

# Human ancestors used fire one million years ago, archaeologist find

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This is the surveying area outside Wonderwerk Cave, South Africa. Credit: L. Milosavljevic

An international team led by the University of Toronto and Hebrew University has identified the earliest known evidence of the use of fire by human ancestors. Microscopic traces of wood ash, alongside animal bones and stone tools, were found in a layer dated to one million years ago at the Wonderwerk Cave in South Africa.

"The analysis pushes the timing for the human use of fire back by 300,000 years, suggesting that [human ancestors](#) as early as [Homo erectus](#) may have begun using fire as part of their way of life," said U of T anthropologist Michael Chazan, co-director of the project and director of U of T's Archaeology Centre.

The research will be published in the [Proceedings of the National Academy of Sciences](#) on April 2.



This is the view from the bottom of the excavated area towards the entrance to Wonderwerk Cave. Credit: R. Yates

Wonderwerk is a massive cave located near the edge of the Kalahari where earlier excavations by Peter Beaumont of the McGregor Museum in Kimberley, South Africa, had uncovered an extensive record of human occupation. A research project, co-directed by U of T's Chazan and Liora Kolska Horwitz of Hebrew University, has been doing detailed analysis of the material from Beaumont's excavation along with renewed field work on the Wonderwerk site. Analysis of sediment by lead authors Francesco Berna and Paul Goldberg of Boston University revealed ashed plant remains and burned [bone fragments](#), both which appear to have been burned locally rather than carried into the cave by wind or water. The researchers also found extensive evidence of surface discoloration that is typical of burning.



This is a panoramic view of the entrance to Wonderwerk Cave, South Africa.  
Credit: H. Ruther

"The control of fire would have been a major turning point in human evolution," says Chazan. "The impact of cooking food is well documented, but the impact of control over fire would have touched all elements of human society. Socializing around a camp fire might actually be an essential aspect of what makes us human."

**More information:** "Microstratigraphic evidence of in situ fire in the Acheulean strata of Wonderwerk Cave, Northern Cape Province, South Africa," by Francesco Berna et al. *PNAS* (2012).

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