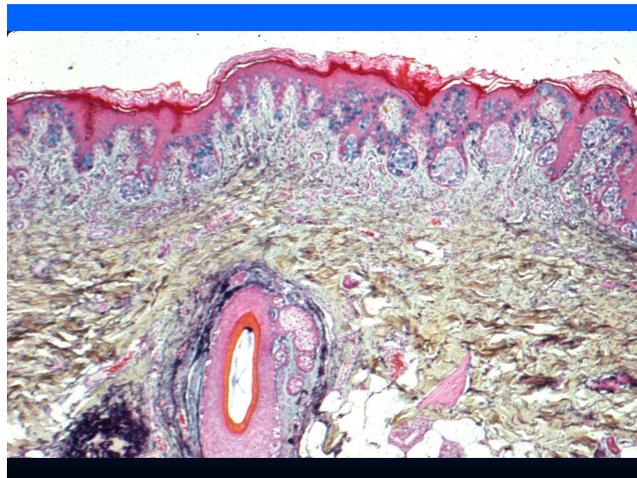


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Diagnostic Detectives:  
Medical Laboratory Professionals

**A Closer Look at  
Careers in Histology**



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# When your doctor orders “lab tests” do you know.....

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

**Histotechnicians & Histotechnologists**

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# Medical Laboratory Facts

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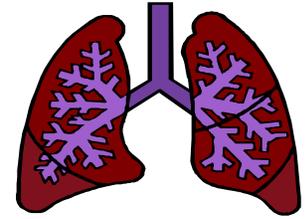
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# Medical Laboratory Facts

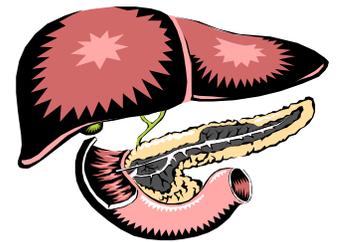
- A behind-the-scenes, highly skilled team of pathologists, specialists, technologists and technicians who work together to provide valuable data needed to:
    - determine the presence or absence of disease
    - evaluate the effectiveness of treatment
    - maintain health
  - Also called Clinical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

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# 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.



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# Careers in the Anatomic Pathology Laboratory

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

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# 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
-

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# Daily Routine

- **Histotechnician & Histotechnologist**
    - Frozen Sections
    - Immunofluorescence
    - Embedding
    - Microtomy
    - Routine Staining
    - Special Stains
    - Immunohistochemistry Methods
    - Electron Microscopy
    - Molecular Pathology
    - Muscle Enzyme Histochemistry
-

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Photo Tour  
of  
Anatomic Pathology

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# Specimen Processing



## The Lab

**Assistant** enters the patient information into the computer.



The **Pathologists'** **Assistant** describes and dissects tissue for analysis.



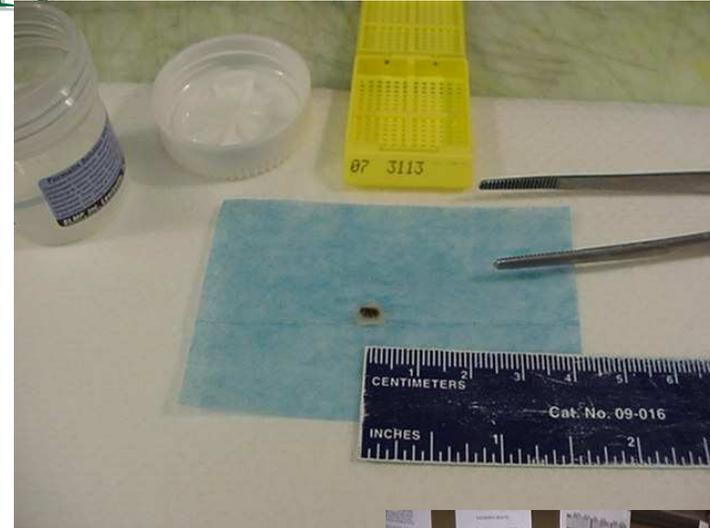
# Frozen Sections

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



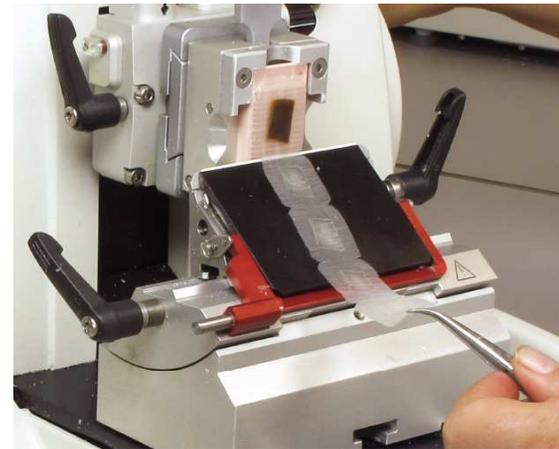
# Histology Laboratory

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



# Histology Lab ...

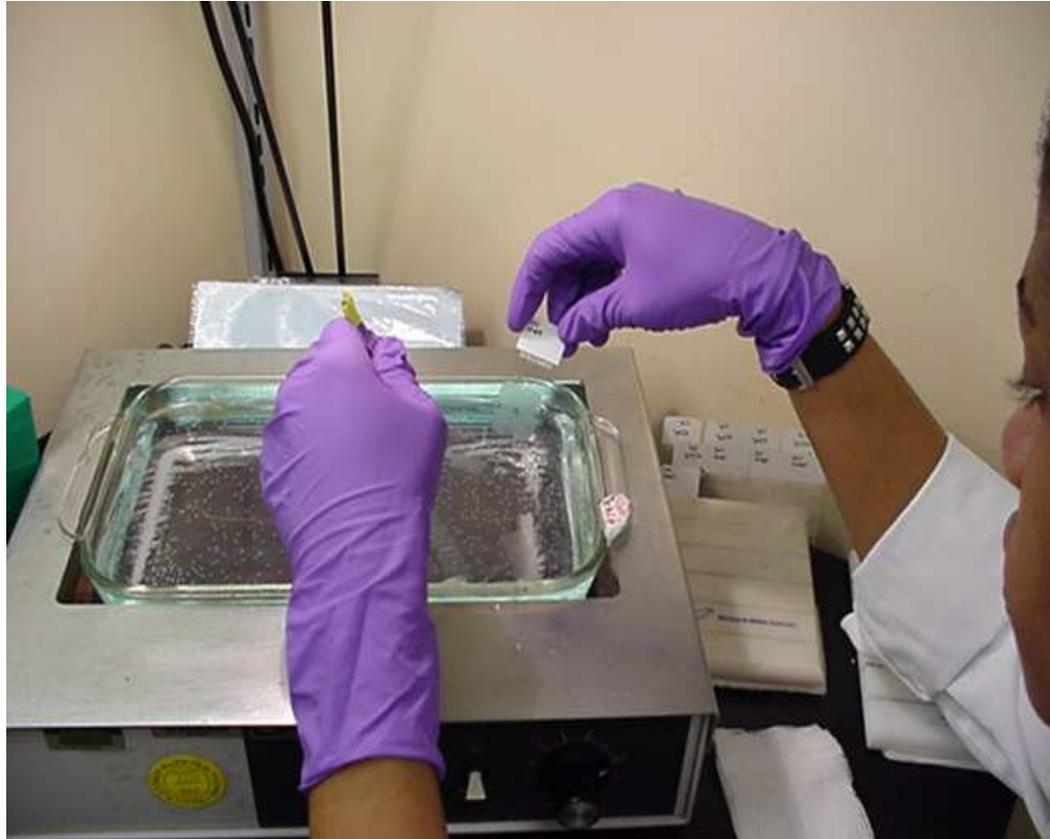
... next they  
cut paper-  
thin sections  
of the tissue using  
a microtome ...



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# Histology Lab ...

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



# Histology Lab ...

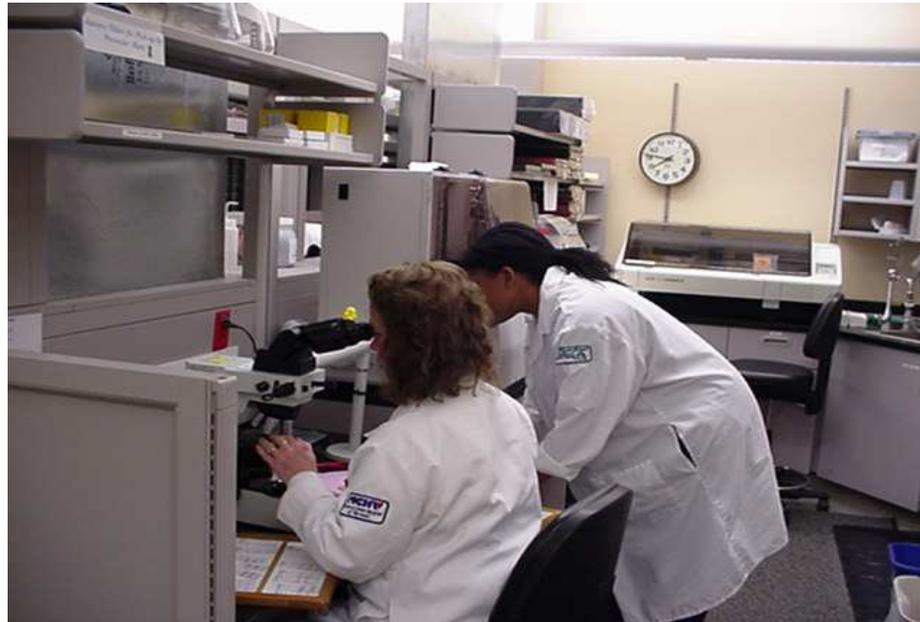
... and then stain the paper-thin sections with the basic stain of hematoxylin and eosin. This is called an “H&E”. The pathologist may then request one of over 75 special stains, to highlight different tissue components (nuclei, muscle, etc.) or microorganisms (bacteria, fungus).



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# Quality Assurance

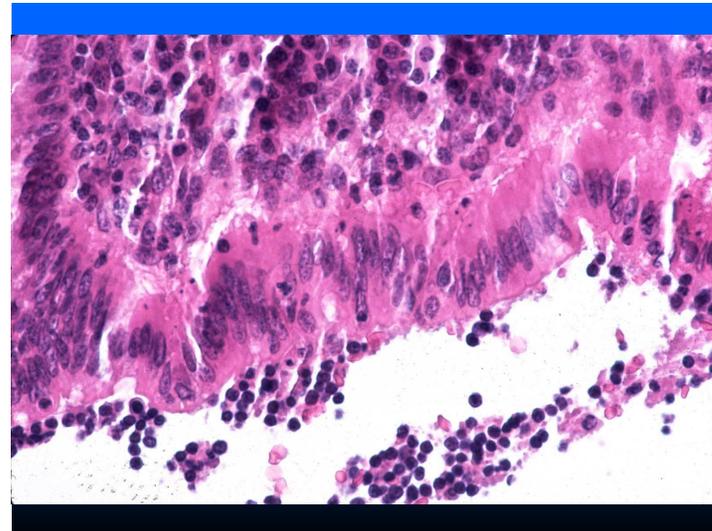
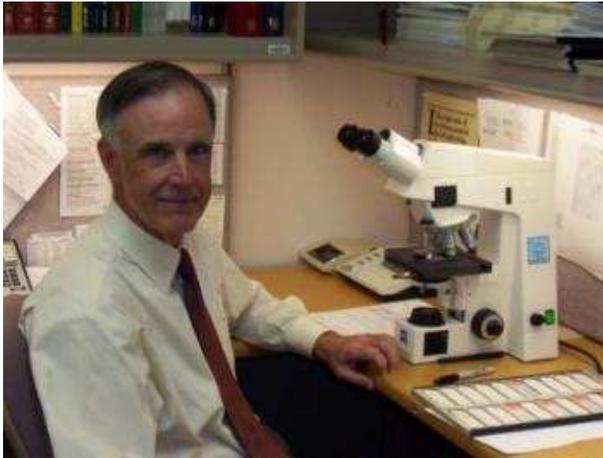
- To ensure accurate staining, histologists view slides before sending them to the Pathologist.



# Pathology

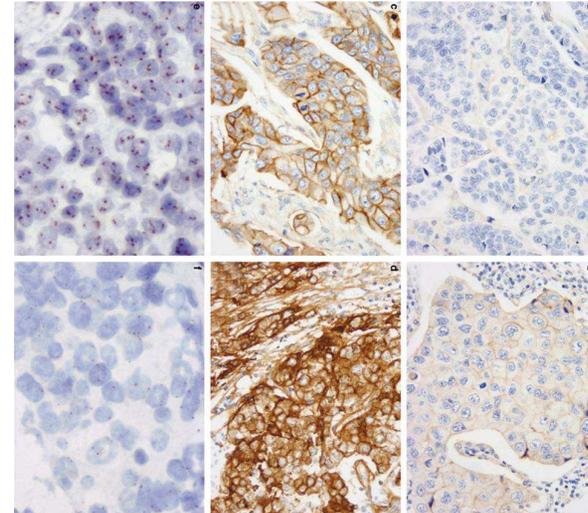


The stained slides are then read under a microscope by a pathologist to look for abnormalities.



# Immunohistochemistry Laboratory

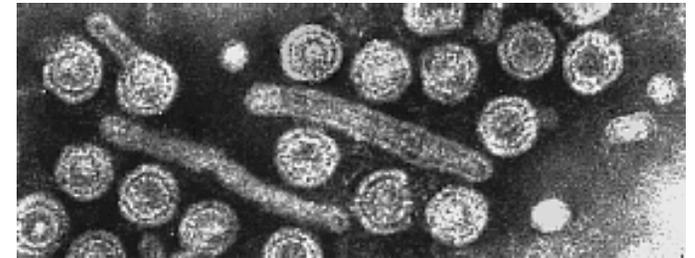
- **Histologists** apply special antibodies to tissue slides and then read them microscopically to determine if a patient is rejecting a transplant, to determine the exact type of cancer, or other disease states.



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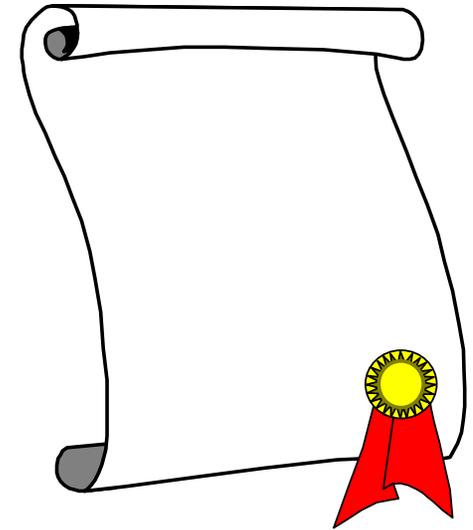
# Electron Microscopy

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



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Education ,  
Training,  
&  
Certification



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# Histotechnician

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

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# Histotechnologist

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

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# Certifying Agencies

- American Society for Clinical Pathology -  
Board of Certification (ASCP-BOC)

Box 12277

Chicago, IL 60612-0277

[www.ascp.org/boc](http://www.ascp.org/boc)

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# 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 .....



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# Summary

then....consider a career in  
**Histology!!**

