



## Novel Drug for Glaucoma Treatment



### The Problem

Glaucoma is one of the leading causes of blindness in the world. It is a slow and progressive disease that can lead to vision loss over a long period of time. Over 60 million people worldwide lives with glaucoma using multiple therapies in order to prevent blindness- and the patients' number will grow as population aged. The exclusive focus of glaucoma treatment continues to be on control of intraocular pressure (IOP) though this approach is not sufficient in all patients, leading them to blindness.



### The Solution

Bar-Ilan University is developing a novel patented drug candidate, A1-46, for the treatment of diseases modulated by the pyrimidineric receptor P2Y6. A1-46, nucleotide derivative screened and selected from the proprietary nucleotides library from Prof. Fisher lab, structurally designed as 5-OMe-UDP ( $\alpha$ -B), was evaluated as a potent and highly selective P2Y6-receptor agonist. The Solution



### The Commercial Benefit

A1-46 holds promise to be translated into pharmaceutical product with a novel mechanism of action, including IOP control and putative neuroprotective action, thus position it as a potential adjunctive therapy for existing treatments. Such a drug could significantly cater to the existing unmet needs of the market.



### Market Potential

- The number of people with glaucoma worldwide will increase to 111.8 million in 2040.
- Market Scope estimates the glaucoma pharmaceuticals market will reach \$5.3 billion in 2022.
- Glaucoma has noteworthy economic impact as it accounts for over 10 million visits to physicians each year, increases lost income tax revenues and health care expenditures.
- To U.S. government glaucoma is estimated to cost over \$1.5 billion annually.



### Target Markets/Industries

- Pharmaceutical companies
- Biotechnology companies
- Ophthalmic research laboratories
- Glaucoma research foundations
- Eye health organizations



### Intellectual Property

Patent pending



### Team: Primary Inventor

#### Prof. Bilha Fischer

- Is a full Professor in the Chemistry department, Bar-Ilan University
- Is leading a research group focusing on drug development and diagnostics
- Is involved in national and international collaborations both in academia and industry for the last 20 years
- Published 100 publications
- Has been awarded 10 patents
- Has been awarded Teva Prize for excellent young scientists; Juludan Prize (Technion) for the Application of Exact Sciences to Medicine; Shoham Prize for arts



### Current developmental status and future research

Within the frame of Israeli Innovation Authority R&D program, the successful drug development milestones were reached, including:

- the scale up of GMP chemical production
- preclinical GLP studies of pharmacokinetic and safety
- proven significant reduction of IOP at levels "same or better" when compared to the benchmark drugs on the market.

As we raise next developmental funding, we aim to test A1-46 as a novel drug candidate to prevent and treat glaucomatous optical neuropathy- an unmet medical need -the major cause of blindness, on experimental optical nerve neuroprotection models (Nuschke A., et al. Exp Eye Res. 2015 Dec;141:111-24.; Maekawa S. et al, Sci Rep. 2017 Jul 31;7(1):6885)

In addition, we started research program to design develop and test the next generation of drug candidates targeting P2Y receptors in ophthalmological indications.



### The Opportunity

Pharmaceutical companies are invited to license our patent through a licensing agreement with sponsored research.



### Keywords

Glaucoma, Ophthalmic Treatment, Pyrimidineric Receptor, IOP, Intraocular Pressure, P2Y6, Optic Nerve