Linking Digital Pathology with Immunohistochemistry

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Description

Immunohistochemistry was developed to identify the presence of proteins that are associated to a disease, sickness, or biological characteristic, utilising antibodies that bind selectively to the antigens of interest (the proteins), which can then be seen using imaging methods. Imaging tissue-based biomarkers are essential to histopathology's diagnostic and prognostic objectives. They also serve as a basis for therapeutic applications. Proteins are used as biomarkers in most of these cases. Pathologists have reliant on immunohistochemical staining patterns to diagnose and monitor illness and medication efficacy for years.

Researchers across the world are able to access and exchange information thanks to the field of digital pathology, which involves digitalization data acquired from imaging whole slide specimens. Benefits such as full slide imaging and automated analysis and data sharing have made it popular to combine this technique with immunohistochemistry. Thus, human subjectivity is minimized and immunohistochemistry operations are performed more accurately and faster.

Recent researches have shown that integrating immunohistochemistry with digital pathology can help solve major difficulties in the field such as Inter-batch variability. It is described as the possibility of immunohistochemical stained slides to vary significantly across batches, even when laboratories adhere to rigorous procedures. To achieve quantitative and accurate staining characterization over a whole series of slides, it is necessary to limit differences between batches. A significant number of slides must be processed in several batches, which are subject to the detrimental effects of batch variation.

Research claims that immunohistochemical staining inter-batch variability was solved using digital pathology. To avoid data analysis from being impacted by differences that were not easily visible, the team devised a novel approach for distinguishing these variations. They developed a method of picture normalization in order to discover and rectify variations. Normalization procedures have been extensively studied for hematoxylin-eosin (H and E) staining, with findings