 104

Győry, Hedvig – Horváth, Balázs Zsigmond – Blázovics, Anna

Blessing or curse. The consumption of wine in ancient Egypt 111

Abstract 111

1. Introduction 112

2. What do we know about wine in ancient Egypt? 113

2.1. Vineyards and wine consumption 113

2.1.1. Historical overview	115
2.1.1.1. Prehistoric and Early Dynastic times.	116
2.1.1.2. Old to Middle Kingdom	116
2.1.1.3. New Kingdom	117
2.1.1.4. Late Period and Greco-Roman times	118
2.1.2. Wine production and commerce	119
2.1.2.1. Wine production in Egypt	119
2.1.2.2. Wine and economy	123
2.2. Wine in every day life.	127
2.2.1. Moderate wine consumption.	127
2.2.2. Excess wine consumption / wine abuse	131
2.3. Religious and symbolical significance of wine for the Egyptians	135
2.3.1. Wine offering (<i>hmk jrp</i>).	139
2.3.2. Religious feasts and drunkenness	142
2.4. Medical use of wine in ancient Egypt	148
2.4.1. Therapy with wine.	148
2.4.2. Wine and liver	150
2.4.3. The khayt-disease	154
2.4.3.1. Khayt in medical texts	155
2.4.3.2. Khayt in intromagical texts	157
2.4.3.3. Conclusion	159
3. What do we know about bioactive agents in wine?.	159
3.1. What is the reason of the disease-causing effect of alcohol?.	160
3.2. Biochemical and physiological processes of wine consumption	161
3.3. Bioactive agents of wine	164
4. Conclusion	165
Bibliography	166

Héthelyi, Éva B. – Győry, Hedvig

Anise and Ancient Egyptian Pharmacopoeia	183
Abstract	183
1. The anise	183
1.1. Botany	184
1.2. Gastronomy	185
1.3. Cosmetics	186
1.4. Archeobotanical finds, Egypt.	186
2. <i>Jnst</i> in ancient Egyptian medicine.	186
2.1. Identification of the Ancient Egyptian name	186
2.2. Medical texts.	188
2.2.1. Wound care	189

2.2.2. Tooth treatment	191
2.2.3. Urinaton	194
2.2.4. Side treatments	195
2.2.5. The <i>ḥ3tj</i> group	201
2.2.6. The spell of the beer	206
2.2.7. Aim of the treatments.	208
3. Medical use of anise in works of Classical authors	210
3.1. Recommendation by Pythagoras and Hippocrates	210
3.2. Hellenistic and early Roman writers on anison	212
3.3. Compended by Celsus	213
3.4. Roman period remedies collected by Plinius	214
3.5. Studies by Dioscorides	216
3.6. Galenos viewpoints	217
3.7. Similarities and deviations between anison and <i>jnst</i>	220
4. Ethnomedicine and historical times.	222
4.1. Middle-East	222
4.2. General Use in the Western world:.	224
4.3. Some European historical uses of anise	225
5. Pharmacology	227
5.1. Our analyses of essential oil of anise	227
5.2. Review of the chemical elements in anise	228
5.3. Contradiction	234
5.4. Comparison.	235
6. Conclusions	236
Bibliography	237

Scheffer, Krisztina

Zoltán Arányi (1856-1862), the most famous child-mummy from Hungary

Abstract	249
1. Introduction	249
2. Zolika.	251
3. Embalming process	254
4. Afterlife of the mummy.	257
5. Plans for the future	258
Bibliography	260

INTRODUCTION TO THE “HEALTH AND LIFE IN ANCIENT EGYPT” CONFERENCE-VOLUME

Dr. Hedvig Győry PhD

Earlier readers of *Aegyptus et Pannonia* will surely be surprised by this volume. It has been more than 10 years since we organised our last conference for the fifth volume, and the theme has changed completely. Therefore, as an introduction, we would like to briefly summarize the recent events and the activities we have carried out in the professional field. This is also the reason for the structural change: the conference presentations will be followed by detailed articles resulting from the work of our Society.

The Hungarian-Egyptian Friendship Society and the Ancient Egyptian Committee

The Hungarian-Egyptian Friendship Society (HEFS) has been a non-governmental organization operating since 1995, which strives to acquaint and promote Egyptian culture; scientific activities and research are essential elements among its objectives. We discuss actual and earlier Egyptian topics from historical, artistic, literary, touristic or even economic points of view in our lectures. We also organize other programs according to the demand of situations and suggestions of our members. Thus, in the recent period our programs included Egyptian days and festivals, workshops, excursions, experience reports, public meetings and quizzes, as well as literary and photo competition. We also share other news and curiosities on our website and in our radio programs. Our activities are carried out partly in collaboration with other organizations, as was the conference organized in 2019 “Health and Life in ancient Egypt. Mummies in Focus”, presentations of which are published in this volume.

Particular emphasis is placed in our efforts to raise awareness of ancient Egyptian monuments, which is why an independent Committee (Ancient Egyptian Committee / AEC) has been set up to coordinate this. It plays a key role in the life of the Society and has done much work both in dissemination and research in recent years.

Part of our work is aimed at pupils who are taught ancient Egyptian knowledge through competitions in a playful way. There were also children’s classes and lectures in schools and community places (often called house of culture in the Hungarian language). Here, we primarily work through manual skills to develop on visual culture. We have been writing out fine art competitions (drawing/painting, puppet, digital

storytelling) for years. In the last two years, an adult category was also launched for the competition at the public's request, and we have organized some exhibitions with the paintings in Hungary, but had already a children's drawing/painting exhibition in Cairo. The committee has published a book on several occasions, most recently with children's drawings/paintings about the ancient Egyptian myth on the Eye of the Sun, and the next such volume is processed. Our radio programs belong also to this activity; there we present various faces of ancient Egypt and report on the latest news ("On the field of the Pharaohs"), resp. we draw attention to exhibitions in Hungary ("From Exhibition to Exhibition").

In the research field, the Ancient Egyptian Committee was initially involved in the excavation and reconstruction works of the Isis Temple in Szombathely (Savaria), focusing primarily on the religious, social, lifestyle, and artistic aspects of Egyptian religious cults. In co-operation with the archaeologists of the Savaria Museum in Szombathely and the Hungarian National Museum in Budapest, it also organized five international conferences. At that presentation, national results, discussion of controversial cases, and lectures on international professional results took place. A significant part of the lectures appeared in the form of articles in the volumes of *Aegyptus et Pannonia*, founded by AEC, representing the diversity of relevant scientific researches.

The medico-history research group

Already in the early 1990s, we contacted the Semmelweis University II, Clinic for Internal Medicine. With the support of the then director, Professor János Fehér, we published several publications in the *Orvosi Hetilap* and other Hungarian medical / medico-historical periodicals. In 2003 under the auspices of the Kriterion Publishing House in Cluj-Napoca, the book "Health and Lifestyle in Ancient Egypt" was published with the assistance of a biochemical researcher at the University. Besides the articles, lectures were also given on request.

The medico-history research group in the AEC was established with such antecedents in 2010 to examine herbs of ancient Egyptian medicine that can still be used currently in today's life, in the knowledge that ancient Egyptian science has reached such a high standard that it has become an outstanding and exemplary professional skill for the surrounding peoples, and later became one of the cornerstones of modern medicine — through the mediation and further development of Greek and Roman and then Arabic medicine. A significant part of the substances used in prescriptions are of vegetal origin, so reviewing and examining their effects and the data on them may provide new uses for current pharmacology. In this field, we collaborated primarily with researchers from the Semmelweis University of Medicine, under the direction of Professor Anna Blázovics.

A few years ago, I was also invited to contribute to the work of the editorial staff of *Kaleidoscope, Journal of Culture, Science and Medical History* at the Semmelweis Uni-

versity. Last year a lecture was given with the staff of the University and the Hungarian Academy of Sciences on the occasion of the Science Day of the Hungarian Academy of Sciences. We thus also maintain an excellent relationship with Professor Judit Forrai, who headed the Institute of Public Health at Semmelweis University, and with the Life Sciences and History Working Committee of the Hungarian Academy of Sciences under her leadership.

Over time, we contacted the HNM Semmelweis Museum of the history of Medicine, which also houses some Egyptian medical material, and the mummy of Zoltán Arányi, whose mummification method raises questions concerning the afterlife of this practice. Documents on this topic were encrypted for the conference, published in this volume.

Initially, our goal was to present international results to Hungarian people, which is why we have given several lectures inside and outside the Society on herbs known and used in ancient Egypt, from the point of view of phytotherapy, aromatherapy, and other medico-historical topics, some of which are summarized in our *Egyiptomi Füzetek* (Egyptian Booklets). We aimed to make aware as many people as possible of the newly acquired pieces of knowledge; at the same time these lectures provided us opportunity for a kind of summary and systematization, for reviewing the still immature results, and for expanding the professional consultation.

After years actively pursued in-depth research on *materia medica*, we have found interesting, even currently valid discoveries in the case of figs, sycamore, Christ's thorns, or coniza. In doing so, we collaborated with the Institute of Pharmacognosy at the Semmelweis University and the Hungarian Free Radical Research Society (Magyar Szabadgyök-Kutató Társaság), also involving pharmacist students at the University, focusing on free radical researches. It has led to a significant change in attitudes and approaches. Our research has yielded results that are as valuable from a medico-historical point of view as from a medical point of view, because they may provide solutions to broaden boundaries in the field of pharmacognosy and to discover newer therapeutic indications. It has been proven that the use of the ingredients listed in ancient Egyptian recipes studied so far can be proven to be effective drugs even today. One of our articles¹ was awarded the Lajos Markusovszky Prize by the *Orvosi Hetilap* (Medical Weekly, May 2017). The student, we worked with, took also a 2nd place prize for her work made for the rector's competition in the frame of the Scientific Students Body (TDK).

Scientific publications were thus produced and the need for wider dissemination of the results arose again. The idea of a public meeting or dissemination conference

1 Katona, Júlia – Győry, Hedvig – Blázovics, Anna: „Azon orvosságok kezdete, melyeket a májra adnak”. [The beginning of the medicaments given for the liver]. *Orvosi Hetilap* 157/48, 2016, 1926-1933.

was raised, where ancient Egyptian medicine could be approached from a historical, cultural, ethnographic and pharmaceutical historical point of view, while drawing attention to the diverse uses and health-preserving and improving roles of these plants. In the course of these researches, the study of the contemporary treatment of the liver came to the fore again, which is also reflected in the current volume, building on our previous results. In the course of this investigations, it was suggested that it would be worthwhile to follow the *jns.t* / anise identification more thoroughly. The results of the researches can be found in this volume, significantly expanded compared to what was presented at the conference. Another direction of research is the mineral analyses, which we recently launched with the participation of Dr. Klára Szentmihályi.

The year 2018 then gave our research team a new impetus and members. In addition to phytotherapy and pharmacognosy, there was an anthropological direction, as can be seen from our article in the volume, which is an expanded material for the 2019 conference presentation. At the same time, we have relaunched the series of *Aegyptus et Pannonia* scholarly symposia with a new direction: mummy research. That year namely, a PhD student Enikő Szvák, who has been investigating the Egyptian mummies of the Hungarian Natural History Museum, asked us to help with our expertise in ancient Egyptian culture by participating in the research of these mummies. We already made some insight into this field as we have continually monitoring the publications concerning ancient Egyptian mummies, but made some practical steps only in 1996, with the help of Ildikó Pap, the than director of the Anthropological Department, when a publication was issued for the 90th centenary of the Hungarian excavation at Gamhud, Middle Egypt. It included the human remains kept in the Hungarian Natural History Museum, taken out from the coffins published at that time.²

We have now embarked on a much wider range of activities, as indicated by our joining to the Nephthys Project. The new, exciting topic added new colour to the palette of our research team, and brought our earlier conference plan to the forefront. It was a natural consequence of organizing this conference together with the Hungarian Museum of Natural History. Still, since there are also ancient Egyptian monuments in the Hungarian National Museum's Semmelweis Museum of Medical History in Budapest, we wanted to draw attention to them as well. The fact that this conference remained not just a plan is due to the active participation of the two partner-institutions, and also to the National Cultural Fund (NKA), which not only made possible to organize the conference, but also contributed to the publication of this volume. We received further help from Ibisz Bt.

² Győry, Hedvig, *Az első magyar ásatás Egyiptomban, 1907. Válogatás a gamhudi ásatás anyagából, 1997.* [The first Hungarian Excavation in Egypt, 1907. Selection from the material of the Gamhud excavation. 1997]. Budapest 1998.

The Nephthys Project

Enikő Szvák

The Nephthys Project was launched in the fall of 2018 as part of a PhD dissertation. The aim of the research is a comprehensive series of studies on Egyptian human and animal mummies and mummy remains kept in Hungary. A particularly important aspect is to implement a multidisciplinary investigations that involves the least invasive procedures possible.

The research began with the biological anthropological reconstruction of the Egyptian mummy collection preserved in the Anthropological Department of the Hungarian Museum of Natural History. Based on the preliminary results, the investigation of the pathologically most promising pieces continued with industrial CT examination, electron microscopy and 3D digital microscope analyses. Radiocarbon dating was also performed, aiming to get a more precise age-determination of the mummies. We wanted to learn the age of death, the possibility of diseases, general health conditions, and materials used in mummification for the deceased individuals, and the period from which the remains originate.

In the course of our research, we found that not only human remains, but also the organic and inorganic chemical analysis of the materials used for mummification can add a lot of new and exciting information to our knowledge about mummies. Thus, the identification of mummifying substances is also treated as a priority area during the project.

We are also experimenting with new procedures. Our goal is not only to realize a multidirectional research, but also to advance in the field of innovation in the future. Therefore, we also performed non-destructive ion beam studies on mummy remains with the help of ATOMKI employees in Debrecen. The preliminary results of the procedure are encouraging, and it is believed that the method may be suitable for a preliminary assessment of the bones at a later stage. This could make further chemical analysis on remains in future safer and easier.

The project resulted in several conference-presentations and professional posters at renowned national and international conferences. These successes gave us the chance to find new research partners and bring new mummy remains under investigation. Currently, the research material of the project includes the remains of the Egyptian human and animal mummies of the HNM's Semmelweis Museum of Medical History and the Török Aurél Collection in the Eötvös Lóránt University, Budapest, as well as the fish mummy of the Déri Museum, Debrecen.

Some of the test series have been completed, and other ones are still ongoing, as the evaluation of the results is. The first scientific publications were scheduled for 2020, which is unfortunately severely hampered by the limitations due to COVID-19.

With the scientific conference we organized, we want to create a tradition. We want to encourage renowned international researchers to participate in the mummy conferences held in Hungary every few years to become an integral part of the circulation of the Egyptian mummy research. In our opinion, it is essential to maintain old professional relationships and make new acquaintances also for the sake of research and to increase our professional knowledge. To maintain the research's smoothness, from time to time, the partial results available to us should be presented to the general public and the narrower profession in the framework of scientific lectures and professional posters. It makes it easier to clarify the issues before the publications appear, so we also organized a mummy workshop on one of the afternoons of the "Health and Life" conference. We presented our results in front of a forum of excellent researchers.

We are pleased to announce that there are currently more than twenty Hungarian and international institutions and more than thirty colleagues working free of charge for the success of the research. We hope that this number will get higher over time and that even more will join us.

At present, we hope that our relatively recent research will stand the test of time and enrich the positive image of Hungarian anthropologists and researchers abroad as a long-term project.

Health and Life in Ancient Egypt conference

In 2012, our conference "Cultures and Therapies. Ethnography and Science" failed due to financial reasons, so it was a special pleasure for us to successfully apply in 2018/2019 for an international conference with the Hungarian Natural History Museum and the HNM's Semmelweis Museum of Medical History. The conference entitled "Health and Life in Ancient Egypt. Mummies in Focus" was held in August 2019. Its program could be followed on the conference's website to make it available to those interested.

The conference was preceded by a press reception organized by the Hungarian Natural History Museum, for which a separate promo spot was created. The participants of the conference were greeted by dr. Ildiko Pap PhD, the honorary director of the Department of Anthropology of the Hungarian Natural History Museum and dr. Gábor Tomka, the deputy general director of the Hungarian National Museum and the Egyptian Embassy. In the introductory speech the three organizing institutions presented their respective research and plans. During the lectures, we enjoyed the hospitality

of the two partner institutions for three days. An exhibition was also organized in the Semmelweis Museum of Medical History in honour of the conference, which was presented to the participants by the museum staff on the occasion of a reception. During the conference, lectures, a poster section and two workshops were held, which provided opportunities to get to know the new results more thoroughly, also on the situation of the research in ancient TB, and discuss the issues that arose during the research of the examined mummy material in the Museum. Many of the presentations were held as introduction to discussions and consultations, which provided an opportunity for exchanges of professional experience.

The program ended with a visit to the Egyptian exhibition in the Museum of Fine Arts and another one to the Holy Right preserved in St. Stephen's Basilica. It was also possible to visit the periodical exhibition "Gold of Mexico" and try out the "Escape Room" of the Hungarian Natural History Museum.

Acknowledgement

The publisher of this volume would like to thank all the organizations and individuals, who made possible the conference and the publication of the volume, as well as the speakers and the volunteers involved in organizing and conducting it, who contributed to the success of the conference by their work.

We want to emphasize the work of Krisztina Scheffer and Enikő Szvák, who not only contributed to the lectures, but also took part in eliminating many of the pitfalls of the organization process.

We also say special thanks to the members of the Scientific Committee: Prof. dr. Rosalie David (University of Manchester), dr. Dina Faltings (Heidelberg Universität, Sammlung Ägyptologisches Institut), dr. Győry Hedvig PhD (HEFS), Prof.dr. Salima Ikram (American University of Cairo), habil. dr. György Pálfi (University Szeged, Anthropology Chair), dr. Ildikó Pap PhD (Hungarian Natural History Museum), Prof. dr. Wilfried Rosendahl (Reiss Engelhorn Museum), Stephanie Zesch (Reiss Engelhorn Museum), habil. dr. Albert Zink (Eurac Research), who took part in the scientific preparation of the conference.

We want again thank the authors of this volume for their professional contributions, and also for their patience and cooperation.

Also, special thanks for Hedvig Király for her assistance in editing work, and for Almamag Bt's work in graphic editing and for its understanding and flexibility during these times burdened with COVID-19.

We then are greatly indebted to Rosalie David in Manchester for her invaluable help by proofreading almost every article in the volume, despite her many other tasks and the situation in Manchester, severely affected by the virus.

We hope you will be as happy to read this volume as the AEC has released it.

RESEARCH HISTORY AND ANCIENT DNA FROM DR GRANVILLE'S EGYPTIAN MUMMY

Helen D. Donoghue

*Centre for Clinical Microbiology, Division of Infection and Immunity, Royal Free Campus,
University College London (UCL), London, UK*

Abstract

'Dr Granville's Mummy' was described to the Royal Society of London in 1821 after a scientific autopsy that had extended over several weeks and involved the destruction of most of the human remains. The mummy was of a woman aged 50 years or so, from the necropolis of Thebes and dated to about 600 BC. She had borne children and several organs were still *in situ*. Dr Granville concluded the cause of death was a tumour of the ovary, but subsequent histological investigations indicated that this was a benign cystadenoma. However, histology of the lungs revealed a potentially fatal pulmonary exudate and subsequent examination revealed the presence of *Mycobacterium tuberculosis* complex DNA in lung tissue and gall bladder samples. This was demonstrated using nested PCR of the IS6110 locus. In addition, lungs and femurs were positive for specific *M. tuberculosis* complex cell-wall mycolic acids. Therefore, it is probable that tuberculosis was the principal cause of death.

Introduction

Dr Augustus Bozzi Granville (1783–1872) was an Italian doctor, an eminent physician and obstetrician, who became very fashionable in London, where he was one of the physicians of the Duke of Clarence, a member of the royal family. He became famous when he conducted a detailed and destructive scientific autopsy of the mummified Lady Irtyersenu, of the 26th dynasty, dated to c. 600 BC.¹ He described the autopsy at the Royal Society of London in consecutive weekly meetings, from April 14th to April 28th,

¹ HEDGES ET ALII 1997.

1821.² In his presentation he described that he was given the mummy by one of his patients, an aristocrat, Sir Archibald Edmonstone, who had purchased it for about four dollars from one of the local inhabitants of Gurna, near the Valley of the Kings of Thebes. Granville wrote that “it is difficult to describe how the beauty and perfect condition of the surface of the single case in which the body was inclosed (sic), could have been so well preserved.” [Figure 1]

Granville was not the first person to examine a mummy. In some cases, mummies were unwrapped solely as an after-dinner entertainment for gentlemen. However, there are earlier examples of mummy un-wrappings and the scientific study of mummies was encouraged following the decipherment of hieroglyphics and their publication by Jean-François Champollion in 1822.³ Granville gave a summary of these previous examples, including detailed measurements and weights of bones and internal organs. The difference between these and the mummy of Irtyersenu is that her mummy was perfect.

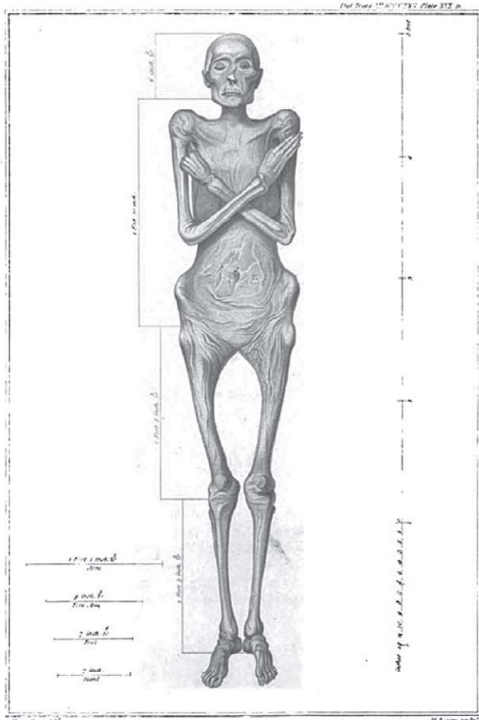


Figure 2. The unwrapped body of Irtyersenu – Dr Granville’s Egyptian mummy

2 GRANVILLE 1825.

3 MOSHENSKA 2014.



Figure 1. Coffin lid for the mummy of Irtyersenu. British Museum EA29781.

Granville explained the reason for his destructive autopsy as follows: “...the deficiency of our knowl-

edge on the art of preparing mummies by the Ancient Egyptians, both as to the mode of operating, and of the degree of perfection to which that art was carried among them, has arisen from imperfect and inferior specimens having been generally employed for the purpose of investigation, the best and most perfect mummies (resembling the one I have undertaken to describe) having, invariably, been preserved intact...”

When the sycamore case was removed, Granville found that the wrapped mummy was exactly in the state in which it was originally described by

its aristocratic owner, "covered with cerecloth and bandages most skilfully arranged, and applied with a neatness and precision that would baffle even the imitative power of the most adroit surgeon of the present day." After their removal, the wrappings were found to weigh 28 pounds (12.7 kg). Both cotton and linen were used to wrap the mummy. The unwrapped mummy was clearly a female and there was no ventral incision so the viscera were presumed to be intact. The breasts were large, the head was closely shaved, and the teeth appeared white and sound. [Figure 2].

The actual dissection took a considerable time to complete, over several weeks in November and December 1821.⁴ Granville commissioned an artist, Henry Perry, to produce drawings of the dissection and an engraver, James Basire, created engraved plates that were included in the *Philosophical Transactions* publication. In addition to the coffin, the wrapped body and mummy, there are images of the pelvis, with the lower vertebrae and upper femurs [Figure 3], and the head of Irtyersenu [Figure 4]. In the paper read to the Royal Society there is some discussion on race, based on the calculation of facial angle, as with the pelvis, which is described as nearer to the ideal of the Caucasian structure than of European women in general, and similar to the Circassian form.

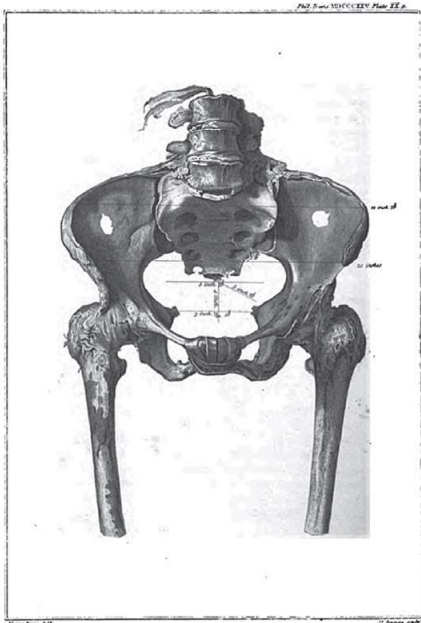


Figure 3. The pelvis after dissection

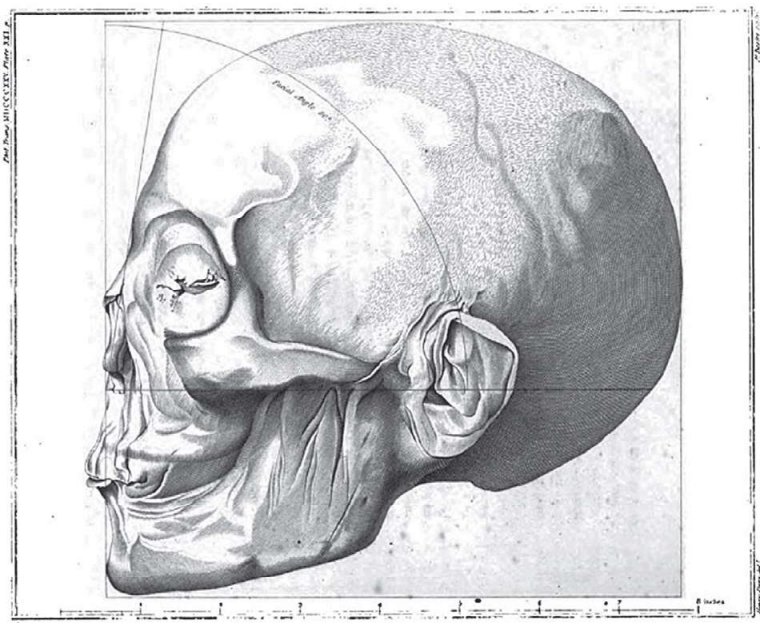


Figure 4. Drawing of the head of Irtyersenu, with additions to show the calculation of facial angle

Granville commissioned a cabinetmaker to make a small chest of drawers in which he arranged various tissue samples from the mummy, fragments of its linen, and his own attempts at mummification. This chest and the original coffin lid were possibly donated

⁴ RIGGS 2016.



Figure 5. 19th century wooden box containing: parts of female Egyptian mummy unwrapped and dissected by A B Granville in 1821, British Museum, London (EA 75991)

to the British Museum in 1853 although Harer & Tapp⁵ state that the British Museum purchased the chest and coffin lid for £50. The histology of the residual mummy tissues suggested a serious pathological condition described by Granville as “ovarian dropsy”, a possible malignant tumour. The residual tissue samples from the Granville Mummy are still in the small chest of drawers [Figure 5]. The lungs and heart are in the top right compartment and the ovarian tumour is in the lower central compartment (EA 75991).⁶

Subsequent research and discussion

Further studies took place from 1994 onwards. Residual tissues were re-examined and histology showed that the supposed malignant tumour was a benign cystadenoma of the ovary [Figure 6].⁷ This led to a re-examination of the lung tissue, the bone from the left and right femurs and the hand of the Granville mummy. Further samples were obtained from the lung, gall bladder and soft tissues possibly of pleura or diaphragm.

5 HARER – TAPP 2014.

6 DONOGHUE ET ALII 2010; TAYLOR 2014.

7 NUNN – TAPP 2000.

Using appropriate precautions against external contamination, DNA was extracted, amplified and detected by electrophoresis and subsequent sequencing.⁸ The *Mycobacterium tuberculosis* cell wall was also analysed using mycolic acid derivatization and high-performance liquid chromatography analysis.⁹ In order to give further discrimination, additional lipid biomarkers, the 'mycolipenic' and 'mycocerosic' acid lipid biomarkers were sought.¹⁰ One lung specimen was found to be relatively positive, with C₂₇, C₂₉, C₃₀, and C₃₂ mycocerosates and C₂₇ mycolipenate. Another lung sample had only a weak signal for C₃₂ mycocerosate. As mycolipenate is only found in *M. tuberculosis sensu stricto* this confirms the presence of tuberculosis in the lungs and suggests that Irtyersenu may have died from disseminated tuberculosis.

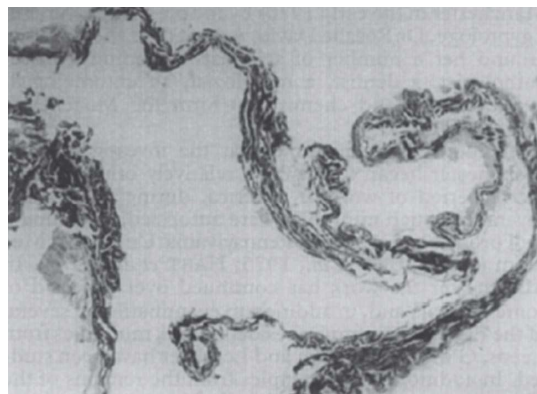


Figure 6. The cell wall of a cystadenoma of the ovary (haematoxylin and eosin; x400)

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