

cal surveillance, hoped that no ebolalike or other life-threatening outbreaks erupted overseas until the fiscal problems ended.

- All new NIH-funded clinical trials slated to begin during the shutdown were put on indefinite hold, creating major logistical headaches for trial organizers and participants.

- The roughly 100 ongoing AIDS clinical trials of the AIDS Clinical Trials Group (ACTG) currently under way across the nation stopped enrolling new patients, including adults and children, and the ACTG's operations center in Bethesda was closed.

- The National Oceanic and Atmospheric Administration stopped its hurricane and flash flood forecast research, warning that this could affect severe weather warnings next spring and summer.

- The Environmental Protection Agency slowed its work on developing ways to detect and control *Cryptosporidium*, a particularly troublesome bacteria that has contaminated drinking-water systems and posed significant hazards to people with compromised immune systems.

As the shutdown dragged on from days into weeks, even the normally benign types of glitches began to wear on people, making it increasingly clear that those workers deemed "nonessential" when the furlough began were more essential with each passing day. Supplies ran out, and there was neither money to buy them nor personnel to order them. For example, CDC came perilously close to draining its supply of reagents, until members of its ordering staff were returned to duty on an emergency basis.

For John La Montagne, director of the division of microbiology and infectious diseases of the National Institute of Allergy and Infectious Diseases (NIAID), it wasn't bad enough that several important vaccine trials were halted. He and others still on duty spent much of their time having to answer their own telephones and deal with minor office crises. For example, a small panic arose when the fax paper ran out. There was no money to buy more, and no one to go for it anyway. So La Montagne found himself in an office supply store. "I ended up buying three different sizes [of facsimile machine paper] because I didn't know what size we used," he said, adding that he wasn't sure if he would be reimbursed the forty dollars spent.

More serious tensions began to mount

among those "nonessential" workers who, despite not getting paid, continued their jobs throughout the ordeal. "Nurses and other health-care providers will go as many extra miles as they can to get patients cared for, but we just shouldn't be placed in this position at all," said Barbara Summers, a clinical nurse specialist in NIH's clinical center, who works with cancer patients in National Cancer Institute protocols. "We view our nursing practice as a contract we have with patients, and as part of our professional, ethical and moral responsibilities," Summers says, "and that supercedes any employer/employee contract you may have. But there gets to be a point where you look and say: 'we're coming in here every day, some of us doing extra shifts, and we're not getting paid.' The message is one of devaluing what we have to provide. And that is very demoralizing."

The shutdown was likely to take a linger-

ing psychological and emotional toll on many federal workers for months to come. By the time the furlough ended, many NIH employees, like Summers, were running on empty, angry at political rhetoric that appeared to place little value on the work they perform. For example, many were infuriated by comments made by Sen. Phil Gramm (R-Tex.), a GOP presidential hopeful, saying the events only proved that thousands of federal workers were expendable.

It is the demoralizing effects of the shutdown that will likely have the longest — and most insidious — impact. Still, the knowledge that there is now a budget in place, and that the furlough threat is over (at least for 1996), has brought a measure of relief to a lot of people in the biomedical research and public health communities.

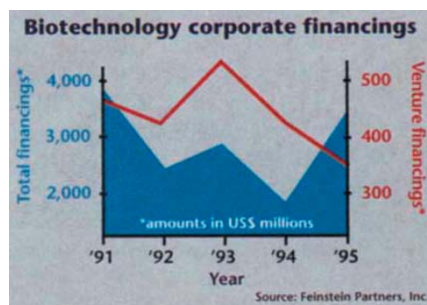
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## 1995: A bonanza year for US biotech

After several lean years, US biotechnology is back in favor, having experienced a level of investor confidence last year not seen since 1991, the best year on record. Although the total level of support for 1995 approached 1991 levels, investors seem more discerning this time around, opting to support companies that either already have products in the clinic or have strong backing from corporate partners.

Twenty-nine companies went public last year, raising a total of \$689 million and with an average initial public offering (IPO) of \$24 million. (By contrast, the total raised in 1991 and 1994 was \$1.2 billion and \$492 million, respectively.) Venture capital financing of private companies, however, was at a five-year low of about \$350 million, down from the 1993 high of more than \$520 million.

The pharmaceutical industry underwent a dramatic downsizing in 1995, and, as a consequence, is increasingly looking to the biotechnology industry to fill its product pipeline. More than 170 alliances were recorded last year, valued at about \$4.7 billion. Genomics companies, in particular, were hot properties. Myriad Genetics, Sequana Therapeutics and Millennium Pharmaceuticals all struck major deals with pharmaceutical companies, and both Myriad and Sequana went on to complete successful IPOs. There was also considerable interest by the pharmaceutical industry in the rapid screening



technology of combinatorial chemistry.

In addition to the money raised, the improved stock prices and the increased number of partnerships between biotechnology and "big pharma" companies, the industry received a boost from a number of favorable product announcements and from several notable legislative changes. For example, the US National Institutes of Health (NIH) nixed its "reasonable pricing" clause from the Cooperative Research and Development Agreements that govern the transfer of technology from NIH-funded research to industry. And in November, as part of its "reinventing government" reform initiative, the Clinton Administration announced changes in the way biotechnology drugs are to be regulated, bringing them more in line with other drugs, and a change was made in US patent law that now allows process patents to be granted for biotechnology inventions.

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