

Laboratory

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A. Occupations

1) Medical Laboratory Technologist

- Regulated health profession in Ontario - College of Medical Laboratory Technologists of Ontario www.cmlto.com
- The College of Medical Laboratory Technologists of Ontario regulates MLTs in the areas of:
 - General Medical Laboratory Science (Histology, Hematology, Transfusion Science, Chemistry and Bacteriology)
 - Genetics (Cytogenetics and Molecular Genetics)
 - Cytology

Role

Medical laboratory technologists may specialize in areas such as clinical chemistry, clinical microbiology, hematology, histotechnology, immunohematology and cytotechnology.

Source: <http://www23.hrdc-drhc.gc.ca/2001/e/groups/3211.shtml>

Medical laboratory technologists perform some or all of the following duties:

- Conduct chemical analyses of blood, urine, cerebro-spinal and other body fluids
- Study blood cells and other tissues to determine their relation to various physiological and pathological conditions
- Prepare tissue sections for microscopic examinations using techniques to demonstrate special cellular tissue elements or other characteristics
- Establish procedures for the analysis of specimens and for medical laboratory experiments
- Perform blood group, type and compatibility tests for transfusion purposes
- May supervise and train other medical laboratory technologists and other medical laboratory workers
- May perform the duties of a pathologist's assistant in some hospitals

Educational Requirements

Source: http://www.hamiltonhealthsciences.ca/careers/upload/file_collection/Healthcare_factsheets_2003.pdf

- Obtain either a Bachelor's degree (BSc) in science, medical laboratory science or health science OR complete a 2-3 year college program in medical laboratory technology
- You also require a period of supervised practical training
- To obtain certification, graduates must pass a national written examination with the Canadian Society for Medical Laboratory Science
- As well, you must be licensed with the Ontario regulatory body - College of Medical Laboratory Technologists of Ontario

- The following schools in Ontario offer degree or diploma programs in the medical laboratory science or health science: Michener Institute, St. Lawrence, St. Claire colleges, and University of Windsor.

Skills/Qualities

Technical

- Basic computer skills: word processing, internet, email, presentation programs, spreadsheet manipulation and database knowledge
- Specialized software: statistical analysis
- Ability to operate and maintain sophisticated medical laboratory equipment
- Enter data and extract results

Communication

- Excellent oral and written communication skills

Other

- Manual dexterity to be able to make small movements or adjustments easily for lab work
- Stamina for standing for long periods of time
- Visual color discrimination and form perception for looking through microscopes or at computer screens to analyze samples - small differences or changes in test substances or numerical readouts can be crucial for patient care
- Detail-orientation to find changes in samples and data
- Analysis skills to quickly assess a situation
- Critical thinking skills for analyzing samples and developing conclusions about the data
- Good analytical judgment and the ability to work under pressure
- Excellent problem solving skills
- Statistical skills
- Able to work independently
- Multidisciplinary teamwork skills
- Excellent organizational skills
- Critical thinking skills
- Accuracy, patience
- Good interpersonal skills
- Aptitude for mathematics and science
- Ability to do detailed work and maintain a high level of accuracy
- Enjoy taking a methodical approach to their work, analyzing results and establishing procedures, and using computers and specialized instruments for accurate and precise testing
- Practice safety precautions when working with infectious samples or hazardous chemicals

Typical Employers

- In smaller clinical laboratories, medical laboratory technologists perform general duties in all sections of the laboratory. In most large labs, they may perform general duties or specialize in a particular area
- MLTs work in hospitals and private medical laboratories, health clinics, public health departments, research, government, industrial or agricultural labs, universities, private clinics, physicians and health practitioners' offices, veterinary research clinics, pharmaceutical laboratories

Source: <http://www.edu.gov.on.ca/eng/general/postsec/openingdoors/occupations/medlabtec.html#c>

- Medical laboratory technologists typically work for clinics, medical laboratories, and hospitals in Ontario. Some are employed in universities and government laboratories.

- Two industry sectors employ almost all Medical Laboratory Technologists in Ontario: Hospitals employ 57%, and Ambulatory Health Care services employ 27%.

Average Hourly Wage

Source:

http://www.labourmarketinformation.ca/standard.asp?ppid=81&lcode=E&prov=35&gaid=9219&occ=3211&search_key=1&search_type=&employer_potential=&new_search=

\$24.62 (average) \$33.23(high) \$14.62(low)

Salaries vary according to such factors such as experience, level of responsibility, seniority, size of company, size of city, etc.

2) Medical Laboratory Technician/Assistant

- Not a regulated health profession in Ontario
- The Ontario Society of Medical Technologists (OSMT) <http://www.osmt.org> certification may be required.

Role

Source: <http://jobfutures.ca/noc/3212p1.shtml>

- Collect blood or other samples and receive tissue samples from patients
- Log patient samples and prepare them for testing
- Set up medical laboratory equipment
- Conduct routine laboratory tests and sample analyses
- Clean and maintain medical laboratory and medical laboratory equipment

Educational Requirements

- One-year college certificate program (i.e., St. Lawrence, Centennial and St. Clair)
- In addition to these programs there are private colleges offering programs
- As the position of medical laboratory assistant is not regulated, in some cases a candidate without prior training, may be hired and receive on-the-job training, particularly in private settings

Skills/Qualities

Technical

- Basic computer skills: word processing, internet, email, presentation programs, spreadsheet manipulation and database knowledge
- Specialized software: statistical analysis
- Ability to operate and maintain sophisticated medical laboratory equipment
- Enter data and extract results

Communication

- Very good oral and written communication skills

Other

- Manual dexterity to be able to make small movements or adjustments easily for lab work
- Stamina for standing for long periods of time
- Detail-orientation to find changes in samples and data
- Ability to maintain a high level of accuracy
- Ability to work with minimal supervision
- Ability to multi-task and to work under pressure
- Excellent problem solving skills

- Able to work independently
- Teamwork skills
- Excellent organizational skills
- Accuracy, patience
- Good interpersonal skills
- Practice safety precautions when working with infectious samples or hazardous chemicals

Typical Employers

Medical laboratory technicians work in medical laboratories in hospitals, clinics, research institutes, universities, and government research laboratories.

Average Hourly Wage

\$18.57/ hour (average)

Salaries vary according to such factors such as experience, level of responsibility, seniority, size of company, size of city, etc.

3) Cytotechnologist

- A Cytotechnologist is considered a Medical Laboratory Technologist and so is a regulated health profession in Ontario - College of Medical Laboratory Technologists of Ontario (CMLTO) www.cmlto.com

Role

Source: http://www.michener.ca/ce/postdiploma/diagnostic_cytology.php#what

- Cytotechnologists evaluate human cells to screen them for early signs of cancer, precancerous changes or other diseases. Working under the guidance of a Pathologist, they examine samples under a microscope, studying the slides for minute abnormalities in a cell's shape, color or size that can be evidence of the presence of disease.

Educational Requirements

Source: http://www.michener.ca/ce/postdiploma/diagnostic_cytology.php

- Cytotechnologists must complete four years of formal education leading to a Bachelor of Science or medical laboratory science, followed by a clinical cytotechnology program, which normally lasts, from one to two years
- Michener Institute offers a Diagnostic Cytology post diploma program

Skills/Qualities

- Same as for Medical Laboratory Technologists above

Typical Employers

- Cytotechnologists work in medical laboratories in hospitals, clinics, research institutes, universities, and government research laboratories.

Average Hourly Wage

\$24.62 (average) \$33.23(high) \$14.62(low)

Salaries vary according to such factors such as experience, level of responsibility, seniority, size of company, size of city, etc.

4) Genetics Technologist

- Genetics Technologist is considered a Medical Laboratory Technologist and so is a regulated health profession in Ontario - College of Medical Laboratory Technologists of Ontario (CMLTO) www.cmlto.com

Role

Source: http://www.michener.ca/ce/postdiploma/genetics_technology.php

- The Genetics Technologist is an integral member of the health care team and is responsible for processing specimens for genetic analysis in both cytogenetics and molecular genetics. They analyze chromosomes, DNA and RNA for genetic abnormalities and help diagnose, treat and monitor genetic diseases.

Educational Requirements

- Genetics Technologists require a Bachelor of Science or medical laboratory science degree and one-two year college program in genetics technology.
- Michener Institute offers Genetics Technology Advance Diploma program http://www.michener.ca/ce/postdiploma/genetics_technology.php

Skills/Qualities

Same as for Medical Laboratory Technologists above

Typical Employers

- Genetic technologists are employed in research and clinical laboratories in colleges and universities, medical schools, commercial laboratories and private industry.

Average Hourly Wage

\$24.62 (average) \$33.23 (high) \$14.62 (low)

Salaries vary according to such factors such as experience, level of responsibility, seniority, size of company, size of city, etc.

8) Other Positions in the Field of Diagnostics/Therapeutics

Pathologists' Assistant is a non-regulated position. Pathologists' assistants assist at autopsies and examinations of surgical specimens or perform autopsies under a pathologist's supervision. They may dissect, weigh, and photograph organs and specimens for chemical analysis and record findings.

To be a pathologists' assistant, you must have either a Bachelor of Science degree or training and experience as a registered nurse, registered nursing assistant or medical laboratory technologist. You must also have specialized, on-the-job training.

Source: <http://jobfutures.ca/noc/3211p2.shtml>

Morgue Attendants lay out instruments, transfer bodies, and assist pathologists at autopsies. To be a morgue attendant, a person requires on-the-job training.

Forensic Scientists are routinely involved in investigations of crimes against persons and property, such as homicides, assaults, arson, impaired driving and fraud. Forensic scientists also appear regularly in criminal and civil proceedings and coroner's inquests to give opinion evidence relating to forensic examinations. Source: <http://www.csfs.ca/>

B) Labour Market Prospects

Medical Laboratory Technologists

Source: <http://www.edu.gov.on.ca/eng/general/postsec/openingdoors/occupations/medlabtec.html#g>

Employment for this occupation is expected to grow about as fast as the average for all occupations between 2002 and 2007. The volume of laboratory tests likely will increase in response to population growth and population aging and the development of new types of tests and technology. As well, new diagnostic techniques, such as DNA testing, should increase the need for Medical Technologists.

On the other hand, automation of diagnostic and treatment procedures may have an offsetting effect. For example, the preparation of specimens in automated laboratories is increasingly being done with computerized systems and robotics. This trend could moderate the demand for Laboratory Technologists.

In the future, job openings should result from the need to replace workers who retire. According to the Canadian Society for Medical Laboratory Science, approximately half of Canada's Medical Laboratory Technologists will be eligible to retire within the next 10 years.

Source: http://www.hamiltonhealthsciences.ca/careers/upload/file_collection/Healthcare_factsheets_2003.pdf

Due to a high retirement rate in Hamilton, many jobs will open up to Medical Laboratory Technologists (MLT). As well, employment opportunities will increase as the volume of laboratory tests increases with population growth and as new types of tests, such as DNA testing, develop. The rapid development of new medical technologies means that MLTs must continually update their skills. MLTs will find many opportunities in hospitals, private health practices and medical laboratories. However, restructuring of the health care system may limit job opportunities for MLTs due to increased use of automated equipment.

Source: <http://www1.on.hrdc-drhc.gc.ca/ojf/ojf.jsp?lang=e§ion=Profile&noc=3211>

Employment for this occupation is expected to grow about as fast as the average for all occupations through the year 2007 as the volume of laboratory tests increases with population growth and the development of new types of tests. In addition, many job openings will result from the need to replace workers who retire. According to the Canadian Society for Medical Laboratory Science, approximately half of Canada's medical laboratory technologists will be eligible to retire within the next ten years. As well, more powerful new diagnostic techniques, such as DNA testing, will increase the demand for medical technologists. On the other hand, automation of diagnostic and treatment procedures may have an offsetting effect. In addition, the preparation of specimens in high technology laboratories is increasingly being done with computerized systems and robotics, which may moderate the demand for laboratory technologists.

The rapid development of new medical technologies means that medical technologists must continually update their skills.

Medical Laboratory Technicians

Source: <http://www1.on.hrdc-drhc.gc.ca/ojf/ojf.jsp?lang=e§ion=Profile&noc=3212>

Employment for this occupation is expected to grow more slowly than the average for all occupations through the year 2007. While there have been major breakthroughs in diagnostic techniques over the past several decades, the increased use of portable laboratory instruments and testing kits, combined with the growth of shared laboratory services among health care providers, will moderate future employment growth.

Workers in this occupation will need to keep up with the latest medical technologies. Private clinics/laboratories will provide the best employment prospects.

C) ITPs in the Field

The most important laboratory skills are not working with equipment but recognizing abnormalities in a cell's shape, color or size that can be evidence of the presence of disease. Anatomical pathologists, general pathologists, hematopathologists, laboratory physicians, medical biochemists and medical microbiologists are most prepared to laboratory technologist and pathology assistant careers. Most of them have skills and experience in preparing tissue sections for microscopic examinations, evaluating human cells to screen them for early signs of cancer, precancerous changes or other diseases and conducting chemical analyses of blood, urine, cerebro-spinal and other body fluids.

All ITPs have some laboratory experience from medical school, residency training, research fellowships etc.

D) Links

Educational Institutions

- Medical Laboratory Science Diploma Program, Michener Institute
<http://www.michener.ca/ft/medlab.php>
- Medical Laboratory Technician, St. Lawrence College
<http://www.sl.on.ca/fulltime/FT0734K.HTM>
- Diagnostic Cytology program, Michener Institute
http://www.michener.ca/ce/postdiploma/diagnostic_cytology.php
- Genetics Technology Advance Diploma program, Michener Institute
http://www.michener.ca/ce/postdiploma/genetics_technology.php

Professional Organizations

Medical Laboratory Technologist

- College of Medical Laboratory Technologists of Ontario (CMLTO) www.cmlto.com
- The Canadian Society for Medical Laboratory Science (CSMLS) <http://www.csmls.org/>
- Ontario Society of Medical Technologists <http://www.osmt.org>
- Canadian Society of Forensic Scientists <http://www.csfs.ca/>

Related Web Sites

- Ontario Job Futures
<http://www1.on.hrdc-drhc.gc.ca/ojf/ojf.jsp?lang=e§ion=Find&noc=0000#skill3>
- Ministry of Training, Colleges and Universities
<http://www.edu.gov.on.ca/eng/general/postsec/univers.html>
- Job Futures.ca <http://jobfutures.ca/noc/3211p2.shtml>