Scientists Recreate Cleopatra’s Favorite Perfume

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Reconstructing the scentscapes of bygone civilizations is anything but simple

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Researchers want to recreate the smells of civilizations like ancient Egypt. Photo by AMIR MAKAR/AFP via Getty Images

Bit by bit, modern researchers are helping reveal what living in ancient societies looked and felt like. But though those studies emphasize taste, as in a cooking museum in Italy that recreates ancient Roman dishes, and sound, as in another that recreated how Stonehenge would have amplified voices and music, smell isn't usually included in the equation.

Now that's slowly changing—and scientists are slowly starting to uncover, and recreate, the scentscape of the ancient world. That includes engineering a perfume thought to be used by Cleopatra, the female pharaoh who ruled Egypt between 51 and 30 B.C.E.

But, as *ScienceNews*' Bruce Bower reports, actually determining which ingredients made up real ancient perfumes isn't as easy as it might seem.

Archaeologists Robert Littman and Jay Silverstein, both from the University of Hawai'i, uncovered a perfume factory outside of Mendes in 2012 filled with perfume bottles and amphorae containing perfume residue. The pair asked the other authors, Dora Goldsmith, a Berlin-based Egyptologist, and Sean Coughlin, a Prague-based professor of Greek and Roman philosophy, to use "experimental archaeology" to try to recreate the perfume produced there.

As *Smithsonian*'s Jason Daley reported in 2019, they were able to create "strong, spicy, faintly musty scents that tended to linger longer than modern fragrances." The trial-and-error process involved ingredients like desert date oil, myrrh, cinnamon, and pine resin.

In Cleopatra's day, the concoction was known as Mendesian perfume, so named for the city in which it originated, Mendes. Due to its immense popularity among the Egyptian upper crust, the written recipe survived in ancient Greek and Roman.

In a September 2021 paper in the journal in *Near Eastern Archaeology* entitled "Eau de Cleopatra," researchers describe how they used both classical sources and the very modern technique of paleobotany to both identify and recreate the scent.

"One constellation of variables produced a scent that was extremely pleasant, with a spicy base note of freshly ground myrrh and cinnamon and accompanied by sweetness. It has remained potent for nearly two years, a quality associated with Egyptian perfumes already in Theophrastus's time," they write.

But creating a good-smelling, long-lasting perfume is only part of the puzzle. *Hyperallergic*'s Elaine Velie reports that, while it's likely the team got at least very close to the exact scent of Cleopatra's eau de toilette, it's unclear whether the surviving Roman and Greek descriptions of the Mendesian perfume are exactly the same as the Egyptian recipe. Even in Egyptian descriptions for other perfumes, some of the exact ingredients are unclear. For example, when a recipe calls for pine resin, should that come from pine or cedar trees?

Cleopatra loved perfumes, and likely wore the scent recreated by modern researchers. Pi3.124 via Wikimedia Commons under Creative Commons Attribution 2.0 Generic

To ameliorate the issue, the team now plans to gather residue samples from the perfume factory site that they can analyze to determine the exact scent. It's a process similar to the one used by Barbara Huber, an archaeologist with the Max Planck Institute for the Science of Human History, in the ancient settlement of Tayma in Saudi Arabia, per *ScienceNews*. Huber and her group successfully analyzed the charred resins they found in incense burners in the city, which was located on an ancient trade route that transported frankincense and myrrh from southern Arabia to the Mediterranean. Sure enough, the analysis revealed evidence of both burnt frankincense and myrrh.

But, as *ScienceNews* reports, not all residue analysis is so successful. A team led by Jacopo La Nasa, an analytical chemist from the University of Pisa in Italy, studied 46 vessels, jars, cups, and bits of organic material from the tomb of an ancient Egyptian architect and his wife. Publishing their findings this month in the *Journal of Archaeological Science*, the team describes finding residues of oil, fat and beeswax—all of which would have been scentless bases for perfumes with fragrant ingredients like juniper berries and nut grass. Ultimately, however, the analysis didn't uncover any specific scents, Goldsmith tells *ScienceNews*.

As research on Cleopatra's perfume continues, smell's importance lingers even longer than the scents she favored. Of the five senses, smell is the one most closely linked to emotions and memory. The only sense to fully develop in fetuses while in the womb, the olfactory experience gives food its flavor and can trigger decades-old memories or associated emotions. Those emotions might enable scents of the past to trigger empathy and understanding for the way people used to live.

A 2021 exhibition at the Mauritshuis in The Hague experimented with that by sending scent bottles that correlated with 17th-century Dutch paintings available to view at home via a virtual tour, *Artnet News*' Menachem Wecker writes. Curators tell *Artnet News* that the exhibition, which featured the scents of everything from Amsterdam's canals to the smell of a building where an artwork was painted, was an attempt to explore the past while drawing perfumed connections to the present.

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