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**ESP “Short-Time Visits” Fellowship 2006 report**

ESP “Short-time Visits” Fellowship enabled me to spend two weeks in the School of Optometry and Vision Sciences at Cardiff University, Cardiff, Wales, UK under supervision of Professor Michael Boulton and Dr Malgorzata Rozanowska.

Professor Michael Boulton and Dr Malgorzata Rozanowska are internationally recognized photobiologists who have greatly contributed to the understanding of age-related increased susceptibility of the human retina to light-induced damage. The broad based study areas include the role of oxidative stress and age pigment – lipofuscin (Lf) in retinal ageing and disease. Aging leads to changes in the retinal pigment epithelium (RPE)-Bruch’s membrane complex that could compromise the normal photoreceptor function and survival. These changes include accumulation of age pigment – lipofuscin (Lf) in RPE cells, progressive thickening of Bruch’s membrane and accumulation of extracellular material between the RPE and Bruch’s membrane. These processes occur maximally at the macula, the site sub-serving central vision, and is integral to the pathogenesis of age-related macular degeneration (AMD). Photoexcited lipofuscin generates reactive oxygen species, leads to oxidation of lipids and proteins and is believed to cause pigment epithelium dysfunction. However, the key photosensitizer(s) responsible for lipofuscin photoreactivity and phototoxicity remain unknown. Our recent data indicate that it may be the products of peroxidation of polyunsaturated phospholipids.

Preliminary laser flash photolysis measurements indicate some similarities between the triplet state observed in photoexcited peroxidized 1-palmitoyl-2-docosaxenoyl phosphatidylcholine ((16:0)(22:6)PC), present in LF and transient species generated in photoexcited lipofuscin extract.

The main goal of my visit in Professor Boulton’s laboratory was to further investigate the contribution of peroxidized ((16:0)(22:6)PC) to lipofuscin photoreactivity. During my stay in the School of Optometry and Vision Sciences at Cardiff University we studied:

- (1) photoreactivity peroxidized ((16:0)(22:6)PC) in polar and non-polar media
- (2) photoreactivity of Bruch’s membrane chloroform-soluble components obtained by Folch’s extraction

For our study we used the nanosecond laser flash photolysis system, time-resolved detection of characteristic phosphorescence of singlet oxygen at 1270 nm and fluorescence and absorption spectroscopy.

The two week visit in Professor Michael Boulton’s Laboratory gave me opportunity to complete planned experiments and allowed me to start working on a joint paper. The promising results of our work will be also present at the 12th Congress of the European Society for Photobiology which will be held in Bath, UK (September, 1-6).

Moreover, the ESP Fellowship gave me an excellent opportunity to discuss problems, exchange scientific knowledge and experience with other photobiologists working on deleterious effects of light on the eye and to build a long term fruitful collaboration with them. I am very grateful to the European Society for Photobiology for this Fellowship.