Artificial Intelligence for Diagnosing Retinal Diseases (AI D)

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AI D will establish robust and reliable tools for early diagnosis of vision disorders involving the photoreceptors as the first neurons in the visual cascade. The emphasis will be on age-related macular degeneration and inherited retinal diseases such as retinitis pigmentosa and Stargardt's disease. It is AI D's goal to use novel imaging and physiological techniques to gain new and crucial understanding of the mechanisms that lead to the development of a disease. Ultra-high resolution images of the retina will be obtained and combined with physiological data on the spatial distribution of photoreceptor and post-receptoral retinal signals and use these extensive data for novel deep learning algorithms.

AI D consists of four work packages (WPs): WP1 will employ novel techniques for obtaining high resolution images of the retina using multimodal adaptive optics technology. WP2 will expand on the present expertise for recording electrophysiological responses originating in the photoreceptors and post-receptoral pathways. In WP3, novel developments will be implemented into clinical routine and combined with additional state of the art techniques. In WP4 the combined information on the structure and physiology of the retina of an extensive set of normal subjects and patients will be used for the development of deep learning algorithms to improve early diagnosis of the diseases and for monitoring disease progression.