They don’t move, they don’t complain, and they’re impervious to X-ray damage. In other words, mummies are “a perfect subject for medical radiography,” according to conservator JP Brown of Chicago’s Field Museum of Natural History.

Scientists figured this out early on: just months after Wilhelm Roentgen’s discovery of X-rays in the fall of 1895, a physicist, Walter Koenig, captured the first radiographic images of mummified remains at the Physical Society of Frankfurt-am-Main. Up until that point, studying mummies had mostly meant unwrapping them, a process that Brown notes is “necessarily destructive.” A few decades later, the Field Museum became a pioneer of mummy imaging. Edward Jerman of the Victor X-Ray Corporation of Chicago volunteered his services and radiographed 32 ancient Egyptian and Peruvian mummies in the museum’s collection with what curator Berthold Lauer called “such gratifying and convincing results” that museum president Stanley Field opened a division of roentgenology in 1926.

In 1931, the museum published a radiographic study by paleopathologist Roy Moodie that captured many of its mummies in vivid skeletal detail, including child mummies from Egypt and Peru, and a skull with an outgrowth that Moodie diagnosed as a cranial tumor. The study also turned up “imitation mummies” made of assorted feathers, bones, and scraps of skin—believed to have been either created to help guide disintegrated bodies on their journey to the afterlife, or assembled by embalmers as a sly attempt to earn extra money.

Although X-rays allow a noninvasive glimpse into unopened mummies, they create distortion by magnifying objects closer to the X-ray source, and they obscure the appearance of soft tissues and textiles. When CT scanning, which produces high-resolution, cross-sectional images of the body, emerged in the 1970s, mummy preservation experts quickly realized its potential for revealing

ancient mortuary practices.

Case in point: a 2011 CT scan at the Field Museum revealed wax figurines of the sons of the ancient Egyptian god Horus bound to individual organ packets stuffed inside the mummy. Because each of the sons designated certain organs in Egyptian culture, Brown was able to identify the intestines, stomach, liver, and lungs. He then used these findings to help identify unknown organ packets in other mummies that didn't have wax figurines. "That was pretty awesome," he says, because "apart from flagrant guessing, we had no previous methodological basis" for determining organ identity.

Mimi Leveque, a conservator at the Peabody Essex Museum in Salem, Massachusetts, and self-described "mummy doctor" who has collaborated with Brown, recalls CT scanning an Egyptian mummy known as Padihershef at Massachusetts General Hospital in 2013 and seeing it imaged "layer by layer by layer so you could see the face, you could see the bones . . . of the face, you could see inside the head . . . you could still see the brain tissue." CT scanning has also helped Leveque design custom housings to support the deteriorated bones of North America's oldest mummy, a roughly 4,000-year-old specimen from Egypt at the Michael C. Carlos Museum in Atlanta.

Despite the long history of mummy scanning, Brown says that many questions remain about ancient mortuary practice that can't be answered with individual scans. He points to archives being developed at the Penn Museum and the IMPACT mummy database, which compile scans of mummies and offer access to researchers who wish to study them, as steps toward improving our understanding of both the mummification process and its artifacts.