



Pannoramic Confocal: the whole slide confocal scanner

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Confocal digital slide scanners have been developed specifically for digitalizing the whole sample surface of the histological glass slide (WSI: Whole Slide Imaging). The system includes an integrated motorized optical mechanism moved by stepper motors making it possible to record images in X-Y and Z directions as well (1, 2). Before the scanning process a slide preview mechanism -based on dark-field illumination- detects the exact area of the tissue on the glass slide. In the next step a focus map is generated based on the focus points which are located randomly on the sample area. Other compensation algorithms are integrated to calibrate the optimal illumination and intensity. The illumination system is triggered directly by the microscope camera, so that the excitation of the sample is limited only to the exposition time. The solid state light engine is able to change the excitation wavelength and to turn the illumination on and off within microseconds. This illumination technique makes it possible to decrease the photo bleaching effect to the minimal level. By using wide spectral ranged – triple band, and quad band – fluorescence filters, it is not necessary to change the filter cube position during multichannel scanning. This results in zero pixel shift images for each channel which is useful for signal colocalisation or FISH quantification (3). Finally, a file is generated in a special digital slide format, containing images of several magnification levels from different depth building up an image pyramid (4).

The confocal WSI technologies make high resolution three-dimensional tissue reconstructions possible. Furthermore, macroscopic and microscopic examinations of the generated virtual tissue structure, as well as volumetric measurement of the tissue are supported (4). In contrast to the conventional confocal systems, the confocal scanner was designed to record the whole sample. Because of its automatized functions this can be a useful tool in research and routine diagnostics. The Pannoramic Confocal is the ultimate choice for high quality fluorescent whole slide imaging.

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