



Medical Laboratory Scientist (MLS): Career Overview, Educational Requirements, Salary, and National Certification & State Licensure

Medical laboratory scientists must complete academic coursework in biological sciences and chemistry and meet the course requirements for the professional curriculum. Review the degree requirements, career responsibilities, and national certification to see if this is a career fit for you.

Quick Facts

Medical laboratory scientists, also referred to as medical technologists or clinical laboratory scientists, perform laboratory testing related to the diagnosis and treatment of disease. They use cutting edge medical instrumentation to analyze blood, body fluids or tissue samples for bacterial infection, electrolyte imbalance, drug and hormone assays, and other chemical components that impact human wellness. They ensure the integrity of the nation’s blood supply and the safety of blood transfusions. A bachelor's degree with a major in one of the life sciences is the pathway to this professional career.

Required Minimum Education	Baccalaureate degree preferably in the sciences
Other Requirements	National Certification and state licensure, as required
Mean Annual Wage (2016)	\$61,070 for medical and clinical laboratory technologists*
Projected Job Growth (2012-2022)	22% for medical and clinical laboratory technologists and technicians*

Source: *U.S. Bureau of Labor Statistics

Medical Laboratory Scientist Career Overview

Clinical laboratories are composed of multiple departments and include testing related to blood banking clinical chemistry, hematology, immunology, microbiology, mycology, parasitology, molecular diagnostics and virology. Completion of a professional program and national certification in medical laboratory science prepares individuals to work in any of these areas or as a generalist rotating through multiple laboratory departments.

A MLS uses advanced instrumentation and technology to culture and evaluate tissue, blood and other fluid samples both microscopically and macroscopically to help determine whether a patient's cholesterol or blood sugar levels, electrolytes, or other important bodily functions are operating normally. They may also examine blood, bone marrow and tissue for cancerous cells, cross match and type blood for transfusion and problem solve incompatibilities in blood and organ tissues, or check chemical compounds in blood to ensure the patient is getting the right dose of a certain medication. They screen emergency patients for drug overdose and identify the causative agent of viral outbreaks.

Smaller labs in community hospitals and evening and late night shifts in large medical centers need medical laboratory scientists who are competent in all areas of the clinical laboratory. In larger laboratories, usually located

in big metropolitan areas, medical laboratory scientists may specialize in one of the sub-disciplines of laboratory medicine. Those specializing in immunology, for instance, use various tests to determine the response of a patient's immune system to allergens such as those found in peanuts or native weeds. An emerging specialty area of the clinical laboratory is molecular diagnostics and molecular testing can now be found in clinical chemistry, hematology, microbiology, and even in clinical blood banks where molecular methods are being used to better phenotype patients who require frequent transfusion in diseases such as sickle cell anemia.

Medical laboratory scientists perform test methods, analyze the data and generate lab reports for physicians and other medical personnel. They develop procedures and maintain complex instrumentation that enhances the accuracy and efficiency of specimen collection and analysis. As they gain advanced knowledge, they may also supervise the laboratory work team including other laboratory scientists and medical laboratory technicians as well as phlebotomists, who are responsible for collecting blood for testing.

Some medical laboratory scientists choose to work in clinical research, public health, and regulatory positions within hospitals. They also seek jobs in industry specifically representing the instrumentation and reagent companies who supply and support the clinical laboratory. This career field also provides a strong foundation for those who later seek patient focused careers in medicine or as physician assistants.

Educational Requirements to Become a Medical Laboratory Scientist

A bachelor's degree in medical laboratory science or one of the life sciences, such as biology, chemistry or microbiology, is required for a position as a certified medical laboratory scientist. The professional curriculum for medical laboratory science typically requires courses in biology, chemistry, and math. Courses particularly relevant to this career field include pathogenic microbiology, immunology, virology, mycology, parasitology, qualitative analysis, biochemistry, and statistics.

Salary of a Medical Laboratory Scientist

Salary for medical laboratory scientists varies based upon experience and geographic location. The mean annual salary earned by medical laboratory scientists as of May 2016 was \$61,070, according to the U.S. Bureau of Labor Statistics (BLS) (<http://www.bls.gov/oes/current/oes292011.htm>). Hospital clinical laboratories are the largest employer of medical laboratory scientists; those working in this setting earned an average salary of \$63,060 annually in 2016. The BLS also states that the projected job growth rate for medical laboratory scientists and technicians (the associate of arts level of the profession) is 22% for the years 2012-2022.

National Certification and State Licensure

Employers, especially in hospital clinical laboratories, prefer to hire nationally certified medical laboratory scientists. Certification is available from the Board of Certification of the American Society for Clinical Pathology (www.ascp.org) as an MLS(ASCP). Requirements for certification include completing a bachelor's degree usually in clinical or life sciences such as biology, chemistry or microbiology as well as the professional program offered through a MLS program accredited by the National Accrediting Agency for Clinical Laboratory Science (www.naacls.org). A NAACLS accredited professional program prepares graduates to work in all areas of the clinical laboratory profession and includes lecture and laboratory courses as well as clinical practicum coursework usually in a hospital setting. To practice in some states medical laboratory scientists must also be licensed; licensure requirements vary by state but usually include completing the baccalaureate degree and professional program and then passing a state licensure exam. Some states accept the national certification exam results in lieu of the state exam.

References

American Society for Clinical Pathology; www.ascp.org

Bureau of Laboratory Statistics; <http://www.bls.gov/oes/current/oes292011.htm>

National Accrediting Agency for Clinical Laboratory Science; www.naacls.org

Requirements Specific to CCMLS

The Colorado Center for Medical Laboratory Science (CCMLS), a program of Metropolitan State University is the largest and oldest program that offers post-baccalaureate certification in medical laboratory science in the state of Colorado. CCMLS has been educating medical laboratory scientists for over 50 years and has contributed significantly to the clinical laboratory healthcare workforce throughout Colorado.

Program Contact: Individuals interested in applying to CCMLS should visit the program's website at:

www.msudenver.edu/ccmls

A CCMLS admission coordinator can be reached at: 720-449-7454 or via e-mail at: medlabed@msudenver.edu

All admission questions will be answered within 3 business days of inquiry when the department is on non-holiday hours.

Length of the Program and Application Timeline: the 1 year professional program is 48 weeks in length and starts each year in June. The admission process is competitive and applicants are encouraged to apply early in the review cycle which starts a year in advance of the program start date. Applications are accepted year round and the acceptance dates for positions in the program run from January through April for the June start date.

Minimum Admission Requirements: For the most current admission requirements see the CCMLS website under "Admissions" "Minimum Application Requirements"