

Inca mummies found in Peru

The first ice-encrusted corpse turned up in September atop a 20,700-foot peak in the Peruvian Andes. There, a teenage girl's frozen body protruded from a rocky outcrop. Shown at left in an eerie mug shot, she wore a fancy feather headdress and was wrapped in woven material. Pottery and small statues surrounded her lifeless form.

In October, investigators climbed back up the mountain and found two more frozen corpses at a slightly lower elevation. A girl of perhaps 10 to 12 years was found wearing a headdress; around her was a large stash of pottery. Nearby were the largely skeletal remains of a teenage boy. Again, woven material was wrapped around both bodies.



M. Zaratel/National Geographic Society

The three mummies apparently represent sacrificial offerings made by the Inca to their gods around 500 years ago, asserts Johan Reinhard, an archaeologist at the Field Museum of Natural History in Chicago. Reinhard codirected the expeditions that made the discoveries.

An ongoing eruption at a nearby volcano in the Andes melted enough snow to reveal the corpses and their burial sites, Reinhard says.

The mummies are now in storage in a freezer at the Catholic University of Santa Maria in Peru. Scientists plan to unwrap

the bodies this month and examine preserved organs, tissue, and fluids. They hope to recover undamaged DNA for genetic analysis. Artifacts found with the mummies, such as the headdress-bedecked statuette shown at right, will provide a rare glimpse of Inca sacrificial rituals, according to Reinhard.



Reinhard/Natl. Geographic Society

Ihy and Hetep's Excellent Afterlife

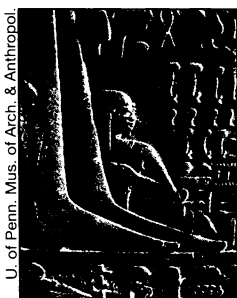
Talk about social climbers. Archaeologists have uncovered evidence at Saqqara, Egypt, that two noblemen who lived about 4,000 years ago had their own underground tombs built secretly within a dead pharaoh's sacred burial area so that they could enjoy a royal afterlife and become gods after death like the pharaohs.

No other nonroyal Egyptians are known to have purposely placed their tombs in a spot reserved for kings.

Ihy and Hetep, two high priests who served the pharaoh Amenemhet I, devised the burials, each of which lies at the end of an underground shaft connected to an above-ground temple. British archaeologists first discovered the tombs about 70 years ago but did not realize their significance. Renewed excavations at the site in April and May were directed by David P. Silverman of the University of Pennsylvania in Philadelphia and Rita E. Freed of the Museum of Fine Arts in Boston.

Ihy and Hetep worked in a mortuary cult that preserved the memory of Teti, a pharaoh who ruled 300 years before Amenemhet I. Their tombs extend just inside the sacred wall around Teti's pyramid and bear designs, inscriptions, and artwork (such as carvings from Ihy's temple, shown here) typical of Teti's era, Silverman contends.

With Amenemhet I distracted by the construction of his own pyramid, the two officials may have used their money and power to build portals to a royal afterlife on Teti's hallowed ground, according to Silverman.



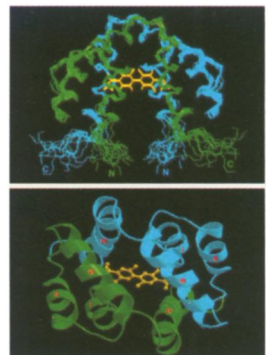
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Fitting a PCB into the lung milieu

High exposures to polychlorinated biphenyls (PCBs), oils that serve as electrical insulators, can cause serious damage to the lungs. Swedish researchers have now used magnetic resonance imaging (MRI) to probe why certain PCBs collect in the lungs once they have been altered slightly by the body. The resulting structural portrait of one such metabolite and its usual intimate companion, a protein secreted by the lung, now answer the important question of how the two could couple.

The lung's uteroglobin protein seemed to have no opening through which a PCB or a metabolite could enter to dock at internal binding sites, explains Torlief Härd of the Karolinska Institute in Huddinge. But in the November NATURE STRUCTURAL BIOLOGY, his team shows that in some instances, disulfide bonds in the protein split open like a drawbridge. "Presumably, that's how the [PCB] gets in," he says. When the protein returns to its normal state, the bridge closes, locking in the PCB so it can travel wherever the uteroglobin goes.

"This is very unusual," Härd observes. "Normally, disulfide bonds stabilize the whole protein." He notes that the PCB also fits the interior pocket of the protein perfectly. He says that one working hypothesis posits that these PCBs may exert their toxic effects "by fitting too perfectly, by binding too tightly" and in so doing "exaggerate or block the normal function of the protein." Indeed, notes coauthor Johan Lund, the only natural compound known to bind to uteroglobin is the hormone progesterone. These PCBs "bind with a 1,000-fold higher affinity."



Härd/NATURE STRUCTURAL BIOLOGY

Above: MRI shows chaotic tendrils of protein's opened drawbridges, allowing the PCB (yellow) to enter. Below: Reformed bridges lock in PCB.

Neurotoxicity of contraceptive implant

Since the Food and Drug Administration approved Norplant contraceptive implants in December 1990, almost 1 million women have been injected with the six rods, which parcel out timed-release synthetic progesterone over a 5-year period. But this route to controlling unwanted births—used mostly by poor, inner-city women—may come at a high price, according to preliminary findings by Alan R. Hirsh, a neurologist at Rush-Presbyterian-St. Luke's Medical Center in Chicago.

Hirsh administered a complex battery of psychological, medical, and nerve function tests to five young women who developed recurrent headaches, severe dizziness, depression, and trouble controlling emotions while using Norplant. None had had the implant more than 24 months. In three women, symptoms continued even after their implant was removed.

Last week, at the International Neurotoxicology Conference in Hot Springs, Ark., Hirsh reported that his cognitive tests and electrophysiological assays of discrete nerve and brain functioning confirmed a neurotoxicity that appears to trace to Norplant. He also turned up subclinical disease—changes not yet recognized or described as a problem by the women. These included brain and nerve abnormalities that could underlie numbness in the arms and legs or cognitive problems revealed by the women's memory and problem-solving tests.

Hirsh expressed the greatest concern about the cognitive abnormalities he's diagnosed "because when the brain becomes dysfunctional, it usually doesn't recover." While he plans a large study of randomly selected implant users, he muses "whether we'd have heard of this sooner if a different group was involved"—such as middle-class women, or men.