

# An Overview on Pathology

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## Commentary

Pathology is a field of medicine that primarily deals with the causes, origins and properties of illnesses. This includes examining tissues, organs, fluids, and autopsy to examine and diagnose the disease. Currently, pathology can be divided into eight major areas, depending on the type of method used or the type of disease studied. These various areas are discussed below.

### General pathology

General pathology describes a complex and wide range of disciplines, including studying the mechanisms behind cell and tissue damage and understanding how the body reacts to and repairs damage. Examples of areas that can be examined include necrosis, neoplasms, wound healing, inflammation, and adaptation to cell damage. A complete understanding of these areas applies to the diagnosis of illness. This field includes the field of pathology, but at a low level of expertise. Those who work in general pathology are trained in the fields of laboratory analysis such as hematology and clinical chemistry. However, it is not as detailed as someone who specializes in one of these areas.

### Anatomical pathology

This area deals with the study and diagnosis of diseases by microscopic analysis of samples from body fluids, tissues, organs and possibly the whole body, or by necropsy. Factors that can be studied include the appearance, anatomical composition, and intracellular chemical characteristics of the cell. This area can be divided into several areas, examples of which are shown below:

**Histology:** Samples of body tissues and organs are prepared and examined to identify and diagnose the disease. Tissue structure is observed at the microscopic level and the relationship between different cells and tissue types is being studied.

**Cytopathology:** Examining fluids and tissues at the cellular level to detect and diagnose disease and assist in treatment decisions. Cytologists study how cells look, form, and function.

**Forensic pathology:** Forensic Pathology is an autopsy study to determine the cause of death. First, evaluate the appearance to check for signs of scratches and the risk of choking. Surgical intervention is then initiated and the internal organs are examined to determine if there is a trauma and it is related to the trauma.

**Clinical pathology:** Clinical pathology, also known as laboratory medicine, analyzes blood, urine, and tissue samples to study and diagnose disease. Examples of information that a clinical pathology laboratory can provide include blood cell count, coagulation, and electrolyte results. Clinical

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pathologists are usually trained in microbiology, hematology, or blood banks, but do not have the same level of expertise as experts in these areas. Clinical pathologists may encounter problems that require specific expertise, at which point they should consult with a more professional colleague. Clinical pathologists are not involved in anatomical pathology, but play a role similar to general pathologists.

### Chemical pathology or biochemistry

A biochemist or chemopathologist studies all aspects of the disease and identifies changes in various substances such as proteins, hormones, and electrolytes in blood and body fluids. Because these changes may provide clues and clues about the disease or risk of illness. For example, biochemists can assess cholesterol and triglyceride levels to determine the risk of heart disease. You can also search for and measure tumor markers, vitamins, toxins, drugs, and recreational drugs.

### Genetics

There are three main areas of genetics, including:

- **Cytogenetics:** This is an analysis of chromosomal abnormalities at the microscopic level.
- **Biochemical genetics:** Search for specific disease markers using biochemical techniques.
- **Molecular Genetics:** Gene mutations are sought and analyzed with the help of DNA technology.

Genetics detects genetic diseases by examining DNA from chromosomes, biochemical markers, body fluids and tissues.

### Hematology

This area deals with a variety of blood-affecting illnesses, including bleeding disorders, coagulopathy, and anemia. Another area of hematology is transfusion medicine. This includes blood grouping, crossmatching for compatibility, and management of large blood products. An example of a test that a hematologist may perform is a blood clotting test to see if a patient needs to increase or decrease his or her dose of warfarin.

### Immunology

Immunologists perform immune function tests to determine if patients are allergic and, if so, what they are allergic to. Many diseases also result from the immune system reacting abnormally to healthy cells and tissues and launching an immune attack against them. This is called an autoimmune disease. There are many immunological tests that can detect markers of autoimmune diseases such as rheumatoid arthritis, diabetes, and lupus [1-5].

### Microbiology

Medical microbiology is also involved in identifying new types of microorganisms. Other areas of microbiology include controlling the development of infections and studying the problems that result from bacterial resistance to antibiotics. One of the main responsibilities of microbiologists is to ensure that antibiotics are prescribed and used properly.

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