Project title:
Post-cataract surgery dry eye as a platform for the development of reliable models of dry eye disease supporting its diagnosis and assessment

Call: SONATA BIS-11
Proposal Number: 528869

**Type of position**: PhD position

**Objective**: Dry eye disease (DED) affects millions of individuals worldwide. One of the causes of DED is the iatrogenic intervention of cataract surgery (CS) – the most common ophthalmic procedure performed globally. It has not been established yet why some patients suffer from DED longer than the others. There is no comprehensive research following changes in many aspects of ocular surface and tear film phases. This project aims to answer the following research questions:

Q1 Knowing that some patients recover sooner and some later, what are the markers of delayed tear film recovery? Can we describe the tear film characteristics that predict the prolonged dry eye symptoms after CS?

Q2 Can the iatrogenic, transient form of DED caused by CS be used as a research platform to study the changes in the ocular surface and tear film parameters that occur in non-iatrogenic DED?

Q3 Could the post-cataract group provide valuable and hitherto unavailable information on the underlying pathology involved in non-iatrogenic DED, where the starting point is impossible to record?

Hence, the aim of this collaborative research project is to develop reliable methodologies for supporting diagnosis and assessment of DED focused on differencing the tear film sublayer’s quality. This will be achieved by comprehensive investigating the physiology of the ocular surface and tear film, using traditional and experimental techniques in a longitudinal research scenario in which DED is induced (iatrogenically, via CS) and managed.

**Skills Requirements**: very good command of English and conversational Polish are necessary; computer programming skills; at least basic knowledge of statistical tools; willingness of work with the patient in the clinic; ability to work independently in a defined time regime; strong motivation to work

**Education requirements**: Master in Physics/Optics/Optometry, Master in Electrical/Electronic Engineering; master in Computer Sciences, Master in Biomedical Engineering or an equivalent Master degree

**Host Institute**: Wroclaw University of Science and Technology
Department: Faculty of Fundamental Problems of Technology, Department of Optics and Photonics
My Website: [https://tearfilm.pwr.edu.pl/index/pl/](https://tearfilm.pwr.edu.pl/index/pl/)
Supervisor: Dorota Szczesna-Iskander, PhD (Project Leader)