

LambdaVision, Inc.

Restoring Vision with an Artificial Retina



Company Overview: LambdaVision is developing the first photoactive, protein-based artificial retina to restore functional vision to the millions of patients blinded by end-stage retinal degenerative diseases, including retinitis pigmentosa (RP) and age-related macular degeneration (AMD).

Problem: Age-related macular degeneration affects over 30M people globally and is the leading cause of blindness in patients aged 55 and older. Retinitis pigmentosa, the most common inherited retinal disorder, impacts 1.5M people worldwide. While there are treatments available to slow the progression of these diseases, there is no cure and patients will go blind. Additionally, current state-of-the-art therapies (e.g., electrode-based prosthetics, stem cell transplants, gene therapies) are either early in development or suffer various technological drawbacks that limit the recovery of functional vision.

Technology: LambdaVision's subretinal implant uses the light-activated protein, bacteriorhodopsin, to convert light energy into an ion gradient, which is capable of replacing the function of the damaged photoreceptor cells (rods and cones) in the retina for patients with AMD or RP.

Competitive Advantage: The LambdaVision implant, with its unique mode of action and manufacturing design, will restore functional, high-resolution vision to patients with AMD and RP. The small, flexible implant allows for a simple surgical procedure, similar to a retinal detachment, thereby enhancing adoption by retinal surgeons. Finally, the LambdaVision implant does not require bulky, rigid hardware like competing electrode-based technologies.

Intellectual Property: Grounded with a strong patent portfolio, LambdaVision is the only company developing a protein-based retinal implant to restore vision to those blinded by AMD and RP.

Regulatory Pathway: LambdaVision's implant is a combination product that will fall under the Division of Transplant and Ophthalmology Products. The implant will be regulated by CDER with consultation by CDRH. LambdaVision has recruited a strong team of regulatory and manufacturing consultants to mitigate any regulatory risks associated with the technology. Additionally, we will first target the orphan indication of RP and will work closely with the FDA to ensure an expedited path to regulatory approval.

Founded: 05/2009 – UConn spinoff

Stage: Preclinical

Leadership Team:

Nicole L. Wagner, PhD, CEO
Jordan A. Greco, PhD, CSO
Robert R. Birge, PhD, Founder

Product: Subretinal bacteriorhodopsin-based artificial retina

Indications: End-stage retinal degenerative disorders (RP/AMD)

Intellectual Property:

- Protein-Based Artificial Retinas
US Patent 8,563,026 Oct. 2013
- Bacteriorhodopsin Protein Variants and Methods of Use
US 8,883,719 Nov. 2014
- A Method for Stimulating Retinal Cells and Treating Vision Loss
US 62/502,815 May 2017

Funding: ~\$2.5M raised in state, local, and government grants

- Connecticut Innovations
- NIH Phase I STTR Grant
- NSF Phase I/IB/II SBIR Grants
- Small Business Incubator Grant
- CT Center for Advancement of Technology Grant
- MassChallenge CASIS/Boeing Prize
- SPARK Technology Grant

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