Application of NL5+ by Confocal.nl in fixed or live cell confocal imaging

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Abstract

Phototoxicity is a central problem in the application of confocal microscopy for live cell imaging. To overcome these challenges, Confocal.nl developed the second generation of fast line-scanning confocal technologies. Using a line scanner instead of a point scanner confocal microscope provides high temporal resolution, at the same time reduces the phototoxicity allowing long-term live cell imaging. The new and improved version of this technology, NL5+ enables even faster imaging with cleaner results due to the additional motorized single-band emission filters.

NL5+ proved to be the perfect tool for live cell imaging. The combination of camera-based detection and the slit pinhole design provides improved temporal resolution, higher sensitivity, and an unprecedented signal-to-noise ratio. At the same time, the sectioning capability of a standard confocal microscope is fully maintained. NL5+ has already demonstrated excellent results in studying biological processes such as fast live cell dynamics where high spatial and temporal resolution are required. It provides high-contrast images from thicker specimens such as organoid models and model organisms. By providing very gentle conditions for your live samples, NL5+ is excellent for long-time-lapse experiments and for the imaging of low-signal samples.

Adding NL5+ to any widefield fluorescence microscope (even those from the 20th century) will turn it into an advanced fast-scanning confocal imaging system. Flexibility in the choice of components allows you to build a future-proof, budget-friendly confocal system for live cell imaging. NL5+ is also available as a complete system with options to do confocal, widefield, or brightfield observations. The line-scanning principle is optics-mechanics only, without custom settings or post-processing that make the NL5+ system easy to use, giving consistent results with reduced training time.