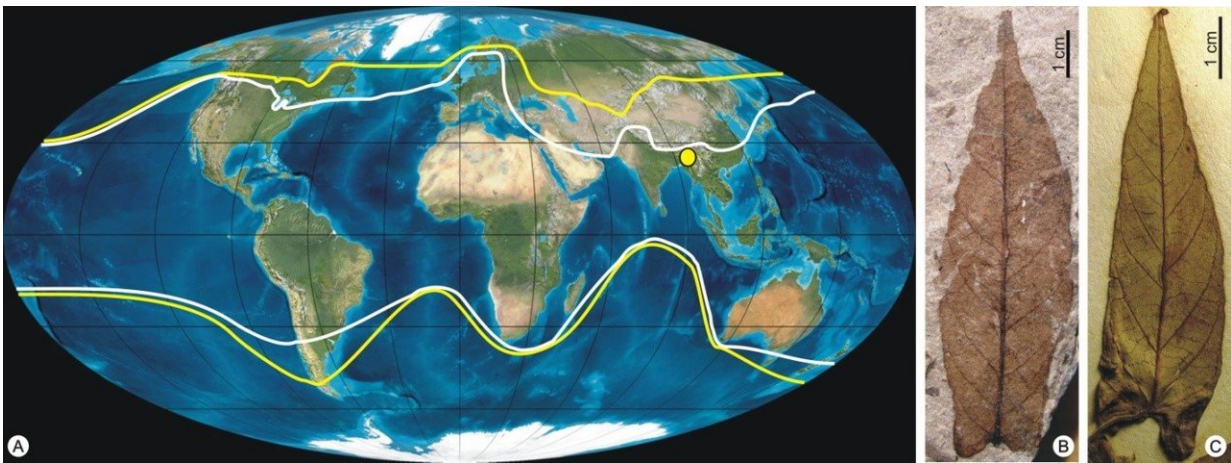


Research suggests sweet potatoes didn't originate in the Americas as previously thought

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A) Modern distribution of the sweet potato family (yellow line) and genus (white line). B) Fossil leaf of *Ipomoea meghalayensis*. C) Modern leaf of *Ipomoea eriocarpa*, showing similar size, shape and vein pattern. Credit: Indiana University

Sweet potatoes may seem as American as Thanksgiving, but scientists have long debated whether their plant family originated in the Old or New World. New research by an Indiana University paleobotanist suggests it originated in Asia, and much earlier than previously known.

IU Bloomington emeritus professor David Dilcher and colleagues in

India identified 57-million-year-old leaf fossils from eastern India as being from the morning glory family, which includes sweet potatoes and many other plants. The research suggests the family originated in the late Paleocene epoch in the East Gondwana land mass that became part of Asia.

"I think this will change people's ideas," Dilcher said. "It will be a data point that is picked up and used in other work where researchers are trying to find the time of the evolution of major groups of flowering plants."

Previous [fossil](#) evidence had suggested the morning glory family may have originated in North America about 35 million years ago. But molecular analyses had supported the idea that it originated earlier and in the Old World. The new research provides evidence for that conclusion.

The discovery also suggests the morning glory family and the nightshade family, which includes potatoes and tomatoes, diverged earlier than previously thought. Together with the recent, separate discovery of 52-million-year-old nightshade fossils in Argentina, it suggests that morning glories developed in the East and nightshades in the West.

The 17 fossils analyzed in the study are the earliest recorded fossils for both the morning glory family, known as Convolvulaceae, and the order Solanales, which includes morning glories and nightshades. Morning glory fossils are rare because the plants' soft structure was not easily preserved in rocks.

Dilcher's collaborators, Gaurav Srivastava and Rakesh C. Mehrotra of India's Birbal Sahni Institute of Palaeosciences, discovered the fossils in Meghalaya, a state in northeastern India.

The researchers used microscopic analysis of the shape and structure of

the leaves, comparing details of the leaf veins and cells with plants in the genus *Ipomoea*. Using such analysis to examine evolutionary relationships has been a hallmark of Dilcher's paleobotany research career.

The leaves the researchers studied are in the genus *Ipomoea*, which includes sweet [potato](#) but also hundreds of other [plants](#), most of which don't produce food for humans.

"We don't know that these were sweet potatoes," said Dilcher, emeritus professor in the Department of Earth and Atmospheric Sciences and the Department of Biology in the IU Bloomington College of Arts and Sciences. "We can't say there were delicious [sweet potatoes](#) there. There may have been, or there may not."

The morning glory family is widely distributed in tropical and subtropical regions and includes about 57 plant genera and 1,880 species. The sweet potato is the world's second most important root crop, and other members of the family are medicinally and culturally significant.

The study will publish online May 21 in the *Proceedings of the National Academies of Science*.

More information: Gaurav Srivastava et al., "Paleocene *Ipomoea* (Convolvulaceae) from India with implications for an East Gondwana origin of Convolvulaceae," *PNAS* (2018).

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