

# Research of Danish astronomer's remains completed

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Scientists have concluded taking samples of the remains of Danish astronomer Tycho Brahe that they hope could help them shed light on his sudden death more than 400 years ago.

On Monday, an international team [opened his tomb](#) in the Church of Our Lady Before Tyn near Prague's Old Town Square, where Brahe has been buried since 1601 to lifted a tin box like a child's coffin in which Brahe's remains were placed after the only previous exhumation, in 1901.

Jens Velle, a professor of medieval archaeology at Aarhus University, Denmark said Thursday the scientists got more than they hoped for.

"Yes, more than that, for sure, it was fantastic," Velle told the Associated Press. "Everything was better than expected." The scientists are scheduled to present their initial findings on Friday and full results next year.

Brahe's extraordinarily accurate stellar and planetary observations, which helped lay the foundations of early modern astronomy, are well documented but the circumstances surrounding his death at age 54 are murky.

It has been long thought that he died of a bladder infection: Legend said it was the result of his reluctance to breach court etiquette during a reception by leaving for a toilet. [Kidney disease](#) was another suspect.

But tests conducted in 1996 in Sweden, and later in Denmark, on samples of his mustache and hair obtained in the 1901 exhumation, showed unusually high levels of mercury. That led to a theory of mercury poisoning - even, possibly, murder.

One theory had it that his assistant, famed German [astronomer](#) Johannes Kepler, was among those to blame. Another pointed to the Danish king, who allegedly ordered Brahe's murder.

"There was nearly the whole skeleton - all the bones, except a few ones, were there," said Vellek, who led the team of scientists from Denmark, the Czech Republic and Sweden.

Vellek decided nine years ago to seek permission from church and Prague authorities to reopen the tomb because there had been no proper archaeological report on the 1901 exhumation. The hope was to gather better samples of mustache and hair - and, for the first time, samples of bone - so they could be analyzed using contemporary technology.

Martin Horak of Prague's Na Homolce hospital said Czech radiologists did CT scans of Brahe's bones, including the ribs, vertebrae and a facial portion of the skull. That way, scientists hope to be able to create 3D models of the bones that will be handed over to Danish scientists who will use them to recreate Brahe's entire skeleton and determine other details, such as how tall he was and what illnesses he suffered from.

An additional X-ray technique known as PIXE analysis and a neutron activation analysis will be conducted at the Nuclear Research Institute AS in Rez, near Prague, Vellek said. These tests are scheduled to start next month.

In a surprise finding, "nearly a complete costume" in which Brahe was buried was discovered in the coffin, Vellek said.

"It was made of red silk, probably made in northern Italy," he said. "It was not his daily dress. It was made very quickly with big stitches, sewing was just made for the funeral, so it was a funeral dress made for this occasion," he said.

Vellev said researchers also found "nearly a full skeleton" belonging to Brahe's wife, who was buried by his side three years after his death.

Archaeologist Petr Veleminsky said archaeologists unexpectedly discovered the remains of several other people in the tomb.

"We found a great number of bones that belonged to at least three other people," Veleminsky said.

Of particular focus was Brahe's skull, which was green where the nose is situated, signaling the presence of copper.

The astronomer had part of his nose sliced off in a 1566 duel with a fellow nobleman as a student in the German city of Rostock, and the missing piece was replaced by a metal plate, possibly a silver-copper alloy.

"We took a very small sample and tests at the nuclear institute will determine what alloy the nose was made of," Vellev said.

Born in 1546 at his family's ancestral castle, Brahe, a Dane, was in Prague in 1601 at the invitation of the Holy Roman Emperor Rudolph II, having had a disagreement with the Danish king and left his scientific observatory on the island of Hven.

His remains will be placed back in the tin box and reburied Friday during a ceremony led by Prague archbishop Dominik Duka.

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