LSU Health Sciences Center

Neuroscience Center of Excellence

Seminar

"Group VIA calcium-independent phospholipase A2 - possible pharmaceutical target in retinal diseases involving retinal pigment epithelium maintenance, proliferation and cell death"

Miriam Kolko, M.D., Ph.D.

University of Copenhagen
The Panum Institute
Copenhagen, Denmark

Calcium-independent phospholipase A_2 ($iPLA_2$) is a member of a rapidly growing super family of enzymes catalyzing the hydrolysis of membrane phospholipids in the *sn*-2 position thereby releasing free fatty acids and lysophospholipids. During the last decade expanding knowledge on the functions of $iPLA_2$ has been discovered and it is now clear that $iPLA_2$ is a multi-functional protein involved in various biological processes. Importantly, $iPLA_2$ has been shown to play a crucial role in macrophage phagocytosis, cell proliferation and cell death. Recently, we characterized $iPLA_2$ in the human retina. Retinal homestasis is maintained by continuously phagocytosis of rod outer segments by the retinal pigment epithelium (RPE). Dysfunction of RPE phagocytosis is seen in retinal diseases such as i.e. age-related macula degeneration (AMD). We have established a model of RPE phagocytosis and have found an essential role of $iPLA_2$ in the regulation of this process. Furthermore, we have shown a role of $iPLA_2$ in RPE proliferation. During physiological conditions RPE is a non-proliferative tissue. However, during pathological conditions such as AMD, proliferative vitreoretinopathy (PVR) and as complication to vitreoretinal surgery, RPE begins to proliferate. RPE proliferation leads to the generation of scar like tissue in the retina and is followed by impaired vision. Thus, understanding of the mechanisms initiating RPE proliferation is essential in the development of pharmaceutical targets to treat a number of retinal diseases. We suggest that $iPLA_2$ may be one of the important targets in preventing RPE proliferation. In addition to RPE phagocytosis and proliferation our latest studies have revealed a role of $iPLA_2$ in RPE cell death. Overall, we hypothesize that $iPLA_2$ is important in retinal homeostasis and may play a crucial role during retinal damage.
Our ongoing and future studies therefore aim to further explore the role of $iPLA_2$ in retinal functioning as well as in retinal diseases leading to blindness.

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4:00pm, Lion's Building, 8th Floor Conference Room
2020 Gravier Street, New Orleans, LA 70112