

Current Trends in Pathology

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EDITORIAL NOTE

Pathology groups face a number of challenging pathology trends in the era of radical healthcare reform. One of the primary trends is that like clinical laboratories, these businesses are carrying significant and potentially unsustainable levels. Medical laboratories and pathology groups are also facing enormous levels of change in their clinical, regulatory and financial environments.

Other pathology trends include:

- Growing emphasis on the continuum of care
- Increasing patient interaction directly with the lab organization
- Mounting demands of interoperability across a proliferation of disparate information technology systems to achieve meaningful use
- Innovations in Cancer Research and Oncology
- Cancer Vaccines
- Cancer Immunology
- Translational Oncology
- Integrative cancer therapeutics
- Turning Cold Tumours Hot by Blocking TGF- β
- Nano informatics Revolutionizes Personalized Cancer Therapy
- Epigenetic Priming in Cancer Initiation
- Clinical Trials in oncology
- Molecular pathology of emerging coronavirus infections.

Pathology is the medical specialty concerned with the study of the nature and causes of diseases. It deals with the diagnosis and management of disease by use of every component of laboratory medicine and every diagnostic technique, including examination of the patient. There are three main subtypes of Pathology: Anatomical Pathology, Clinical Pathology, and Molecular Pathology. These subtypes can be broken down into even more specific categories; pathology is a diverse field because so many different diseases and ways of studying diseases exist.

Anatomical Pathology

Anatomical pathology is a study that is concerned with the diagnosis of disease based on the microscopic, macroscopic, molecular,

and immunologic and biochemical examination of organs and tissues. It also includes examination of the chemical properties of cells, and their immunological markers. This includes Surgical Pathology is the examination of tissues removed during surgery. A common example is the examination of a small piece of tumour tissue to determine whether the tumour is malignant (cancerous) or benign and make a diagnosis. This procedure is called a biopsy. Histopathology is the examination of cells under a microscope which are stained with dye to make them visible or easier to see. Often, antibodies are used to label different parts of the cells with different colours of dye or fluorescence. Cytopathology is the examination of cells from various body sites to determine the cause or the nature of disease.

Clinical Pathology

Clinical pathology deals with the diagnosis of disease through laboratory analysis of body fluids and tissues. Sometimes, the field of Clinical Pathology is also referred to as the field of laboratory medicine as the chemical components of blood are analysed, along with cells and identifying if any microorganisms such as bacteria are present in a sample. This includes Chemical Pathology that involves the study of blood and its immune components like white blood cells. Commonly, it involves the chemical analysis of body fluids, through testing and microscopy. Haematology is also related to the study of blood, but it has more to do with identifying blood diseases specifically than chemical pathology do. Hematologists also study the bone marrow and lymph system, which includes other parts of the hematopoietic system. Immunology, or immunopathology, is the study of immune system disorders. It deals with immune responses to foreign molecules, allergies, immunodeficiency, and organ transplant rejection.

Molecular Pathology

Molecular Pathology is the study of abnormalities of tissues and cells at the molecular level. It is a broad category that is used to refer to the study of disease of any organ or tissue in the body by examining what molecules are present in cells. This consists about both the aspects clinical and anatomical pathology. Some techniques that can be used in molecular pathology include polymerase chain reaction (PCR) to amplify DNA, fluorescence labelling, karyotype imaging of chromosomes, and DNA microarrays (small samples of DNA placed onto biochips).

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Paediatric Pathology

Paediatric Pathology is of pathologists who are specialized in the pathology of the foetus, neonate or child. A perinatal pathologist is concerned with normal foetal development, congenital abnormalities and problems during pregnancy, labour, and early neonatal life. Paediatric Pathology is specific to age rather than specific to organ and helps in investigation of that organ which is specific to the foetus and the placenta. Degenerative diseases are not usual in children but tumours are relatively common, despite the types of tumour are different from those in adults. Paediatrics Pathology involves a complex development ranging from embryos to teenagers, encompassing not on.

Cutaneous Diseases

Dermatopathology is a subspecialty of anatomic pathology that focuses on the skin and its derivatives. There are two paths a physician can take to obtain the specialization. All general pathologists and general dermatologists train in the Pathology of the skin, so the term dermatopathology denotes either a general pathologist or a dermatologist can undergo a 1 to 2 year fellowship in the field of Dermatopathology, either of these who has reached a certainly level of accreditation and experience; in the USA, Dermatopathology must maintain a broad base of knowledge in clinical dermatology, and be familiar with several other specialty areas in Medicine. Dermatologists are able to recognize most skin diseases based on their appearances, behaviour and anatomic distributions. Sometimes, a skin biopsy is taken to be examined under the microscope using usual histological tests as it does not lead to conclusion based on above criteria.