



THE ISRAELI RESEARCH ASSOCIATION FOR  
EYE HEALTH AND BLINDNESS PREVENTION (I.R.A.)

**LIROT is promoting a unique project, essential for future personalized treatment of photoreceptor degenerative diseases**

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With the assistance of Prof. Dror Sharon, Member of LIROT Board of Directors,  
Hadassah Hospital and Dr. Tamar Ben-Yossef, Technion.

The retina has a crucial role in our sense of vision. Light sensors (photoreceptors) in the retina are responsible for the absorption of the light entering the eye, and generating electrical activity. These electrical signals are then processed by the retinal neurons and transmitted to the brain where further processing is done leading to visual perception. Functional damage to the photoreceptors, retinal nerve cells or optic nerves can lead to significant sight impairment up to blindness.

The LIROT nonprofit organization was established to prevent blindness and operates in two parallel directions to reach its goal: (i) Preventive medicine, targeting early diagnosis of vision threatening diseases such as glaucoma, age related macular degeneration and amblyopia, enabling early treatment and prevention of disease progression. (ii) Encourage Universities, Research Institutions, and Hospitals to perform research aimed at understanding the pathological mechanisms leading to blindness, and developing new treatment approaches that will prevent or, at least delay vision loss. To promote research, LIROT is raising funds from supporters, non-profit associations and government sources. During the eight years since LIROT inception, the organization succeeded in raising over NIS 10 million to support 20 projects promoting the knowledge and understanding of vision loss diseases.

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Executive Committee: Prof. Ehud Assia, Dr. Yair Morad, Prof. Ari Barzilai, Prof. Dov Weinberger, Prof. Eli Hazum, Prof. Anat Lowenstein, Prof. Saul Merin, Mr. Arie Neiger, Mr. Mark Amos, Mr. Freddy Shaviv, Dr. Yafit Stark, Mr. Yair Schaffer, Dr. Ronit Levinger, Prof. Hannah Garzozl, Mr. Nir Erdinest, Mr. Asher Grinbaum, Prof. Jacob Pe'er, Prof. Ido Perlman, Dr. Dror Sharon, Ms. Iris Spiegel.

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In the past year LIROT promoted a unique project in Israel, which is also unique in the world, with the goal of genetically mapping all Israelis suffering from inherited photoreceptor degenerative diseases. This is a large group of diseases with a clinical common denominator: progressive deterioration of vision up to complete blindness. Over 200 genes are known today, and additional genes are expected to be discovered, causing photoreceptor degenerative diseases when mutated. Despite the similarity in clinical pattern, these are different diseases; each with a unique pathology, and thus a single "one treats all" treatment of anti-photoreceptor degeneration cannot be expected. On the contrary, we expect that a series of different therapies, one for each disease or a group of diseases having similar pathology, will be developed making treatment personalized to each patient.

In our unique project, started a year ago, eleven centers of excellence in universities and university hospitals participate, including six genetic centers, four units of Clinical Electrophysiology of Vision and a Center for Bioinformatics. Our goal is to reach most families from all ethnic groups, in which at least one family member suffers from hereditary photoreceptor degenerative disease. We characterize the patients clinically, electrophysiologically and genetically. The database created by the participating centers will be used to compare clinical characteristics and functional data for any genetic mutation. This is the basis for the understanding of the pathological mechanisms of various diseases. During the progress of the project, we expect to find new mutations of known disease-causing genes and new genes that cause photoreceptor degenerative diseases. Furthermore, when an innovative treatment approach will be offered in Israel or anywhere in the world, we will be the first to be able to check its effectiveness in a controlled trial on patients with the respective disease. When a new treatment will be recognized as effective in stopping or delaying a specific photoreceptor degenerative disease, we will use the database to summon patients known to have that specific disease and give them the new therapy.

This unique project has already received significant financial support from the The Foundation Fighting Blindness USA, which recognized its importance to Israeli patients in particular, but also for patients worldwide. The American Association

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helped us to initiate this project, but more funds are needed for this unique project. One of the major goals of LIROT now is to raise the funds, needed for this project to achieve its important goals.

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