

Pharmacy

Pharmaceutical Scientist, Pharmacy Technician, Pharmacist



Pharmaceutical Scientist, Pharmacy Technician

Pharmaceutical Scientist

JOB DESCRIPTION

Pharmaceutical scientists specialize in the design, development and rational use of medications for the treatment and prevention of disease. While pharmacists interact with patients and other health care practitioners to optimize patient drug therapy regimens, pharmaceutical scientists are intimately involved in the drug development and research of new medications. In designing new drug therapies, pharmaceutical scientists are involved in developing drug dosage forms, studying the dosage form in terms of how quickly and how much of the drug is delivered to the bloodstream, defining appropriate drug dosing regimens and identifying possible drug interactions.

AREAS OF SPECIALIZATION

Physical Pharmacy – the development and optimization of the physical/chemical properties of traditional and novel drug delivery systems.

Biopharmaceutics – the study of the relationship between the nature and intensity of biologic effects of drugs and various dosage formulations.

Pharmacokinetics and Pharmacodynamics – analyses of drug concentrations and therapeutic effects, in the human body.

Clinical Pharmacokinetics and Clinical Pharmacodynamics – the safe and effective therapeutic management of patients.

Pharmacogenomics and Bioinformatics – the study of how an individual’s genotype governs his/her drug concentrations and therapeutic response; and how drugs may alter a person’s gene expression.

Pharmacometrics – an important, new field that fuses pharmacology, computer sciences, mathematics and statistics to analyze diverse data in large populations of diverse patients.

WORK ENVIRONMENT

Pharmaceutical scientists are typically employed in the research laboratories of pharmaceutical companies and universities, or as faculty in schools and colleges of pharmacy. The United States Food and Drug Administration (FDA) also employs pharmaceutical scientists to review investigational and new drug applications prior to the marketing of a new drug.

ANNUAL WAGES

	National
Bachelor’s (BS)	\$48,500
Master’s (MS)	\$55,000
Doctoral (Ph.D.)	\$72,000

Wages for individuals with 0-5 years of experience. 2001 AAPS Salary Survey. American Association of Pharmaceutical Scientists.

ACADEMIC REQUIREMENTS

A pharmaceutical scientist must have a bachelor’s degree, master’s degree, or PhD in pharmaceuticals or pharmaceutical sciences from a pharmacy school. After obtaining a bachelor’s degree (in any of the sciences), students interested in a master’s degree in pharmaceutical sciences typically need two to three additional years of graduate education and research; those interested in the doctoral degree typically need four to six additional years of graduate education and research. Individuals interested in academia may need to complete another two to four years of research in a post-doctoral training program.

PROFESSIONAL ORGANIZATIONS

American Association of Pharmaceutical Scientists
 American Society for Pharmacology and Experimental Therapeutics

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Pharmacy see page 54.

Pharmacy Technician

JOB DESCRIPTION

Pharmacy technicians assist and support licensed pharmacists in providing health care and medications to patients. They have a broad knowledge of pharmacy practice and are skilled in the techniques required to order, stock, package, and prepare medications. When working in a pharmacy, pharmacy technicians work under the direction of a licensed pharmacist.

WORK ENVIRONMENT

Pharmacy technicians are hired in the same settings where pharmacists work. Neighborhood pharmacies, hospitals, independent laboratories, federal agencies and pharmaceutical companies all employ technicians. They may be employed on a part-time or full-time basis.

ANNUAL WAGES

National	\$22,755
New York State	\$23,317

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

A high school diploma or equivalent is required. The educational requirements for pharmacy technicians vary according to the type and extent of duties they are hired to perform. Some who are hired as aides, work only under direct supervision and may be hired without any formal training. However, pharmacy technicians usually attend a community college or vocational technical school where they are trained in the fundamentals of pharmaceutical science. An

associate’s degree is the most significant degree awarded for this field, and usually takes two years to obtain.

PROFESSIONAL ORGANIZATIONS

American Association of Pharmacy Technicians
 American Pharmaceutical Association

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For educational programs in New York State for Pharmacy see page 54.

Pharmacist

Pharmacist

JOB DESCRIPTION

Pharmacists are the “drug experts” among health professionals. They understand how a drug heals and how it can hurt, and how it reacts with food and other drugs. They know the drugs’ desired effects and side effects. Pharmacists are responsible for ensuring the safe, appropriate and cost-effective use of drugs in almost every type of patient care setting. Their most important duty is to teach patients, physicians and other health care providers about drugs. This includes how the drugs work, what they are used for, how they are used, and what to expect from them. Pharmacists are also responsible for monitoring whether or not the drugs being used are working correctly.

AREAS OF SPECIALIZATION

Community Pharmacist – fills drug prescriptions, advises clients on treatment regimens, and runs small neighborhood businesses.

Home Care Pharmacist – supplies patients with their medication in their home, and serves as a consultant and source of information.

Hospital Pharmacist – provides patients with accurate drug dosages, educates the medical staff on the uses and effects of medications, monitors the patient’s progress and makes appropriate changes in treatment as needed.

Nuclear Pharmacist – specializes in the compounding (mixing), dispensing, quality assurance and development of radiopharmaceuticals (radioactive drugs used for disease diagnosis and treatment).

Nutritional Support Pharmacist – specializes in the care of patients who get nutritional support including parenteral (IV) and enteral (tube feeding) nutrition. A nutritional support pharmacist works with other health care providers to provide the best possible nutritional care by creating and modifying a treatment according to the needs of the patient.

Oncology Pharmacist – promotes optimal care of patients with cancer. Oncology pharmacy specialists work with a team of health care providers to recognize, manage and prevent complications of cancer and cancer treatment. They must understand the balance between increased patient survival and the quality of the patient’s life.

Pharmacotherapist – specializes in pharmacotherapy and is responsible for direct patient care, often working with a team of other health care providers, conducting research and often being the main source of drug information for other health care providers.

Psychiatric Pharmacist – assesses the patient, recommends proper treatment plans, monitors the patient’s response and recognizes drug-induced patients.

Other areas of specialization include biometrics, clinical, compounding, critical care, drug information, geriatric, infectious disease, internal medicine, intravenous drug therapy, law, managed care, neuropharmacology, poison control, transplant immunosuppression pharmacology, and veterinary.

WORK ENVIRONMENT

Pharmacists are employed in a variety of settings, including community pharmacies or drug stores, community and free-standing clinics, hospitals, federal and state government agencies, health maintenance organizations (HMOs), industries, law firms, long-term care settings, pharmacy associations, and trade journals. Pharmacists may work 40-50 hours a week, especially those in private practice. Part-time work is also available.

ANNUAL WAGES

National	\$80,538
New York State	\$78,894

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

To become a licensed pharmacist, you must graduate from a school or college of pharmacy, which is accredited by the American Council on Pharmaceutical Education, and pass an examination given by the State Board of Pharmacy. The Doctor of Pharmacy (PharmD) degree is the only accredited degree program for new graduates of pharmacy programs. This degree requires six years of full-time college study to complete. Postgraduate training in specialty areas of pharmacy practice (e.g. pediatrics, oncology, cardiology) via residencies and fellowships is available. Some schools offer a master’s degree and PhD in component areas of pharmacy education (e.g. pharmaceutical sciences), as well as dual degree programs (e.g. Master in Business Education). To practice as a pharmacist in New York State, individuals must meet New York State licensing requirements. Detailed information for New York State licensing requirements can be found online at: www.labor.state.ny.us/business_ny/employer_responsibilities/olcny/menu.htm.

PROFESSIONAL ORGANIZATIONS

American Association of Colleges of Pharmacy
 American Council on Pharmaceutical Education
 American Pharmaceutical Association
 American Society of Consultant Pharmacists
 American Society of Health-System Pharmacists
 National Association of Boards of Pharmacy
 National Community Pharmacists Association
 New York State Council for Health-system Pharmacists
 Pharmacists Society of the State of New York

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Pharmacy see page 54.

*New York State Educational Institutions***NEW YORK STATE EDUCATIONAL INSTITUTIONS
WITH PROGRAMS IN PHARMACY**

*(For New York State educational institution address
and phone informations, see Appendix A.)*

Albany College of Pharmacy
Long Island University-Brooklyn Campus
Long Island University-Westchester
St John's University-New York
State University of New York At Buffalo

*Source: U.S. Department of Education –
Integrated Postsecondary Education Data System
(www.nces.ed.gov/ipeds/) and the New York State Area
Health Education Center System Data Resource Center,
September 2003.*