



Anna Maria Luisa de' Medici bequeathed her family's legacy to the city of Florence in Italy.

HISTORY

Medicean secrets

Alison Abbott enjoys a scientific history of the family who ruled Florence during the Renaissance.

The Medici clan held sway over Florence and Tuscany during the Italian Renaissance and well beyond. They created one of Europe's most powerful banks, ruled Florence and produced four Popes. Today they are best remembered for their patronage of science, art and architecture. We have them to thank for Florence's enduring beauty — including the magnificent Basilica of San Lorenzo. Designed by the architect Filippo Brunelleschi, this is where most of the family were buried, several after violent deaths.

Tombs were shuffled around within San Lorenzo four times between the fifteenth and nineteenth centuries, as successive generations tried to improve the presentation of their dynasty. Some remains got jumbled; some labelling got lost. Then, in 1945, anthropologist Giuseppe Genna disinterred 23 skeletons to make measurements that he hoped would support fashionable 'anthropometric' theories of psychological traits. The research was scientifically misguided and damaging: Genna removed all traces of flesh from the bones before returning them to their graves. Today's molecular biologists could have made much of those scraps.

Now the exhibition *The Medici* at the Reiss-Engelhorn Museum in Mannheim, Germany, charts the family's rise and fall, from founding father Giovanni di Bicci (1360–1429) to

Anna Maria Luisa de' Medici, the last of the clan, who died in 1743. It is Anna Maria Luisa whose crowned skull graced international news media last month (see <http://go.nature.com/gws6g3>).

The exhibition has the familiar round-up of formal portraits, many on loan from the Uffizi in Florence, the world-famous art museum built for the Medici. The family was known from contemporary documents to have been plagued by disfiguring illnesses such as psoriasis, syphilis and arthritis, which, unsurprisingly, the flattering portraits do not reflect.

But the paintings are complemented by casts of the skulls of each of those pictured. Some were made by Genna, others after more systematic exhumations — of both bones and the pots in which the Medici interred the entrails of the deceased — carried out since 2004, when the Medici Project was launched. This project was a collaboration of Italian scientists and the culture ministry to assess any damage caused by the catastrophic flooding of the city in 1966, to identify which remains belonged to whom and to try to work out, using molecular biology, what the various individuals died from.

The exhibition weaves stories about each Medici from these scientific results and from

The Medici: People, Power and Passion

REISS-ENGELHORN MUSEUM, MANNHEIM, GERMANY.

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analyses of contemporaneous documents. A couple involve murder. Beautiful, flirtatious Isabella (1542–76) was strangled by her jealous husband, with the apparent encouragement of her brother. Her bones were thrown into a mixed grave. Researchers managed to identify which skull was likely to be hers, and used forensic techniques to make a facial reconstruction for the exhibition that closely matches a contemporaneous portrait. It stands startlingly apart from the other oil portraits in its modernity and humanity.

Project scientists also managed to tentatively identify the entrails pot of Bianca Cappello, long-term mistress and then second wife of Francesco I (1541–87), whose bones have disappeared. Bianca and Francesco died within hours of each other. Scientists found traces of arsenic in their remains, lending substance to the historical claim that they were poisoned rather than dying of malaria as autopsy doctors declared at the time.

But it is the exhibition's centrepiece — the exhumation of Anna Maria Luisa — that propelled it into the headlines recently. When project scientists at the University of Florence opened the wooden coffin of Anna Maria Luisa last October, they were startled. Her skeleton was almost undamaged by the floods and topped by a crown — not the expected Medici death crown, but that of her husband's principality of Palatinate, in what is now Germany's Rhineland, where the museum is located.

The scientists used a three-dimensional scanner to replicate the skull for palaeo-forensics, one of the first such applications of the technology. They removed a small fragment of bone to analyse carbon and nitrogen isotopes that might illuminate how rich the Medicis' diets were in meat and fish, and for DNA analysis to determine her cause of death. Documents from the time suggest it could have been syphilis or breast cancer. Researchers also took samples for DNA testing from an unlabelled pot of entrails that they suspect belongs to her. The exhibition will be updated should results arrive.

A final thrill for scientists visiting the exhibition is a relic of Galileo Galilei (1564–1642), on display for the first time outside Italy. Galileo depended on Medici patronage. To keep things sweet, he named the moons of Jupiter, which he discovered in 1610, the Medicean Planets. The relic — the astronomer's fifth lumbar vertebra — has spent decades in a safe box at the University of Padua. It was brought out in 2010 when NASA requested a fragment for its Juno mission to Jupiter. The Italian Space Agency, apparently fearing Vatican disapproval, declined. After the Medici exhibition, the relic will go on permanent display at the university. ■

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