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## *Egyptian blue found in Romanesque altarpiece*

A team of researchers from the University of Barcelona has discovered remains of Egyptian blue in a Romanesque altarpiece in the church of Sant Pere de Terrassa (Barcelona). This blue pigment was used from the days of ancient Egypt until the end of the Roman Empire, but was not made after this time. So how could it turn up in a 12th Century church? Egyptian blue or Pompeian blue was a pigment frequently used by the ancient Egyptians and Romans to decorate objects and murals. Following the fall of the Western Roman Empire (476), this pigment fell out of use and was no longer made. But a team of Catalan scientists has now found it in the altarpiece of the 12th-century Romanesque church of Sant Pere de Terrassa.

"We carried out a systematic study of the pigments used in the altarpiece during restoration work on the church, and we could show that most of them were fairly local and 'poor' - earth, whites from lime, blacks from smoke - and we were completely unprepared for Egyptian blue to turn up," said Mario Vendrell, co-author of the study and a geologist. The researcher says the preliminary chemical and microscopic study made them suspect that the samples taken were of Egyptian blue. To confirm their suspicions, they analyzed them at the Daresbury SRS Laboratory in the United Kingdom, where they used X-ray diffraction techniques with synchrotron radiation. "The results show without any shadow of a doubt that the pigment is Egyptian blue," noted Vendrell, who stated it could not be any other kind of blue pigment used in Romanesque murals, such as azurite, lapis lazuli or aerinite, "which in any case came from far-off lands and were difficult to get hold of for a frontier economy, as the Kingdom Aragon was between the 11th and 15th centuries."

The geologist also says there is no evidence that people in medieval times had knowledge of how to manufacture this pigment, which is made of copper silicate and calcium: "In fact it has never been found in any mural from the era. The most likely hypothesis is that the builders of the church happened upon a 'ball' of Egyptian blue from the Roman period and decided to use it in the paintings on the stone altarpiece," Vendrell explained. The set of monuments made up by the churches of Sant Pere, Sant Miquel and Santa María de Terrassa are built upon ancient Iberian and Roman settlements, and the much-prized blue pigment could have remained hidden underground for many centuries. "But only a little of it, because this substance couldn't be replaced - once the ball was all used up the blue was gone."

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