



Chopin's Heart

Frédéric Chopin died in France in 1849 at the age of 39 of what his death certificate recorded as "tuberculosis of the lungs and larynx." After his death, friends had the composer's heart removed, submerged in a jar of cognac, and placed in a Warsaw church in his native Poland in accordance with his wishes.

Now Polish scientists want to reopen the jar to see whether Chopin actually died of cystic fibrosis. Michal Witt of Warsaw's International Institute of Molecular and Cell Biology has argued that Chopin had childhood symptoms matching a mild form of the genetic illness, including respiratory infections, weakness, and delayed puberty. As an adult, Chopin was slight of stature, had a hard time climbing stairs, and occasionally had to be carried offstage after concerts. "If it turned out that Chopin had cystic fibrosis, this would be very special news for all those affected with CF," Witt says.

Witt hopes to persuade Polish authorities to open the niche where Chopin's heart is stored by 2010, the 200th anniversary of his birth. "It's a good moment to check, and once we have it in our hands it's a small matter to do a CT [computed tomography] scan and DNA test," says Tadeusz Dobosz, a geneticist at Wrocław Medical University. Poland's Culture Ministry is considering the request.

Was China an Early Emitter?

Last year, China overtook the United States as the world's leading emitter of greenhouse gases. But archaeological evidence suggests that the Chinese are old hands at global warming: Rice farmers may have begun making significant contributions thousands of years ago.

A Chinese-U.S. team led by William Ruddiman, a paleoclimatologist emeritus at the University of Virginia, Charlottesville, surveyed 311 archaeological sites in rice-growing regions of China. It found that between 6000 and 4000 years ago, the number of sites increased almost 10-fold. The timing coincides with evidence from other studies that atmospheric levels of

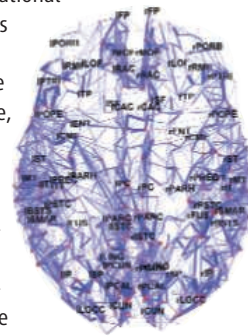
methane, a byproduct of many farming activities, including wetland rice cultivation, began to increase about 5000 years ago. These findings, published in the July issue of *Quaternary Science Reviews*, are in line with Ruddiman's controversial earlier claims that human contributions to global warming began long before the industrialization of the 19th century (*Science*, 16 January 2004, p. 306).

Dorian Fuller of University College London, an expert in prehistoric Chinese agriculture, says the study adds "important and compelling" information in support of Ruddiman's hypothesis. He says climate modelers should also start looking at other early sources of atmospheric methane, such as cattle herding, which likewise increased dramatically about 5000 years ago.

Brain Traffic

The "connectome" of the human cortex has been produced by an international team of brain scientists and imagers led by Patric Hagmann of the University of Lausanne, Switzerland.

Specialized regions of the neocortex are linked by a dense network of neural pathways, with several distinct nodes, like airline hubs, the researchers reported last week in *PLoS Biology*. The data were based on imaging brains of five male volunteers.



The Invisible Hand

Researchers in the United Kingdom are trying to help amputees speed up the process of getting used to prostheses by harnessing a well-known illusion.

In the "rubber hand" illusion, a person's hand and an adjacent rubber hand are both brushed gently. The real hand is kept out of sight. Before long, the subject's brain creates a new spatial link, imagining that the sensation in the real hand is arising where the rubber hand is.

Graduate student Matthew Mulvey of Leeds Metropolitan



University has now shown that the effect will work if the researchers deliver transcutaneous electrical nerve stimulation (TENS) not to the

hidden hand but to the wrist. After being primed with the illusion, subjects perceive the impulses—which hijack the nerve pathways

between hand and brain—as a tingling located in the rubber hand. The researchers predict that with an amputee, a TENS signal from above the site of amputation would seem to come from the fake limb.

The team, which showed its results at the Royal Society's Summer Science Exhibition last week, hopes TENS can help amputees adapt faster to prostheses and possibly counter phantom limb pain, a major problem. Kate MacIver, a research nurse at the Pain Research Institute at the University of Liverpool in the U.K., says the idea is "harmless, ... so it's worth a try."