Diagnostic Detectives: Medical Laboratory Professionals

A Closer Look at Careers in Histology
When your doctor orders “lab tests” do you know.....

- Who prepares, embeds, cuts, and stains tissue samples and biopsies for diagnosis?

  Histotechnicians & Histotechnologists
Medical Laboratory Facts

- 80% of all physician decisions are based on laboratory test results produced by the laboratory team.
Medical Laboratory Facts

- A behind-the-scenes, highly skilled team of pathologists, specialists, technologists and technicians who work together to provide valuable data needed to:
  - determine the presence or absence of disease
  - evaluate the effectiveness of treatment
  - maintain health
- Also called Clinical Pathology and Anatomic Pathology.
Anatomic Pathology

- The analysis of a variety of **body tissues and organs** to detect the presence or absence of disease is performed in the medical laboratory commonly known as Anatomic Pathology.
Careers in the Anatomic Pathology Laboratory

- Laboratory Assistant
- Autopsy Technician
- Histotechnician
- Grossing Technician
- Histotechnologist
- Cytotechnologist
- Pathologists’ Assistant
- Supervisor/Manager/Educator
- Pathologist (MD or DO)
Job Opportunities

- Hospital laboratories
- Reference laboratories
- Physician office laboratories
- State Department of Health
- Fertility clinics
- University/Research Facilities
- Pharmaceutical / Biotech industry
- Veterinary laboratories
- Forensic laboratories
Daily Routine

- **Histotechnician & Histotechnologist**
  - Frozen Sections
  - Immunofluorescence
  - Embedding
  - Microtomy
  - Routine Staining
  - Special Stains
  - Immunohistochemistry Methods
  - Electron Microscopy
  - Molecular Pathology
  - Muscle Enzyme Histochemistry
Photo Tour
of
Anatomic Pathology
Specimen Processing

The **Lab Assistant** enters the patient information into the computer.
The **Pathologists’ Assistant** describes and dissects tissue for analysis.
Frozen Sections

The **Histologist** freezes, sections, and stains tissues from patients in the operating room, so pathologists can make an immediate diagnosis.
Histology Laboratory

The **Histologist** embeds patient tissue in a paraffin wax block that has been processed through various chemicals...
Histology Lab ...

... next they cut paper-thin sections of the tissue using a microtome ...
Histology Lab ...

... and place these sections on a microscope slide for drying and fixing ...
Histology Lab ...

... and then stain the paper-thin sections with the basic stain of hematoxylin and eosin. This is called an “H&E”. The pathologist may then request one of over 75 special stains, to highlight different tissue components (nuclei, muscle, etc.) or microorganisms (bacteria, fungus).
Quality Assurance

- To ensure accurate staining, histologists view slides before sending them to the Pathologist.
Pathology

The stained slides are then read under a microscope by a pathologist to look for abnormalities.
Histologists apply special antibodies to tissue slides and then read them microscopically to determine if a patient is rejecting a transplant, to determine the exact type of cancer, or other disease states.
Electron Microscopy

- **Histologists** magnify tissues up to 250,000 times, to look inside cells and tissues for abnormalities in the mitochondria and other cell structures.
Education, Training, & Certification
Histotechnician

- Associate Degree
- Minimum 12 semester hours chemistry and biology
- Clinical internship in NAACLS accredited Histotechnician program
- National certification: HT, QIHC
Histotechnologist

- Baccalaureate degree
- Minimum 30 semester hours chemistry and biology
- Clinical internship in NAACLS accredited Histotechnology program
- National certification: HTL, QIHC
Certifying Agencies

- American Society for Clinical Pathology - Board of Certification (ASCP-BOC)
  Box 12277
  Chicago, IL  60612-0277
  www.ascp.org/boc
Summary

If you...

- are fascinated by science
- like to solve problems
- like challenge and responsibility
- are accurate and reliable
- work well under pressure
- communicate well and
- set high standards for yourself ….
then...consider a career in Histology!!