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A closer look at our ancestor

AUSTIN, Texas – Discovered in 1974, the 3.2-million-year-old bones of the fossil Lucy could give us more insight into our origins. Lucy's remains, which are the oldest and most complete adult erect-walking skeleton ever found, consist of around 80 separate bones. The fossil has been studied extensively, but questions about the way she walked and stood, and about whether she climbed trees, have gone unanswered. On her current tour of the US, Lucy took some time out from her busy museum schedule to be imaged.

A group of researchers at the University of Texas received permission from the government of Ethiopia, which owns the skeleton, to scan the fossil in 3-D using x-ray computed tomography (CT). Previous scans of the remains were completed using early-generation CT systems that could not visualize important details of the structure. Using a MicroXCT scanner from

Xradia Inc. of Concord, Calif., and an Actis scanner from Bio-Imaging Research Inc. (now part of Varian Medical Systems Inc. of Palo Alto, Calif.), the investigators spent 10 days imaging every element of the fossil.

The bones were examined before and after imaging to make certain that no damage had been done. In addition to taking images of each element as a whole, the scanners enabled investigators to view close-ups of larger portions such as the jaw bone, which allowed them to look more closely at the teeth embedded therein. The images are currently being analyzed, with the hope that the detailed architecture of the bones in Lucy's arms and legs will reveal important information about her lifestyle and the adaptations she made to her environment.

Although none of the CT images has been released yet, the researchers said that their digital images of Lucy would eventually be accessible from any classroom or research center. According to John Kappelman, an investigator and professor of anthropology, once the scientists have finished their analysis, the Authority for Research and Conservation of Cultural Heritage in Ethiopia will make the data available to other investigators.

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Skeletal elements of the ancient fossil Lucy are assembled for display. Image courtesy of the Houston Museum of Natural Science.



Several of Lucy's skeletal elements, including the right distal radius (arm bone), were scanned with an ultrahigh-resolution Xradia MicroXCT scanner in the High-Resolution X-ray CT Facility at the University of Texas at Austin. Custom-built foam mounts were constructed to safely hold the specimens in the scanner. Photo by Marsha Miller, courtesy of University of Texas at Austin.

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