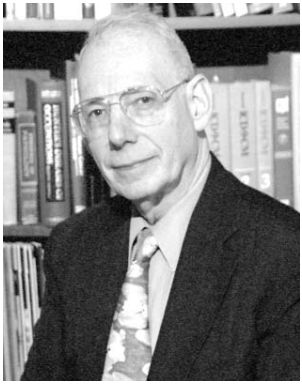
# laboratory director

## A TRUE TALE

Lawrence Sturman, MD, PhD, never dreamed he would be spending almost his entire career in a public health laboratory. After receiving his medical degree from Northwestern University Medical School and completing a year of clinical training at the Hospital of the University of Pennsylvania, he realized his interests ran toward research. To that end, Dr. Sturman attended The Rockefeller University, where he earned a doctorate in virology. He spent the following two years at the National Institutes of Health Laboratory of Viral Diseases. There he met a fellow virologist who invited him to visit the Wadsworth Center in Albany, New York, then known as the Division of Laboratories and Research of the New York State Department of Health. He was told the organization was "a cross between a mini-NIH and a mini-CDC." Dr. Sturman agreed to take a position at Wadsworth, but assumed it would be for a short time. "Certainly not for 30 years!" he says. In 1989, Dr. Sturman became Director of the Wadsworth Center's Division of Clinical Sciences, and in 1992 he was appointed Director of the Wadsworth Center.



Lawrence S. Sturman, MD, PhD

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### Profiling the job

The Wadsworth Center, which has 1,100 employees and is a part of the New York State Department of Health, is the largest and most comprehensive state public health laboratory in the nation. Established in 1901 as the State Antitoxin Laboratory, it was first known for producing high quality biological products, such as diphtheria antitoxin.[1] Today, Wadsworth remains committed to responding to public health threats by developing and applying advanced technologies.

**Laboratory Director Checkpoint**

Do you enjoy science and have the ability to work with precision?

Do you like learning and applying new knowledge to different issues?

Does making a difference matter to you?

Do you work well as a member of a team?

*If so, read on*

*"At Wadsworth, we depend very much on the knowledge base of our staff. Our intellectual capital is our greatest asset."*

Lawrence Sturman, MD, PhD

Such technologies have had a dramatic impact on the definition of preparedness. "When I think of public health preparedness," Dr. Sturman says, "I realize that what would have constituted preparedness from the laboratory standpoint in 1950 or even 1980 is not what we need today. Today, public health preparedness in the lab means having the facilities, the people and the knowledge to deal rapidly with any health matters as they arise, whether they are environmental issues, infectious diseases or considerations of genetics. We depend very much on the knowledge base of our staff. They are our intellectual capital."

That intellectual capital was brought to bear on a critical public health issue in late 2001. The Wadsworth Center became involved to a large degree in the anthrax situation and was well prepared for it. "Back in 1999," Dr. Sturman says, "an FBI agent telephoned us, saying that they had an anthrax threat letter in Vermont, and requested that Wadsworth test the letter. That event turned out to be a fortunate spur to the development of anthrax-specific preparedness. When this latest situation came along, we had a core of people who were trained, and we had the proper methods for testing already in place. We had laboratory protocols, we had molecular tests and we had a method for determining whether spores of the deadly bacteria were present." What Wadsworth Center did not have was the capability to handle the volume of requests for testing that started coming into the laboratory in late 2001.

Dr. Sturman asked for volunteers from the microbiology laboratory to supplement the existing bioterrorism team, eight individuals specially trained in handling pathogenic and potentially lethal agents. An expanded group of 30 Wadsworth scientists worked in a Biosafety Level Three (BSL-3) facility, where they were required to wear protective suits and face masks. Testing was carried out 24 hours a day. The State Emergency Management Office was involved, as were the FBI and the state police, and a protocol was developed for handling and processing samples as they arrived. Nearly 1,000 environmental samples had been tested by the end of the year 2001. Twenty-four samples tested positive for anthrax, among them samples from several media outlets.

Whether the next public health crisis comes from a bioterrorist threat or a newly emerged pathogen such as West Nile virus, Wadsworth Center's unique characteristic as a research-intensive public health laboratory provides

the expertise needed to respond. There are organic chemists, atmospheric chemists, and a wide range of microbiologists, virologists, parasitologists and other specialists. There are also research scientists in rapidly evolving fields such as genomics, bioinformatics and nanobiotechnology. They are specialists who can provide informed answers when called upon — but need not necessarily have formal public health degrees or training. Although Wadsworth is a public health laboratory, Dr. Sturman says an MPH is not a requisite to success there. Some who work in public health laboratories have bachelor's degrees, master's degrees, or medical technology training. A degree in science is preferred, he says.

"Other state public health laboratories may not conduct the kind of research activities that take place at Wadsworth," Dr. Sturman explains, "but Wadsworth in turn does not perform functions that some other public health laboratories do. Ours is a reference laboratory. We perform complex tests not available elsewhere, as well as confirmatory tests. While some public health laboratories carry out a high volume of routine tests — they may do hundreds of thousands of syphilis serologies, for example — we perform large numbers of routine tests only if there happens to be an outbreak or a special need." For example, all state laboratories routinely monitor drinking water, but Wadsworth tests drinking water principally if there is a complaint or a problem in an area, or if requested by a local health department. They also provide specialized testing not widely available elsewhere, such as for *Cryptosporidium*.

Wadsworth does perform some high-volume laboratory services, including newborn screening for such metabolic disorders as phenylketonuria, branch chain ketonuria and galactosemia, for every baby born in New York State. With the State averaging more than 250,000 annual births, this is Wadsworth's highest-volume laboratory service by far. Wadsworth also conducts hundreds of thousands of HIV tests each year. The arbovirus program has been regularly testing large numbers of mosquitoes, birds, and other animals for West Nile virus since the virus made its first North American appearance in New York State in 1999.

The laboratory also safeguards the health of the public by providing certification for all clinical and environmental laboratories that test specimens originating in New York State. "One of our top responsibilities is laboratory quality certification. We supply the materials and the experience so that we can certify other laboratories to accurately perform and report tests," says Dr. Sturman. A team of specialists inspects each laboratory, administers proficiency tests and reviews the qualifications of the staff and their methodologies. Wadsworth staff members also oversee blood and tissue banks statewide.

### A day in the life

Solitude plays little part in Dr. Sturman's daily schedule, which is a continual sequence of interactions with staff, colleagues, biomedical luminaries and others. He begins one recent workday joining the State Health Commissioner on morning rounds, then moving on to discuss a disease outbreak in upstate New York. A meeting with his counterparts in the Heath Department's Center for Environmental Health and Center for Community Health follows. The subject is testing procedures for infectious diseases.

Late that morning, he confers with a Wadsworth administrator about grant programs that fund breast cancer and spinal cord injury research, leaving his office at noon to have lunch with the director of a joint Wadsworth-Albany Medical College research program aimed at rapidly moving laboratory discoveries to clinical application.

Back in his office, Dr. Sturman prepares for a visit the next day by a Nobel Prize-winning scientist, who has been invited to deliver the Department of Health's Centennial Lecture. Needing an update from the West Nile virus team he assembled after the initial outbreak in New York State, Dr. Sturman drives to Wadsworth's arbovirus laboratory, housed at a 200-acre farm in a community just outside Albany. His last meeting of the day is at another Wadsworth facility back in Albany, where he talks with other scientists about progress on specific infectious disease protocols.

The daily life of a public health laboratorian is no less busy than Dr. Sturman's, but clearly follows a different track. Drawing upon research methods used in public health and health sciences research, laboratorians perform a wide range of tasks. A typical morning might find a laboratory specialist performing genetic assays on parents concerned about being Tay-Sachs carriers, having earlier spent time developing and applying quality assurance criteria for those assays. Then she might conduct follow-up tests on blood samples.

In the afternoon, the public health laboratorian might move from lab to community, perhaps leading a training seminar on sterile technique for biology teachers at a local high school, or discussing standard laboratory practices with technicians in a police department's forensics lab. Towards the end of the day, she might attend a seminar at a nearby research institution. Altogether, a public health laboratorian is a busy worker in a widely varied field that blends hard science, interaction with a variety of publics, and the desire to make a difference.

## career at a glance

**Lawrence S. Sturman, MD, PhD**

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| 1995–Present | **Professor** Department of Biomedical Sciences, School of Public Health, The University at Albany, State University of New York |
| 1992–Present | **Director** Wadsworth Center, New York State Department of Health, Albany, N.Y. |
| 1985–1995 | **Chair** Department of Biomedical Sciences, School of Public Health, The University at Albany, State University of New York |
| 1989–1991 | **Director** Division of Clinical Sciences, Wadsworth Center |
| 1970–1989 | **Research Physician** Laboratory of Virology, Wadsworth Center |
| 1968–1970 | **Staff Associate and Surgeon** Laboratory of Viral Disease, National Institute of Allergy and Infectious Disease, National Institutes of Health |

1 www.health.state.ny.us/nysdoh/commish/history/historical_timeline.htm