

CONE-MOSAIC IMAGING IN THE LIVING HUMAN EYE WITH A SCANNING LASER OPHTHALMOSCOPE

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1. INTRODUCTION

Images of the living human-eye retina are of major importance in the diagnostics of sight-related diseases. Recently, techniques based on respectively flood illumination and scanning have been improved to allow high-resolution imaging of the photoreceptor cone mosaic [1,2]. This has been accomplished by the incorporation of wavefront-correction techniques that reduce the influence of ocular aberrations to approach diffraction-limited resolution. In this contribution we report on recent results obtained with a scanning laser ophthalmoscope (SLO) optimized to take advantage of the high directionality of cone photoreceptors [3]. We discuss the pros and cons of retinal cone-mosaic imaging in such a configuration and show recent experimental results.

2. MEASUREMENTS AND DISCUSSION

The SLO used for the imaging is essentially a confocal optical microscope incorporating the optics of the human eye. The normally poor optical eye quality at large pupil diameters hinders high-resolution retinal imaging unless wavefront-correction techniques are implemented. We compare results obtained with a directional-sensitive SLO to those from related studies with corrected ocular aberrations, and find the former well suited to image cone mosaic and blood vessels off the foveal center.

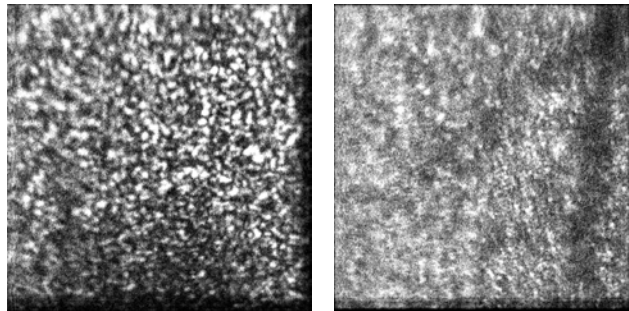


Figure 1: Images [$2^\circ \times 2^\circ$] of retinal sections obtained with directional-sensitive (left) and wavefront-corrected (right) SLO.

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