Journal of Pathology and Disease Biology

Extended Abstract
Vol. 3, Iss. 2
2019

Pathology Congress 2017: Digital molecular pathology - Ahmed A Yameny - Society of Pathological Biochemistry and Hematology, Egypt.

Ahmed A Yameny
Society of Pathological Biochemistry and Hematology, Egypt.

The molecular pathology laboratory bids molecular diagnostic tests for a diversity of clinical signs across the health care continuum, counting disease susceptibility, population screening, diagnostic, prognostic, diagnostic tests. Therapeutic decision and disease surveillance. Molecular pathology (MP) is at the heart of modern diagnosis and translational research. It has become evident that, in order to advance the translation of the discovery of biomarkers into diagnostic and therapeutic applications, the aim of this article is to advance PD in digital molecular pathology (DMP), as a function of known biomarkers, in particular mRNA and proteomics, to solve many clinical laboratory requirements, such as screening for cancer, endemic or rare viral infections and biological warfare. We would like to suggest an integrated model of DMP, biomarkers to form two stages of diagnosis and two stages of treatment, the first stage for rapid diagnosis and rapid therapy to stop the spread of the disease, the second stage for complete diagnosis and efficient processing, many biomarkers have been discovered and must therefore be divided into groups. DMP can allow facilities to outsource all or part of demand data such as cloud computing, bioinformatics pipelines, variant management data and knowledge retention. The exchange of electronic molecular data allows laboratories to validate rare diseases using foreign data, to verify the accuracy of their test results against reference

Molecular pathology is an evolving castigation in pathology that emphases on the study and analysis of diseases by examining molecules in organs, tissues or bodily fluids. Molecular pathology segments convinced aspects of preparation with anatomical and clinical pathology, molecular biology, biochemistry, proteomics and genetics, and is sometimes considered to be a "cross" discipline. It is multidisciplinary in nature and focuses primarily on the sub-microscopic aspects of the disease. A key reflection is that an extra precise analysis is possible when the diagnosis is based both on morphological changes in tissues (traditional anatomical pathology) and on molecular tests. It is a methodical castigation which embraces the development of molecular and genetic approaches for the diagnosis and classification of human diseases, the design and validation of predictive biomarkers for the response to treatment and the progression of the disease, the sensitivity of individuals of different genetic make-up to develop disorders.

Molecular pathology is commonly used in the diagnosis of cancer and infectious diseases. The techniques are numerous but include the quantitative polymerase chain reaction (qPCR), multiplex PCR, DNA chips, in situ hybridization, in situ RNA sequencing, DNA sequencing , antibody-based immunofluorescence tissue assays, molecular profiling of pathogens, and analysis of bacterial genes for antimicrobial resistance. The incorporation of "molecular pathology" and "epidemiology" has directed to an interdisciplinary arena, called "molecular pathological epidemiology" (MEP), which represents integrative molecular biology and the science of population health.

The digital microscopy and molecular pathology unit provides high speed full slide scanning services for all clients. We offer fast, high-quality, cost-effective wide field imaging for bright field and fluorescence. Web microscopy is developed by the Lundin group. It is a method of scanning entire microscope samples and viewing and processing virtual slides via a web interface. Johan Lundin's research group has great expertise in analyzing images of digitized images. We can help you analyze your images with different software and digitized slides can also be converted on the Aiforia platform.

Pathology laboratory techniques, such as tissue treatment, paraffin block cutting and chromogenic staining are also available. In addition, we are well

This work is partly presented at 14th Asia Pacific Pathology Congress, November-13-14, 2017 held at Osaka, Japan.

experienced in fluorescent IHC on paraffin sections and in multiplexed fluorescent IHC. Molecular pathology can be broadly defined as the testing of nucleic acids in a clinical setting. The applications of molecular diagnostics cover a range of human disorders, including hereditary, neoplastic and infectious diseases. Molecular analyzes are used for specific purposes, including

- Establishing the basis of an existing disorder (diagnostic testing)
- Defining the existence of a genetic disorder when there are no obvious signs (predictive testing)
- Carrier testing
- Assessing a fetus for abnormalities (prenatal testing)
- Detecting cancer-causing gene mutation
- Selecting pharmacotherapy

The aim of molecular pathology is to elucidate the mechanisms of the disease by identifying molecular and pathological alterations. At the heart of this still evolving discipline is the application of classic and new techniques developed in biochemistry, cell biology, molecular biology, proteomics and genetics to the evaluation of pathological processes. Within the pharmaceutical industry, the efficacy of molecular pathology in addition to histopathology in the development of non-clinical drugs is well recognized. Many molecular pathology techniques rely on the use of labeled antibodies and nucleic acid probes and are either slide-based or fluid-based. In this chapter, we provide a brief description of the basic principles underlying slide-based techniques and highlight their applications in the non-clinical phase of drug development. More specifically, we will discuss non-clinical applications of immunohistochemistry (IHC), immunofluorescence (IF), in situ hybridization (ISH), microRNA analysis (miRNA), digital imaging pathology and toxic genomic evaluation. This chapter will focus less on the technical aspects, which are readily available in many excellent texts and journal reviews, but more on the usefulness of these techniques to facilitate various aspects of the drug discovery and development process.

The basis of IHC is the binding of labeled antibodies to epitopes in tissue sections on a slide and the detection of the stained reaction product or fluorescence in tissue sections. Here we develop the basic methodologies of IHC and IF, the challenges associated with laboratory practice of these techniques, and the usefulness of IHC or IF as a tool to identify and monitor the expression of target epitopes in tissues in non-clinical studies. Submissions of IHC as a device to monitor efficiency, recognize tissue biomarkers (BM), evaluate toxicity, and assess possible unexpected cross-reactivity of bio therapeutics with human and animal tissues will be examined.

Biography: Ahmed A Yameny is the head of the society of pathological biochemistry and hematology. He is the head of the Union medical laboratory in Egypt. He has chaired five international medical laboratory conferences and two international society conferences. He is an expert and consultant in the medical laboratory. He is editor-in-chief of the Journal of Bioscience and Applied Research. He obtained a BSc in biochemistry from the University of Alexandria in Egypt and a BSc in biochemistry / chemistry from the University of Tanta in Egypt.

This work is partly presented at 14th Asia Pacific Pathology Congress, November-13-14, 2017 held at Osaka, Japan.