tors say, Simmons produced results that were in line with expectations.

After university officials were told of the co-worker's suspicions, they decided to investigate by laying an artfully designed trap. Simmons was asked to test cells that he was told should produce one type of result when, in fact, they should have produced the opposite. ORI documents explain that the test was designed to rule out the possibility that the whistle-blower was acting out of "possible frustration or anger at being unable to replicate Dr. Simmons['s] work [and] had himself spiked the vials." Simmons failed the test, and on 29 April 1999 university officials placed him on administrative leave. He resigned 2 months later following an investigation by three UT Southwestern academics—Frederick Bonte, head of the radiology department; Paul Bergstresser, head of the dermatology department; and James Forman, an immunology professor.

Simmons also falsified results on samples sent to him by collaborating researchers, concluded a subsequent investigation conducted by ORI. "A preponderance of the evidence" showed that Simmons had "systematically" falsified results "throughout his tenure as a graduate student and postdoctoral fellow," states the ORI report. Despite earlier denials of the allegations, Simmons signed an ORI settlement agreement on 10 August that called for the retraction of the 1997 *Immunity* paper and three others published since 1993 in the *Journal of Immunology and Immunogenetics*. A table in a 1998 *Journal of Experimental Medicine* paper was also withdrawn.

In the aftermath of the revelations, some of Simmons's former collaborators at The Jackson Laboratory in Bar Harbor, Maine, and the Wellcome Human Genetics Center in Oxford, U.K., are taking a tougher approach to cooperative research. "It's made me much more careful," says Derry Roopenian of the Jackson Lab, noting that he now deliberately hides the identity of reagents and other shared molecular tools from cooperating researchers in order to "blind" experiments. But most of all, Roopenian is upset that a number of young scientists—in his lab and elsewhere—"wasted a lot of time and money trying to reproduce results that weren't real to begin with."

–DAVID MALAKOFF

BIOTERRORISM

Experts Call Fungus Threat Poppycock

CAMBRIDGE, U.K.—The script seems straight from a John LeCarré novel. A former bioweapons lab in Uzbekistan tinkers with a fungus that destroys opium poppies, which Western antinarcotic teams then unleash on poppy fields in Afghanistan. Furious, Afghan heroin cartels retaliate by modifying the fungus to kill food crops in Western countries.

Far afield. British documentary on how an opium fungus could become a bioweapon is greeted with skepticism.

True? A documentary that was aired last week by the BBC and created a stir here paints the scenario as plausible. But experts contacted by *Science* play down the threat.

The real-life story begins in December 1989. A Soviet deputy minister "raised the issue of biological control of illicit narcotic crops" with a U.S. assistant secretary of state, according to Eric Rosenquist, head of the narcotics research program at the U.S. Department of Agriculture's Agricultural Research Service (ARS). The Soviet Union then approached the United Nations Drug Control Program (UNDCP) with proposals to develop biocontrol agents against opium poppies and marijuana plants that may be more effective and environmentally benign than herbicides, including 2,4-D and glyphosate. After the Soviet Union unravelled, several institutes—including some former bioweapons labs—pursued these proposals with help from the UNDCP.

One such lab, the Institute of Genetics in Tashkent, Uzbekistan, approached the U.S. embassy in Tashkent in May 1996 with its research on a naturally occurring fungus, *Pleospora papaveracea*, that kills poppies by attacking their roots. The institute, which the Soviet military had backed to develop agents to destroy crops, subsequently received U.S. and British funding.

The institute is now testing a version of *P. papaveracea* that can be sprayed from a plane. Research shows that the fungus doesn't affect any of 130 closely related plant species. On a recent visit by *Science* to the lab, institute director Abdusattar Abdukarimov said that the treatment could be deployed in a few years and that the research site, near the Afghan border, is heavily guarded.

The BBC program, "Britain's Secret War on Drugs," recycles concerns raised 2 years ago in the media that the Uzbek institute's efforts "touch the edge of biological warfare." In the program, Paul Rogers, a plant pathologist at the University of Bradford in the U.K., says the work "is providing new evidence as to how biological warfare could be used against crops." He later told *The Guardian* that "drug cartels could themselves acquire the technology and in revenge attacks use a form of agricultural terrorism against Britain or the U.S."

Other experts, however, play down such fears. "If drug cartels did acquire the fungus, they would have to adapt it to become a pathogen of food crops, and this would not be a trivial project," says plant pathologist Jan Leach of Kansas State University in Manhattan. Rosenquist questions whether *P. papaveracea* will ever become the weapon of choice against opium poppies. So far, he says, from the ARS's perspective the field tests have fallen short of showing its effectiveness as a herbicide.

Ironically, learning how *P. papaveracea* behaves and how to target it to certain fields may someday protect legitimate opium poppy plantations. The Uzbek work, says Rosenquist, could help "safeguard world supplies of analgesics" such as morphine.

–RICHARD STONE

CHEMISTRY

New Reaction Promises Nanotubes by the Kilo

Nine years ago, the news roused the slow-but-steady world of organic chemistry like a double espresso: Japanese researchers had discovered that carbon atoms can assemble themselves into tiny tubes with amazing properties. One hundred times as strong as steel and able to conduct like either metals or semiconductors, carbon nanotubes were soon being touted for uses as down to earth as lightweight fuel tanks and car bumpers and as fanciful as cables for elevators into space. The hitch, so far, has been that the most promising tubes—single layers of carbon atoms arrayed like sheets of rolled-up chicken wire—can be made only by the thimbleful. As a result, they have cost up to $2000 a gram, enough to make a single nanotube-based fuel tank worth more than a fleet of Lamborghini automobiles. But perhaps no longer.

At a meeting in Boston* last week, researchers from Rice University in Houston,

* American Vacuum Society, 47th International Symposium, Boston, Massachusetts, 2–6 October.

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