

## Plug and play Adaptive Optics system for Quantitative microscopy

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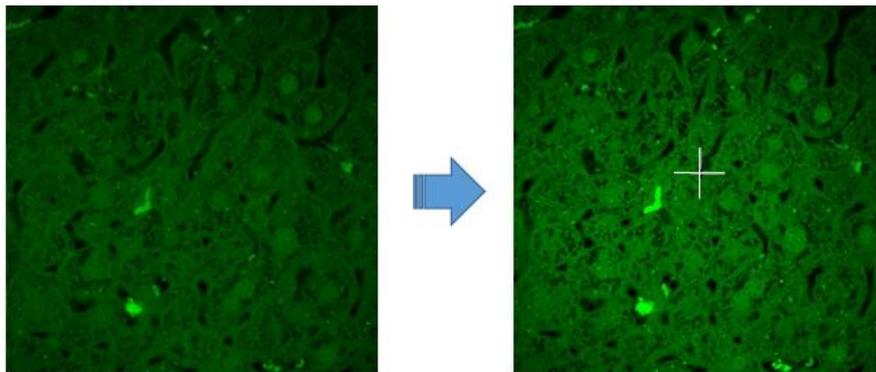
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Despite a huge progress of imaging in microscopy, optical aberrations still limit the performances. This drawback is particularly amplified for region of interest deep inside biological samples. To overpass this limitation and increase optical resolution, adaptive optics (AO) was developed. Nowadays, complex AO systems are used by many different groups to increase performances of multi-photon microscopy, confocal microscopy, super-resolution techniques like PALM and STORM, and others [1]. Ideally, such AO system is easy to integrate and flexible.

For such purpose, we present out recently developed AO system for microscopy, the AOS- $\mu$ , integrated in a commercial Nikon AIR+ confocal microscope. The AO system is designed to match various microscope parameters including different objectives. It makes the integration and use of AO in optical microscopes user-friendly and straightforward.

In order to avoid complex wave-front measurements which identify present aberrations, the AO corrections are attained in a sensor-less adaptive optics approach [2,3]. A desired metric is optimized, e.g. the image brightness, spatial frequency contrast or molecular brightness, while the aberrations are corrected. We will show first results obtained with the mentioned AO system.



Confocal images of a transparent mouse liver (40  $\mu\text{m}$  inside the sample), before and after sensor-less AO correction. Credits: ConfoBright and Laurence Dubreil, Oniris Nantes, France

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