



## **NAME OF LABORATORY:** Regenerative ophthalmic

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**PI:** Prof. Adiel Barak MD and Dr. Aya Barzelay MD, PhD

**Director Department:** Prof. Loewenstein Anat MD, MHA

### **Research Objectives:**

- Development of novel stem cells therapy for retinal degeneration diseases using mesenchymal stem cells, isolated from subcutaneous fat of patients.
- Development of minimally invasive methods to isolate stem cells from the patient.
- Growing stem cells at the laboratory and studying their ability to develop into retinal cells.
- Developing methods to transplant stem cells into mice retinas in mice models of retinal degeneration.

### **Main Research topics:**

- To isolate and characterize human adipose tissue derived mesenchymal stem cells from patients .
- Developing minimally invasive methods for isolation and transplantation of stem cells to the patient
- Induce differentiation of ASCs into retinal cells. Designated for retinal transplantations of differentiated ASCs.
- Study the paracrine activity of ASCs in the hypoxic environment. Designated for retinal transplantations of activated ASCs.
- Evaluate the therapeutic potential of stem cells transplantations to retina in animal model of Retinal degeneration.

**Staff:** Prof. Adiel Barak MD, Dr. Aya Barzelay MD, PhD, Dr. Itay Nakdimon PhD, Lab manager, Mr. Moshe Ben Hemo MSc, DMs. Dorit Eliyaev, DMs. Noam Azmon

### **Active Grants:**

- Moxie Foundation
- IDF grant
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### **Collaborations:**

- Prof. Yael Hanin lab - Micro and nano systems Laboratory, University Research Institute for NanoScience and Nano Technology, Tel Aviv University
- Dr. Tal Dvir lab. The Laboratory for Tissue Engineering and Regenerative Medicine. George Wise faculty of life science Tel Aviv University

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