

Inside Story

A dead boar in all its complexity is revealed in this photograph by Swedish physician Anders Persson, winner of this year's Lennart Nilsson Award for photography. Persson, director of the Center for Medical Image Science and Visualization at Linköping University, has combined magnetic resonance, ultrasound, and positron emission tomography to get 3D images from inside the body. Particularly useful for autopsies, his photos have been featured on the forensics TV show *CSI*.



Napoleon: Case Closed

Historians have long speculated about what killed Napoleon, who died in exile at 52 on the isle of St. Helena in 1821. His doctor said it was stomach cancer, but analysis of some hairs and accounts of his symptoms raised the notion that he was poisoned with arsenic.

Now the Italian National Institute of Nuclear Physics says it has ruled out homicide. Scientists analyzed several preserved samples of Napoleon's hairs, one from when he was only a year old and others cut a few days before his death, along with hairs from his son, his wife

Josephine, and 10 other people living at the same time.

The hairs, placed in a nuclear reactor and bombarded with neutrons to determine their composition, were all found to be "extremely toxic," says institute director Ettore Fiorini and colleagues, with arsenic levels more than 100 times what would be found today. Napoleon's arsenic load registered 8.3 parts per million as an infant and 18.9 ppm when he died, the researchers report in the bulletin of the Italian Physical Society, *Il Nuovo Saggiatore*.

Fiorini notes that at the time, arsenic was everywhere—in paints, drugs, tapestries, and pre-

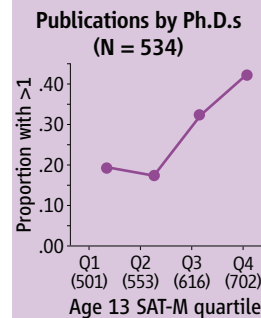
served food. Angela Santagostino, a toxicologist in the Department of Environmental Sciences at the University of Milan-Bicocca, says the scientists have finally come up with conclusive proof that there was "not an intentional poisoning."

Little Gray Cells Add Up

To succeed in science, it helps to be very smart. But being very, *very* smart is even better.

That's what researchers at Vanderbilt University conclude from a longitudinal study begun at Johns Hopkins University in 1972. The Study of Mathematically Precocious Youth tracks the careers of students who were in the top 1% of scorers in the math portion of the SAT at the age of 13. Twenty-five years later, the crème de la crème within this elite group have produced the most publications and patents, psychologist David Lubinski and colleagues report. "Measures with high ceilings are needed" to reveal such distinctions, the authors say. For example, 28% of those with science doctorates had authored a peer-reviewed publication, but the probability rose with their SAT-M scores (see chart, above), according to a paper in the October issue of *Psychological Science*.

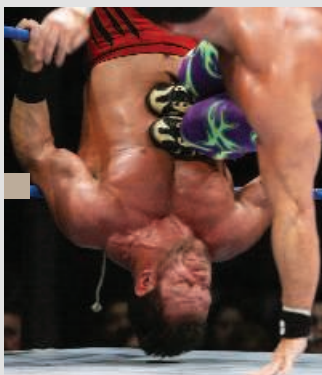
Psychologist Diane Halpern of Claremont McKenna College in California says the data are valid as far as they go. But "the flip side of this question" is how many top scientists "would score among the top 1% of the population on a math test. ... I don't know what proportion of Nobel Prize-winners have IQs above 140 or 145, which would be predicted from the points made in this paper."



THE BATTERED BRAIN

Last June, pro wrestler Chris Benoit strangled his family and hanged himself at age 37. Benoit had suffered various blows to his head in the course of his career. When neurosurgeon Julian Bailes of West Virginia University, Morgantown, examined the brain at the request of the Sports Legacy Institute, he found damage similar to that of advanced dementia.

Now scientists at Boston University are hoping to get a better fix on what happens to banged-up brains with the establishment of a new Center for the Study of Traumatic Encephalopathy. Twelve athletes, including six retired NFL football players, have announced they will be donating their brains to aid studies of what happens after severe concussions. Big names include former New England Patriots line-



backer Ted Johnson and former Olympic soccer champ Cindy Parlow.

Researchers have long suspected a link between athletes' head injuries and chronic traumatic encephalopathy (CTE). With donated brains, they'll be able to look for

biomarkers of CTE, which can cause dementia-like symptoms and personality changes in patients, says neurologist Robert Stern, the center's co-director. Preliminary work suggests that CTE causes a buildup of tau protein, also implicated in Alzheimer's disease. Research also points to a genetic component. "We really need to understand this disease bet-

ter—we're still in the infancy there," says co-director Ann McKee, a neuropathologist. McKee says she's most interested in learning how brain trauma in young adults can trigger brain damage that, as is possible in Benoit's case, surfaces many years later.