History out from under wraps: Science Center's extensive 'Mummies' exhibit reveals a wealth of information

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A well-dressed 18th-century miller from Hungary, a 6,500-year-old child found in Peru, a baby crocodile -- these aren't your mother's mummies. You can see all three of them, along with more than 40 others, at the world premiere of "Mummies of the World," at the California Science Center.

Don't worry, there are a few linen-wrapped Egyptian mummies too. But this exhibit isn't limited to one ancient civilization. Made up of specimens lent from 20 international institutions, it showcases the incredible variety of mummies, highlighting how they're created and all that can be learned from these relics of the past.

"It's a matter of understanding the big wide world of mummification and how it works," said Heather Gill-Frerking, director of science and education for the exhibition. "People will see things that they've never encountered before."

The exhibit was inspired by a cache of mummies found in the basement of the Reiss-Engelhorn Museum in Germany in 2004. The rediscovery of the mummies, which were originally collected from all over the world, spawned the German Mummy Project, a research effort to uncover the stories behind the diverse collection. The California Science Center exhibit has grown beyond the original specimens to become the largest exhibition of mummies and related artifacts ever assembled, but

the aim remains the same: to understand the history behind each mummy.

Each mummy, the scientists say, has a story. And with the advent of new technology, such as CT scans and DNA analysis, these histories can be revealed without harm. CT scans in particular are considered the gold standard in mummy research, providing remarkable three-dimensional records that allow researchers to see details such as heart defects, tumors and evidence of respiratory infections like tuberculosis.

"We can essentially do a virtual unwrapping of the mummy," said Gill-Frerking, also scientific research curator of the German Mummy Project. Unlike Victorian "unwrapping parties," this procedure provides valuable information about the mummies' insides without damaging them.

CT scans can even be useful for the seemingly simple task of determining gender. The case of one child in the exhibit proved particularly challenging, but the team is now relatively confident he is a boy. "We think we've identified testicles, which may not sound like much, but we spent hours trying to figure out what else they might be," Gill-Frerking said.

In fact, the mummies in the exhibit are all under continuing study, even during exhibition. Just a week before the opening, the remains of Hungarian miller Michael Orlovits, dressed in his Sunday best and laid out on a pristine white sheet with his hands in his lap, was awaiting a CT scan. Crowded around the computers were Gill-Frerking, Ildiko Pap and Ildiko Szikossy from the Hungarian Natural History Museum, Orlovits' home institution, and imaging specialists from Cedars-Sinai, all eager to see what the scan might reveal.

Orlovits, who died in 1806, was found in a church crypt in Hungary in

1994, along with his wife, Veronica, three of their four children, all of whom died before reaching the age of 3, and more than 200 other mummies. Church records provided a wealth of information, including the identities, ages, familial relationships, and years of birth and death for many of the individuals, but the researchers knew they could learn more if they could see inside him.

What they found -- he had a broken leg that hadn't healed completely at the time of his death, for example, and he was buried with a metal cross that had been tucked inside his clothes and remained undetected until he was moved for the scan -- are the kinds of tidbits that provide concrete pictures of how people lived and died long ago.

"One of the great things about this exhibit is that you not only get to see these fascinating mummies, but you also get to see how these new science tools are used to provide new insight into these mummies in non-destructive ways," said Diane Perlov, California Science Center senior vice president for exhibits.

Many mummies, however, hold tight to their mysteries, even against such powerful modern techniques. A scan revealed that a 1,600-year-old Peruvian woman in the exhibit (who, like many South American mummies still has a full head of dark brown hair) held children's teeth in her clenched fists. Finding the teeth was a triumph, but it also raised a host of questions -- such as whom the teeth belonged to and why she was holding them.

"Each answer asks more questions, so it's a great example of the scientific process," said Jeffrey Rudolph, the museum president and chief executive. The exhibit's focus on the continuing studies behind the mummies was one of the reasons the California Science Center was eager to take on a subject that might more typically be found in a natural history museum, he said.

As well as revealing the stories of the individual mummies, the exhibit also explains some of the different processes that can keep mummies from decaying. Traditional Egyptian mummies were carefully prepared, but many mummies in the exhibit are natural; they weren't specially treated and were only preserved by an environmental luck of the draw.

Most of these natural mummies were laid to rest in dry, well-ventilated areas, resulting in something akin to a dried flower or piece of fruit. Counterintuitively, some bogs can also create mummies, probably due to their high acidity, although scientists are still studying exactly how this mummification process works.

"I think this concept that mummification exists in different forms is really cool," Gill-Frerking said. "One of the things I hope this exhibition will do is really show people that mummies are not what they think they are."