

## Procedures Involved in Anatomical Pathology

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### DESCRIPTION

The diagnosis of disease based on the macroscopic, microscopic, biochemical, immunologic, and molecular examination of organs and tissues is the focus of the medical profession known as anatomical pathology. Surgical pathology has greatly changed over the past century, going from a technique that historically involved the study of entire bodies (autopsies) to one that is now more focused on the diagnosis and prognosis of cancer to help oncologists make treatment decisions. One of the two subspecialties of pathology, the other being clinical pathology, which deals with the diagnosis of disease through the laboratory examination of body fluids or tissues.

Pathologists frequently combine anatomical pathology with clinical pathology, a discipline known as general pathology. In veterinary pathology, there are related specialties. Anatomic pathology deals with how a doctor skilled in pathological diagnosis processes, examines, and diagnoses surgical specimens. The clinical pathology department includes blood cell counts, coagulation tests, urinalyses, blood glucose level estimations, and throat cultures, is clinical pathology. Chemistry, hematology, microbiology, immunology, urinalysis, and blood bank are some of its subfields.

Surgical pathology (including breast, gynecological, endocrine, gastrointestinal, genitourinary, soft tissue, head and neck, and dermatopathology), neuropathology, hematopathology, cytopathology, and forensic pathology are the four primary subspecialties of anatomical pathology.

Some of the procedures involved in the anatomical pathology are as follows:

- Gross examination
- Histopathology
- Immunohistochemistry
- hybridization
- Cytopathology
- Electron microscopy
- Tissue cytogenetics
- Flow immunophenotyping

### Gross examination

The pathologist chooses the regions that will undergo histopathology processing at this stage. A stereo microscope or magnifying glass can occasionally be helpful for the eye, especially when examining parasitic creatures.

### Histopathology

A branch of histology that involves the microscopic inspection of stained tissue sections is referred to Histopathology. Hematoxylin and eosin are the two common stains, however there are numerous more. The fundamental skill of anatomic pathology is the use of hematoxylin and eosin-stained slides to make precise diagnoses based on morphology. Histochemistry is the science of staining tissues.

### Immunohistochemistry

Using antibodies to identify the existence, concentration, and location of particular proteins is known as immunohistochemistry. This method is essential for identifying diseases with comparable morphologies and for describing the genetic characteristics of certain tumors.

### In situ hybridization

Using this method, specific DNA and RNA molecules can be located on sections. The method is known as FISH when the probe is dyed fluorescently. This method is used diagnostically in the detection of abnormal genes, identification of viral infections, tumor phenotyping, etc.

### Cytopathology

Extraction and examination of individual cells from tissues to determine the cause of particular disease is referred to cytopathology. Sample cells are taken by using methods such as bronchoscopy, cystoscopy. It can be identified by staining on the glass slides. It mainly helps in diagnosis of cancer cells.

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### **Electron microscopy**

This technique enables the imaging of organelles within cells by examining tissue under a much higher magnification electron microscope. Although immunohistochemistry has mostly replaced it, also frequently used for a few tasks, such as the diagnosis of renal illness and the detection of immotile cilia syndrome.

### **Tissue cytogenetics**

It refers to the examination of the tissue cells to check for the changes in the chromosomes. Mainly used for the diagnosis of

the chromosomal disorders. Genetic disorders such as chromosomal translocation can be identified.

### **Flow immunophenotyping**

Immunophenotyping by flow cytometry is the process of analyzing the presence or absence of white blood cell marker called antigens. It is very useful to diagnose the different types of leukemia and lymphoma. Also used for the diagnosis of hematologic neoplasms.