

## MASTER DRAFT CLEAN 7-8-20

### EAU DE CLEOPATRA AND TELL TIMAI

Jay Silverstein, Robert Littman, Dora Goldsmith, Sean Coughlin

*“I will tell you.  
The barge she sat in, like a burnish'd throne,  
Burned on the water: the poop was beaten gold;  
Purple the sails, and so perfumed that  
The winds were lovesick with them; the oars were silver,  
Which to the tune of flutes kept stroke, and made  
The water which they beat to follow faster,  
As amorous of their strokes. For her own person,  
It beggar'd all description: she did lie  
In her pavilion, cloth-of-gold of tissue,  
O'erpicturing that Venus where we see  
The fancy outwork nature: on each side her  
Stood pretty dimpled boys, like smiling Cupids,  
With divers-colour'd fans, whose wind did seem  
To glow the delicate cheeks which they did cool,  
And what they undid did.”  
(Shakespeare, *Anthony and Cleopatra*, Act II, Scene 2)*

Cleopatra VII, the last of the Ptolemaic rulers of Egypt, reveled in perfume (Plutarch *Life of Marcus Antonius* 26.2) She even used it in her seduction of the Roman general Marc Antony. Sailing up the river Cydnus to meet him. She reclined in a canopy spangled with gold, adorned like Venus in a painting. Boys dressed as cupids fanned her and wondrous scents from incense offerings wafted along the riverbanks. Not long after her death in August 30 B.C.E., a book circulated under her name called *Cleopatra's Cosmetic*, full of recipes for fragrant oils and cleansers (Totelin 2017: 114–118; Flemming 2000:40–41). (Fig. 1 Cleopatra Alma Tadema; fig.2 bust of Cleopatra Berlin; Cleopatra 000)

Cleopatra's fondness for olfactory adornments must have been influenced by Egypt's long tradition of fragrant remedies and exquisite perfumes, which go back to the very beginning of dynastic history (ca. 3100 B.C.E.). The fragrances of Egypt were famous throughout the entire ancient world. The base for perfumes and unguents was animal fat, and vegetable oil, rather than our modern alcohol. Distillation of alcohol was not discovered until the 4<sup>th</sup> century B.C.E., but it was not until the 14<sup>th</sup> century C.E. that it was used for perfume (Voudouri & Tesseromatis 2015). Sweet scents were created either through smoke from burning fragrant resins, barks and herbs (thus the origin of the word 'perfume' from *per fumum* 'through smoke'), or through maceration by steeping resins, flowers, herbs, spices and wood. Resins, barks and herbs have antifungal and antibacterial properties, and thus could also eliminate body odor and produce soft and fragrant skin. One of the few documented perfume recipe from ancient Egypt, and one of the world's first perfume recipes, records the instructions to prepare a fragrance called kAp.t in Egyptian, and rendered in Greek as *kyphi*. The earliest mention of *kyphi* goes back to the building of the

pyramids. Its preparation is recorded in several different sources (pEbers 852; Edfu II, 203–204; Edfu II, 211–212; Philae III, 48a–c). The first recorded *kyphi* recipe (pEbers 852) contains resins, berries and roots, which need to be ground, made into a mixture, and burnt. The exudation of this perfume mixture by burning served to purify and scent the air in one's home, clean and perfume clothing; and it was even used as a chewing gum.

“*Kyphi* to make the smell of the house and clothing pleasant: dry myrrh, juniper berries, incense (*snTr*), cyperus, wood of camphor, *Pistacia* resin, reed of Djahy (Canaan) (sweet flag), ? (unknown aromatic substance), ? (unknown aromatic substance) and styrax are ground (until) smooth, made into a mixture, some of it is placed on top of fire.” (pEbers 852, translated by Goldsmith)

The Egyptians recorded the recipe of only a few of their countless perfumes. The names of several fragrances are known from hieroglyphic texts, but their precise ingredients and process of preparation remain a mystery. There were strict rules and regulations in the temple precincts for the manufacturing of fragrant offerings.

“I am coming towards you Isis the great, mother of the god, mistress of Dendera (*latdi*). I am bringing you the mistress of Punt carrying vessels of (aromatic) oil (*mD.t*) filled with camphor (*ti-Sps*) for your *ka*, cooked by Shesmu, put in order by the Ibis, produced in accordance with all the instructions, provided with his divine discharge and resins of Punt, mixed by Horus, lord of the laboratory. The drops inside them form a union with your hair. The scent becomes one with your body.” (Dendera IV, 130, 11–15, translated by Goldsmith)

One of the biggest mysteries of ancient Egyptian perfumery is the nature of the ingredients of the seven or ten sacred oils. The names of these sacred oils, used in funerary rites to embalm the dead and in temple rituals to anoint the divine image, are attested from the Old Kingdom until the Ptolemaic period. Nevertheless, hieroglyphic texts tell us the recipes of only a small number of them. Most of the sacred oils are known merely by their names. Did the Egyptians try to keep their sacred perfume recipes a secret from the rest of the ancient world? With the Greek conquest of Egypt in the 4<sup>th</sup> century B.C.E. and the rise of the Roman Empire in the first century B.C.E., the Egyptian tradition of perfume-making made its way into the Greek and Latin written record. However, the perfume recipes described by the classical authors represent a Greek or Roman perception of ancient Egyptian perfumery and culture. Thus, they need to be regarded with caution and are not necessarily translations of ancient Egyptian perfume recipes.

In the Ptolemaic period, the city of Mendes in the Nile Delta was a major center of the perfume trade. The Roman scientist Pliny the Elder (23-79 C.E.), who perished in the eruption of Mt. Vesuvius, as well as the physician and pharmacological pioneer, Pedanius Dioscorides (ca. 40-90 C.E.), discuss many perfumes of Egyptian origin. They say one of the finest, the “Chanel No. 5” of Greek-Roman Egypt, took its name from the city where it was made: the Mendesian. Produced at Mendes/Thmouis (Tell Timai), the capital of the XVI Lower Egypt Nome, the Mendesian remained for over five centuries one of the most well-known and popular fragrances in the ancient world (Pliny, *N.H.* 13.2.5; Dioscorides. *Materia Medica* 1.59.1–3; Galen. *Comp.*

*Med. Loc.* 2.2, 12.570 K.; Athenaeus. *Deipnosophistae.* 15.38 Kaibel; Aetius of Amida. *Lib. Med.* 1.126; Paul of Aegina, *Medical Compendium* 7.20.31; cf. Theophrastus. *Odor.* fr. 4.29–30 Wimmer). Pliny records it was such an important fragrance that it shifted the world’s olfactory focus: “in ancient times the most highly praised perfumes came from the island of Delos, but later they came from Mendes” (*laudatissimum fuit antiquitus in Delo insula, postea Mendesium, N.H.* 13.2.4).

But what made the Mendesian the “Chanel No. 5” of late antiquity? It is the joint effort of archaeological field work, carried out at Tell Timai in Egypt by a team of the University of Hawaii directed by the archaeologists Robert Littman and Jay Silverstein, and experimental archaeology based on written sources, carried out in Berlin by the Egyptologist Dora Goldsmith and historian of ancient Greco-Roman science Sean Coughlin, that might reveal the answer.

### Archaeological discoveries at Tell Timai

In 2009, a team of the University of Hawaii directed by Robert Littman and Jay Silverstein began the excavation of the site of the ancient city of Thmouis (Tell Timai). Thmouis is the Greek



rendering of the Egyptian tA mAwI, which translates as “New Land.”

Thmouis is the southern settlement extension of Mendes, a city that had been settled since at least the 4<sup>th</sup> millennium B.C.E. and once was the capital of Egypt (Redford 2010). In the 5<sup>th</sup> century B.C.E., Thmouis was visited by the Greek traveler and father of history, Herodotus (*Histories* II,166). During the Ptolemaic period, Thmouis usurped authority from Mendes as the seat of the nomarchy. The northern part continued as a religious center but declined in influence throughout the Hellenistic and Roman periods (Blouin 2014; Littman & Silverstein 2017). Today the ancient name is preserved in a tiny village, Timai El Amdid, on the edge of the Tell. Thmouis once ranked among one of the most important cities in Egypt (Ammianus Marcellinus, *Roman History* 22.16); a city renowned throughout the ancient world for one particular product: perfume (de Rodrigo 2000). Its central location in the Nile Delta made it an emporium where exotic spices flowed from India, Arabia, and Africa. From these ingredients the priests and merchants of Thmouis and its sister city Mendes produced the most desired perfume of antiquity, a fragrance called the Mendesian (de Rodrigo 2000)., Ships sailed from the Mendesian nome to Alexandria and across the Mediterranean world carrying this most valuable of fragrances.

Much of the northern portion of the archaeological site of Tell Timai was levelled in the early 20<sup>th</sup> century by *sebakheen*, people who systematically mined mudbrick to extract nitrates and archaeological artefacts (Holz et al., 1980). The area was further exposed by more recent rescue work preparing the area for a new construction project associated with the expansion of the adjacent town of Timai el Amdid (*Fig.* air photo). While the loss of knowledge due to encroachment is devastating, there is one positive outcome – the open trenches exposed a horizon dating from the 3<sup>rd</sup> to mid-1<sup>st</sup> century B.C.E., that spans nearly the entirety of Ptolemaic control of Egypt. Piece by piece, evidence was exposed revealing how Ptolemaic Thmouis fit into the complex history of the perfume trade of the ancient Mediterranean world.

Between the mid-4<sup>th</sup> century and the first quarter of the 2<sup>nd</sup> century B.C.E., the northeastern portion of the tell was dominated by a large kiln complex directly associated with the ancient fragrance industry. One imported red-figure Greek sherd suggests, perhaps, early

Greek migrants had established themselves in the Thmouis perfume industry by at least the 4<sup>th</sup> century B.C.E. (Hudson 2014a; Hudson 2016).

The kilns, while likely used for various types of ceramics, were certainly involved in the production of perfume bottles. Numerous fragments and some complete fine grey clay perfume bottles (*lekythoi*) were discovered in association with the kilns (Hudson 2014b). At first, these bottles appeared to be imports because the central Delta clays tend to be orange/red and generally quite coarse. In 2010, however, two amphorae were uncovered near the kilns that proved to be extremely informative (*Fig. amphorae*). The amphorae were filled with fine grey silt, and this silt appeared to match the clay from which the *lekythoi* had been made (*Fig. perfume bottles*). The amphorae were of a known style that came from the Aegean island of Cnidus. Nevertheless, chemical analysis of the clay demonstrated that the clay had been imported from nearly 800 km to the south from around Esna, the home of the ram-headed creator god Khnum, all the way to Mendes, home of the likewise ram-headed god Banebdjedet (Najovits 2003: 1:30,36; Shaikh al Arab 2013)(*Fig. map Egypt*). Likewise, chemical analysis of the grey *lekythoi* perfume jars also showed that the clay had come from Esna (Hudson et al. 2018). The amphorae, therefore, first traveled from the Cnidus to Esna, where they were filled with fine local clay, and shipped to Thmouis for the manufacture of perfume jars. It must have been rather important to the perfumers to have this specific clay for their bottles rather than a more local source.

During the great rebellion, the kiln complex was destroyed in a destruction layer that has included unburied bodies, iron arrowheads, burning, ballistae stones, and *in situ* artifacts including a small hoard of coins (Littman & Silverstein 2017). The entire area was leveled and rebuilt sometime after 186 B.C.E. with a remodeled town that very much looked like a Greek polis rather than an Egyptian temple city. Features of the post-rebellion Greek-Roman occupation included public facilities such as a bath, a gymnasium, a theater, various temples, a nilometer, and in the later Roman Period, a fort and a prominent church. The manufacture of perfume bottles would have transitioned from clay to glass, but aside from one glass kiln (Gentelli & Medhat 2017) with associated evidence of Roman-style green fusiform perfume bottle manufacture (*Fig*), evidence of this latter large-scale bottle industry has not yet been discovered. The perfume itself, however, would not have been manufactured at the kiln complex since perfume manufacture would require a different dedicated facility. While not conclusive yet, there are some prospects for where a Mendesian factory was located at Thmouis.

In another rescue excavation 30 m west of the kilns, Hamdy Mashaly, an archaeologist with the Ministry of Antiquities and Tourism made an important discovery of a manufacturing area that appeared to be dedicated to liquids. It consisted of two rows of reused amphora bases and two vats or ovens with amphora neck piping or flues (*Fig.*). This factory had been built on top of the destruction layer, dating it to after 186 B.C.E. In a deeper cut, at the level of the destruction layer, there were remains of an older factory of the same design, destroyed and buried when the land was levelled for the new city. Just a few meters away, a pot full of 71 silver tetradrachms and gold and silver jewelry allowed for the dating of the facility, providing the basis for some inferences about what had happened and the mystery of why this treasure was hidden more than 2,000 years ago (*Fig. gold dolphin*). The tetradrachms in the hoard ranged in date from 110 to 61 B.C.E and included coins minted by Ptolemy X and Ptolemy XII thus providing a *terminus post quem* of ca. 60 B.C.E. during the reign of Ptolemy XII Auletes. In 58 B.C.E., Ptolemy XII had been deposed and he and his younger daughter, Cleopatra VII, fled to Rome. In 55 B.C.E., Ptolemy

XII had persuaded Pompey and bribed Gabinius, the governor of Syria, to conquer Egypt for him and thus Ptolemy XII returned to Egypt to resume his rule. According to Casius Dio (XXXIX 58), Ptolemy XII “put to death his daughter [Berenice IV] and also the foremost and richest of the citizens, because he had need of much money.” Perhaps the treasure was the cache of a merchant who hid it to avoid having it taken by the reinstated Ptolemy XII.

This is a possible manufacturing area, which had been in operation in its first iteration at least by the 3<sup>rd</sup> century B.C.E., with a second incarnation running from ca. 186-55 B.C.E. It might have contained a perfume factory. Residue samples, which we suspect are remains of Mendesian were taken from the exposed amphorae. We hope our pending organic analysis will reveal the nature of the ingredients. analysis, give us new insights into the nature of the perfume and confirm what the literary sources describe as the Mendesian perfume.

### **The Mendesian in the written sources**

Literary witnesses to the perfume exist only in Greek and Latin writings; the perfume itself, however, was said to be emblematic of ancient Egypt and its ingredients known and used in ancient Egypt. The question remains how “Egyptian” is Mendesian. Was it a Greek invention based on Egyptian traditions or simply an Egyptian product manufactured by Greeks. Since we do not as yet have sufficient archaeological remains of the Greek and Egyptian to compare, it leaves us with examining and comparing Greco-Latin sources with ancient Egyptian ones, to reconstruct the ancient Egyptian roots of the Mendesian perfume.

The earliest evidence we have comes from the first century C.E. author Pedanius Dioscorides who describes a perfume called ‘Medesian’ in his pharmacological work *On medical materials* (*De materia medica* 1.59.3); while Pliny the Elder describes it as if it were the second perfume to have made a name for itself in Rome, and the first complex perfume (*Naturalis Historia* 13.2.8).

The Mendesian, however, seems to have gone by several different names in Greco-Roman antiquity. Galen of Pergamum (second century C.E.) reports that some it was sometimes called the ‘Egyptian’ perfume (cf. Erotian, *Glossarium Hippocraticum*, 96.7–9), while at other times it was called the ‘Megalium,’ which Galen explains comes from the name of perfumer who invented it:

“The Egyptian perfume is not only referred to as such, but also as the Mendesian. Some also say it is called Megalium, since it took both its names from Megalus, the man who blended it. The former comes from his own name (what is called a paronym); the name ‘Mendesian’ comes from his hometown” (Galen, *On Compound Drugs According to Place in the Body* [De Compositione Medicamentorum Secundum Locus] 2.2, 12.570 Kühn).

Galen does not reveal the source of his story about Megalus; nevertheless, a perfume called ‘Megalium’ is attested in other earlier sources. Theophrastus (4<sup>th</sup>/ 3<sup>rd</sup> century B.C.E.), Aristotle’s friend and successor at the Lyceum and a contemporary of Alexander the Great, wrote about a perfume called the ‘Megalium’ in his work *On Scents*, and its ingredients are the same as those of the ‘Mendesian’. Were these perfumes the same? The fact that the Mendesian was invented by a perfumer named Megalus is perhaps unlikely; nevertheless, the identity of the ingredients suggests the Mendesian may have been known in Greece under a different name as early as the fourth century B.C.E., when it was also known as one of the costliest and most desired perfumes available.

Our Greek and Latin sources are remarkably consistent concerning the composition of the Mendesian. It is always said to contain four ingredients: oil of *balanos*, myrrh, cassia, and pine

resin (some sources also mention that cinnamon was added at the end, but they claim this step to be superfluous). Our sources for Mendesian are:

**Theophrastus (4<sup>th</sup>-3<sup>rd</sup> century B.C.E.).** “The Egyptian is made from several ingredients, including cinnamon and myrrh... [They say] the Megalium is compounded of cooked resin and oil of *balanos*, mixed with cassia, cinnamon and myrrh. This perfume and the Egyptian take a great deal of work, since the mixture contains so many and such expensive ingredients. For Megalium, the oil is boiled for ten days and ten nights, and then the resin and other ingredients are added, since it is more receptive once it has been boiled” (Theophrastus, *On Scents* [De odoribus] 4.29–30).

**Pliny the Elder (1<sup>st</sup> century C.E.).** “The perfume which was most often and, it seems likely, the first to be prepared, was from bryony and oil of *balanos*, which we discussed earlier. Afterwards, it was the Mendesian, which combined oil of *balanos*, resin, and myrrh.” (Pliny, *Natural History* [Historia Naturalis] 13.2.8.)

**Dioscorides (1<sup>st</sup> century C.E.).** “The perfume called Mendesian is prepared from oil of *balanos*, myrrh, cassia, and pine resin. Some people throw in a little bit of cassia after the other ingredients have been weighed out...” (Dioscorides, *On Medical Materials* [De materia medica] 1.59.1–3.)

**Aetius of Amida (c. 5<sup>th</sup>/6<sup>th</sup> century C.E.).** “Mendesian is very softening and relaxing for bodies, and productive of pus. It is made from oil of *myrobalanos* [*lit.* the perfumers’ nut], myrrh, cassia and pine resin. After fixing it, some people also sprinkle cinnamon on it” (Aetius of Amida, *Medical Books* [Libri Medicinales] 1.126)

**Paul of Aegina (7<sup>th</sup> century C.E.).** “Mendesian is so named because it was invented at the place in Egypt where Mendes was worshipped. It is made with 10 pounds of oil of *balanos* (another recipe has 10 pints); 3 ounces each of myrrh and cassia quill; 1 pound of pine resin (some have 10 pounds); 3 ounces cinnamon. This perfume is not boiled; instead, the dry ingredients are added [to the oil] and stirred for 60 days. Next, after it has been melted in part of the oil, the pine resin is added. Then, it is stirred for another 7 days and stored” (Paul of Aegina, *Medical Compendium in Seven Books*, 7.20.31, p.388,21–389,2 Heiberg)

The botanical identifications for most of these ingredients are relatively uncontroversial, but there has been some disagreement about the identification of the base oil: oil of *balanos* or “oil of the perfume nut” (*balaninon* or *myrobalaninon elaiou* / βαλάνινον or μυροβαλάνινον έλαιου). The terms are used interchangeably in our sources, but they are vague and so make identification difficult. “Balanos” means “acorn” or just “tree nut” more generally; and “perfume nut,” while more specific, tells us how it was used rather than the kind of tree it may have come from. In the 19th century and early 20th century, *balanos* had been identified as *Balanites aegyptiaca* (L.) Delile or “desert date” (LSJ 1843: 304; Hort 1916: 443), but this identification was based on an error in the text of Pliny the Elder (Fée 1833: 194–195). More recently, scholarly consensus is that it refers to a species of *Moringa*, likely *M. peregrina* Fiori or the Ben tree (Berendes 1902: 61; André 1985: 32-33, 167; Beck 2005: 29, 310; Amigues 2006: 274; Keyser et al. 2012: 1041; Haars 2018: 195). A number of modern scholars support the identification of *balanos* with *Balanites aegyptiaca* (Amigues 1989; Eigler 1993). We await chemical analysis of ancient perfume samples to settle this issue.

While our Greco-Roman sources are mostly consistent on the composition, only one describes its method of production: Paul of Aegina. This recipe has so far gone unnoticed in the literature on Greco-Roman perfumery, perhaps because of its later date; however, Paul’s is not only the sole existing recipe for the Mendesian from the ancient world, but it is also likely to be

much older than the 7<sup>th</sup> century. We know that most of his medical writings derive from earlier sources (Paul of Aegina, *Compendium* 1. proem). One of the works he cites is the *Cosmetics* of Crito of Heraclea (1<sup>st</sup>/2<sup>nd</sup> century C.E.), chief physician to the Emperor Trajan (cf. Paul of Aegina, *Compendium* 7.13.19). This work is reported by Galen to have included a recipe for the Mendesian (Galen, *On Compound Drugs According to Place in the Body* 1.3, 12.446,14–449,7 Kühn), and while we cannot be sure Paul's recipe comes directly from Crito's *Cosmetics*, the recipe remains an important, indeed our only, source for how the Mendesian was produced.

### The Origins of Mendesian in Egyptian Records

Many of the ingredients of Mendesian perfume appear in the Egyptian records.

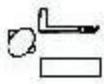
#### *Balanos*

*Balanos* oil is identified with  *baq* in Egyptian. *baq* has been widely interpreted as moringa oil, most probably *Moringa peregrina Fiori*, which grows in the Eastern desert in Upper Egypt, the Sinai, Syria and Israel (Keimer 1984: 27).

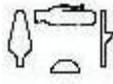
 **Myrrh** The use of *antyw*, identified as myrrh, was not native to Egypt, but came from the land of Punt or the Levant. The myrrh used in Egypt could have been *Commiphora myrrha* or *Commiphora erythraea* from the area of Djibouti, Eritrea, Somalia and Ethiopia; or *Commiphora gileadensis* from the Levant, which many scholars have identified with the biblical Balm of Gilead (Serpico 2000: 439-442). The costly scent of *antyw* belonged to the olfactory landscape of religious festivals. *antyw* is heavily featured in medical recipes in various forms for blood vessels, infected wounds, and skin and eye infections. Due its strong antibacterial properties, *antyw* played a vital role in the process of embalming.

 **Cinnamon.** The enigmatic substance called *ti-Sps* in Egyptian must have been the original Egyptian equivalent of cinnamon. *Cinnamomum verum* (true cinnamon) from Sri Lanka, southern India and Myanmar and *Cinnamomum cassia* (Chinese cassia) from southeast China, Vietnam, Laos and Myanmar were not available in Egypt until the Persian period. The enigmatic substance behind the word *ti-Sps* is probably camphor (*Cinnamomum camphora* (L.) J.Presl.). Camphor and cinnamon both belong to the same botanical genus of *Cinnamomum*, which is a part of the family of *Lauraceae*. The root of cinnamon trees contain a large amount of camphor (Hoppe 1981: 73). Thus, it is highly likely that in late antiquity, the Greeks saw cinnamon as a suitable substitute for camphor in Egyptian perfume remedies. It could have been the novelty of cinnamon or its better availability, or possibly both, that prompted the Greeks to substitute cinnamon for camphor.

**Pine** There are two words in the ancient Egyptian language that have been interpreted as 'pine':



*aS* and



*qd.t*.

Chemical analyses can often only detect the botanical family *Pinaceae* but cannot distinguish between the genera cedar (*Cedrus*) and pine (*Pinus*). The Egyptians obtained *aS* from the Levant in great quantities for making exquisite boats, coffins, furniture, jars and statues out of its precious wood. It is documented as early as the 4<sup>th</sup> Dynasty until the end of the Ptolemaic period as an offering to the dead in tombs or to the gods in temples. *qd.t* is used in perfumery from the New Kingdom in the form of a list of kyphi ingredients delivered to the temple of Memphis. The Ptolemaic kyphi recipes unequivocally state that it was the resin (*DdA* ‘fat’) of *qd.t* that was used in kyphi. If we were to equate *aS* with cedar and *qd.t* with pine, it would become apparent from the written record that cedar was used by the Egyptians much more frequently. Cedar resin and wood were favored by the Egyptians over pine resin and wood throughout their dynastic history. In the Greek-Roman period, pine resin and wood became more common in Egypt. Due to the excessive use of cedar for its exquisite wood, there was significant deforestation of cedar in antiquity leading almost to its extinction in the Levant. Thus, it is plausible that in late antiquity, pine resin was substituted for cedar resin in perfume recipes due to the scarcity of cedar.

## Conclusions

While the ancient Egyptian sources do not yield a recipe for the Mendesian, many of its ingredients, especially *bAq*, *antyw* and *ti-Sps*, are frequently mentioned in connection with each other. The written sources demonstrate that *bAq*, *antyw* and *ti-Sps* were frequently combined to make a perfume oil or unguent, which was offered to the gods in the temple, the deceased in afterlife, and used in the process of mummification on the body. The documents highlight the exclusive and celebratory character of the perfume, which was intended to be used on special occasions. This would explain why the classical texts call the Mendesian expensive and luxurious. The perfume in question was also referred to as “the fragrances of Punt” and “the pleasant unguent” giving us the impression that it was a well-known product. Several inscriptions indicate that the perfume in question was commonly referred to as *antyw*:

“Presenting myrrh (*antyw*). Words to be spoken: Take yourself the jar filled with camphor oil (*ti-Sps*) (placed) on the forelegs of the lion, the ruler of Punt. You anoint your head. You anoint your body. Its fragrance is good for your Majesty.” (Dendera III, 157, 1–3, translated by Goldsmith)

The main ingredient of this perfume was myrrh, which was cooked and made into an oil or unguent, most likely with the help of moringa oil (*bAq*). Thus, the Egyptian considered “the base” or “heart” of this perfume *antyw*, to which *ti-Sps* was added. Curiously, a few classical sources treat cinnamon as an extra ingredient of the Mendesian, which could be added at the end, if one pleases. The written sources reveal that *antyw* as a manufactured perfume product was essential in ancient Egyptian perfumery. The written documentation informs us that *antyw* was mostly cooked (*nwd*) to be made into an unguent or an oil.

“Words to be spoken: I come to you Ennead in the throne (Edfu), the great ancestors in the throne of Re. I am bringing you myrrh (*antyw*) cooked (*nwd*) according to the requirements. Your smell is pleasant because of it. You are the gods, the lords of unguent, (with) beautiful faces and (of) sweet love.” (Dendera IV, 30, 4, translated by Goldsmith)

It seems that myrrh oil or unguent (*antyw*) was “very Egyptian”, it symbolized the true character of ancient Egyptian perfumery. This would explain why the Mendesian is also called “the Egyptian” in classical sources.

### **Experimental archaeology: The recreation of the Mendesian based on written sources**

In December 2018, Goldsmith and Coughlin began a series of experiments to recreate the Mendesian perfume. They started with the recipes and reports preserved in the ancient sources, especially the Mendesian recipe of Paul of Aegina (*ibid.*). Their goal was to replicate the Mendesian and compare their results with written testimonies about the Mendesian perfume (*Figs.*). By following the ancient sources step-by-step and working with the various possible botanical materials to which they refer, they hoped to better comprehend the ancient sources and the way the ancients perceived the world through scent.

The results of these experiments revealed the material reality of the ancient descriptions of the Mendesian perfume. As Goldsmith and Coughlin smelled the Mendesian for the first time, the words “elegant” and “luxurious” came to their minds, reminding them of Pliny calling it “highly praised” and “very famous”, and of Aetius of Amida stating that it is “very softening and relaxing for bodies”. All of sudden, Theophrastus’ comment started making sense: “This perfume and the Egyptian take a great deal of work, since the mixture contains so many and such expensive ingredients”. After smelling Goldsmith and Coughlin’s reconstruction, the olfactory art curator Caro Verbeek described the Mendesian with the following words: “To my nose the scent was incredibly voluminous, red-colored, strong, warm, rich, sweet and slightly bitter. A perfume fit for an elegant gala.”

Goldsmith and Coughlin’s reconstruction was exhibited at the National Geographic Museum, Washington D.C. between March 1, 2019 and September 15, 2019 in the framework of the exhibition *Queens of Egypt (Fig.)*. Since the exhibit, the two researchers are frequently contacted by potential buyers who would like to purchase a piece of olfactory history. Many of those who purchase a bottle of the reconstruction of the Mendesian end up wearing it. Even after thousands of years, the perfume that once might have been worn by the famous Cleopatra herself does not cease to amaze us and finds its relevance in the modern world. To obtain the recreated perfume visit [0000.com](http://0000.com).

## REFERENCES

- Amigues, S. 1989. *Theophraste. Recherches sur les plantes* : Tome II: Livres III-IV : Texte établi et traduit par S. Amigues. Collection des Universités de France. Paris: Les Belles Lettres.
- Amigues, S. 2006. *Theophraste. Recherches sur les plantes: Tome V*. Paris: Belles Lettres.
- André, J. 1985. *Les Noms de plantes dans la Rome antique*. Paris: Les Belles Lettres.
- Beck, L. Y. 2005. *Pedanius Dioscorides of Anazarbus. De materia medica*. Hildesheim: Olms-Weidmann.
- Berendes, J. 1902. *Des Pedanios Dioskurides aus Anazarbos. Arzneimittellehre in fünf Büchern*. Stuttgart: F. Enke.
- Blouin, Katherine. 2014. *Triangular Landscapes: Environment, Society and the State in the Nile Delta under Roman Rule*. Oxford: Oxford University Press.
- Bouras-Vallianatos, P. 2020. *Innovation in Byzantine Medicine: The Writings of John Zacharias Aktouarios (c.1275-c.1330)*. Oxford: Oxford University Press.
- Brugsch-Bey. 1876. The Great Mendes Stele XXXII Dynasty English translation by S. Birch from the German version by Brugsch-Bey, in: S. Birch (ed.), *Records of the past: being English translations of the Assyrian and Egyptian monuments*, vol. VIII, London, 1876, pp. 91-10.
- Clarysse, W. 2004. The great revolt of the Egyptians (205–186 BC). Retrieved from <https://www.lib.berkeley.edu/sites/default/files/files/TheGreatRevoltoftheEgyptians.pdf>
- de Rodrigo, A. 2000. An Ancient Mendesian Industry. *The Bulletin of the Egyptological Seminar* 14: 33–39.
- Eigler, U. and G. Wöhrle and B. Herzhoff. 1993. *Theophrast. De odoribus. Edition, Übersetzung, Kommentar. Von Ulrich Eigler, Georg Wöhrle, mit einem botanischen Anhang von Bernhard Herzhoff*. Stuttgart: Teubner.
- English, S. 2012. *Mercenaries in the classical world: To the death of Alexander*. Barnsley. Frontline Books.
- Fée, A. L. A. 1833. *Commentaires sur la botanique et la matière médicale de Pline*. Paris: C.-L.-F. Panckoucke.
- Flemming, Rebecca 2000. *Medicine and the Making of Roman Women: Gender, Nature, and Authority from Celsus to Galen*. Oxford: Oxford University Press. 40–41.

Gentelli, L., & A. Medhat. 2017. A multi-analytical approach for the archaeometric identification of a Roman period glass furnace in the central Nile delta. *Journal of Archaeological Science: Reports*. 11: 330–337. <https://doi.org/10.1016/j.jasrep.2016.11.018>.

Germer, R. 2008. *Handbuch der altägyptischen Heilpflanzen*, Wiesbaden: Harrassowitz.

Gowling, E. (2015). Aetius of Amida. Libri Medicinales Book 1: A translation with commentary. Ph.D., University of Glasgow.

Haars, M. 2018. *Die allgemeinen Wirkungspotenziale der einfachen Arzneimittel bei Galen: Oreibasios, Collectiones medicae XV*. Stuttgart: Wissenschaftliche Verlagsgesellschaft mb.

H.Hazzard, R. A. 1995. *Ptolemaic coins: An introduction for collectors*. Toronto: Kirk & Bentley.

Holz, R. K. and E.S. Hall and B. V. Bothmer, eds. 1980. *Mendes I*. Cairo: American Research Center in Egypt.

Hoppe, H.A. 1981. *Taschenbuch der Drogenkunde*, Berlin: Walter de Gruyter.

Hort, A. F. 1916. *Theophrastus; Enquiry into plants and minor works on odours and weather signs*. Loeb Classical Library 79. London: Heinemann Hudson, N. 2014a. Late 4th Century BC Pottery from Tell Timai (Thmuis). *Bulletin de La Céramique Égyptienne*. 24: 241–266.

Hudson, N. 2014b. Preliminary Report on the Pottery at Tell Timai (Thmuis). *Bulletin de La Céramique Égyptienne*. 24:15–50.

Hudson, N. (2016). Late Persian and Early Hellenistic Pottery at Tell Timai. *Bulletin de La Céramique Égyptienne*, 26, 75–108.

Hudson, N. and L.Gentelli & J. Trampier. 2018. Importing Clay for Local Pottery Production in the 4th Century b.c. at Tell el-Timai, Egypt. *Journal of Field Archaeology*. 43(1): 1–16. <https://doi.org/10.1080/00934690.2017.1410924>.

Keimer, L., ed. Germer, R. 1984. *Die Gartenpflanzen im alten Ägypten 2*, Sonderschrift des Deutschen Archäologischen Instituts Abteilung Kairo 13, Mainz am Rhein: Philip von Zabern.

Keyser, P. T., and G.L. Irby-Massie 2012. *The Encyclopedia of Ancient Natural Scientists: The Greek tradition and its many heirs*. London: Routledge.

Littman, R. and J.Silverstein. 2017. "Is this Like the Nile that Riseth up: Ethnic Relations at Thumuis," in *Frontiers of Colonialism* (ed. Christine Beule) University of Florida Press. 179-207.

Redford, D. B. 2010. *City of the Ram-man: The Story of Ancient Mendes*. Princeton: Princeton University Press.

Serpico, M. and White, R. 2000. “Oil, Fat and Wax”, in: P.T. Nicholson, and I. Shaw, eds., *Ancient Egyptian Materials and Technology*, Cambridge: Cambridge University Press, pp. 391–429.

Squillace, G. 2015. *Le lacrime di Mirra. Miti e luoghi dei profumi nel mondo antico*, Bologna: Il mulino,.

Totelin, Laurence. 2017. “The Third Way: Galen, Pseudo-Galen, Metrodora, Cleopatra, and the Gynaecological Pharmacology of Byzantium” in Lehmhaus, L. and Martelli, M., eds., *Collecting Recipes: Byzantine and Jewish Pharmacology in Dialogue*. Berlin: De Gruyter. 114–118;

Voudour, Dimitra and Christine Tesseromatis. 2015. “Perfumery from Myth to Antiquity.” *International Journal of Medicine and Pharmacy* 3 no.2:41-55.

## ABOUT THE AUTHORS

Jay Silverstein is Professor of Anthropology, School of Advanced Studies, University of Tyumen and co-director, Tell Timai Excavation;

Robert Littman is Professor of Classics University of Hawaii and Director of Tell Timai Excavation;

Dora Goldsmith, Egyptology Seminar, Freie Universität Berlin, is an Egyptologist whose research focuses on the sense of smell in ancient Egypt. She gives lectures and workshops around the world accompanied by her scent reconstructions, where the long-lost world of the ancient Egyptians comes back to life through your nose.

Sean Coughlin, Institute for Classical Philology, Humboldt-Universität zu Berlin, Germany