

# Parade Magazine

## New technology is revealing medical clues buried for as long as 3000 years

### Unwrapping Medical Mysteries

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When mummies travel the country, as they have in major exhibits this summer, they always draw big crowds. There's a mystique surrounding these human time capsules from ancient civilizations. What secrets can they reveal to us about their pasts?

Medical researchers hope they'll tell us what made them sick, providing clues about the progress of disease through the ages. Egyptian mummies, it turns out, suffered from ailments that still bother us, like obesity, clogged arteries, and tooth decay.

Any corpse saved from the normal process of decay, either by deliberate chemical treatment or by nature—buried under thick ice or preserved in dry desert soil—is technically a mummy. In recent years, scientists have learned valuable information from those found not just in the Nile Valley but also in South Korea, Hungary, and Chile.

#### Revealing the Body's Deepest Secrets

The invention of the X-ray in the late-19th century first enabled scientists to look at mummies' bones under the wrappings. X-rays provided information about a mummy's age, sex, history of injuries, bones, arthritis, and, to some degree, its likely blood relationship to other mummies.

The next step forward came with the introduction of the CT scan in the 1970s. These 3-D scans provided a view of soft tissue as well as bones. That is how researchers discovered that Egyptian mummies suffered from atherosclerosis—the images revealed calcified plaque in their arteries.

But scientists wanted to know more. "A CT shows you that the bone is damaged and may suggest a disease process," says **Dr. Mark Spigelman of the Kuvim Center for the Study of Infectious and Tropical Diseases at Jerusalem's Hebrew University**. "But it doesn't tell you what disease killed the person."

#### Limiting the Risks of Radiation

Enter tissue and DNA analysis, which have revolutionized mummy science. Utilizing minute tools such as an endoscope—a sterile tube equipped with a tiny camera—researchers can get to the mummy's actual tissue. "I create or go into a hole in the mummy," explains Spigelman, a surgeon by training, "and from there I extract what I need."

Even small tissue samples can yield significant insights. Marvin Allison—a specialist in laboratory medicine at Virginia Commonwealth University who has examined more than 3000 mummies—has found ancient evidence of several diseases that still plague us today. For example, based on his studies of mummies in Chile and Peru, he concludes, "Breast cancer was a common disease in women" even 3000 years ago.

The newest technological development—PCR, or polymerase chain reaction, developed in the 1990s—takes DNA analysis to another level. It allows scientists to learn about the microbes and organisms that live inside the intestines, lungs, or other body parts. Germs for malaria, leprosy, hepatitis, and the helicobacter Pylori bacterium, which causes ulcers—all still active today—have been found in mummies. **As microbes continually evolve over the years, they can become more lethal, Spigelman says. By studying a 500-year-old virus, “we are trying to find clues that may enable us to combat them.”**

### Medical Discoveries That Can Save Your Life

Take, for instance, Hepatitis B, one cause of liver disease. Spigelman’s team found it in the 500-year-old mummified body of a South Korean boy.

They also gleaned insights into tuberculosis from a family of five 18th-century mummies discovered in a crypt in Vac, Hungary, in 1995. The mother and daughters clearly died of a virulent form of the disease, but the father and son hadn’t contracted it. **The obvious question, Spigelman says, is: “How did they live in the same house, breathe the same air, without getting infected?” If scientists can figure out what protected the males in that family, “that knowledge may help come up with new methods to treat the disease.”**

Mummies also help set the medical record straight. Scientists had long assumed that a particularly deadly strain of influenza caused the 1918 Spanish flu epidemic. But when they isolated the virus’ RNA from frozen tissue of Arctic miners and from a woman buried in an Alaskan village, they realized that it was a relatively normal flu virus. Nearly a century later, these mummies’ revelations may help lead to a vaccine.

### Mummies Around the Globe

*Hollywood horror movies to the contrary, not all mummies are Egyptian. Here are some surprising finds that have revealed medical secrets in recent years.*

#### Israel

**DNA from a shrouded man entombed in first-century Jerusalem was found in 2009 to be the earliest proven case of leprosy.**

#### South Korea

In 2007, a construction boom unearthed 500-year-old accidentally mummified bodies, including one with traces of Hepatitis B.

#### Hungary

Some 250 18th-century mummies, discovered in a church crypt near Budapest in 1995, yielded clues about tuberculosis.

#### Alaska

The frozen body of a woman who died in a rural village in 1918 gave scientists a peek at the Spanish flu virus.