

Adaptilens, Inc.

Category:

Best Startup

Company Name:

Adaptilens, Inc.

Turnover and/or Funding:

In 2020, Adaptilens received \$1.6M in seed funding from Pillar VC and Accanto Partners.

In 2021, Adaptilens Founder and CEO Liane Clamen, MD, was awarded a Massachusetts Next Generation Initiative grant of approximately \$90,000 from the Massachusetts Life Sciences Center

In 2022, Adaptilens won a \$75,000 Grand Prize in the Harvard President's Innovation Challenge while participating in the Harvard Innovation Labs accelerator.

In 2024, Adaptilens closed their \$17.5M Series A raise, led by the Perceptive Xontogeny Venture Fund.

Sub-Category:

Medical Technology / Digital Health

Corporate history (creation, key milestones, main funding,...)Information on Condition / Disease and need for solution / product (prevalence, existing treatments / solutions):

The first and only biomimetic intraocular lens (IOL), the Adaptilens IOL is a soft and flexible Accommodating Intraocular Lens (AIOL) that responds to the eye's natural signal to focus, eliminating the need for eyeglasses or contact lenses. Adaptilens aims to be the first implanted lens that enables patients to see clearly over a range of distances, from near to far, without negative side effects. Founded in 2019, Adaptilens is a Boston-based company focused on revolutionizing cataract surgery by restoring vision to its youthful state.

Cataracts are the leading cause of global blindness, with over 94M people visually impaired due to cataracts. The treatment for cataracts is surgery and currently more

than 30 million cataract surgeries are performed globally (about 5M surgeries in the US). Today's standard of care is to replace the cataractous lens with an artificial intraocular lens (IOL) that is a monofocal IOL; this type of IOL has one power and thus corrects for near or far vision, but not both, leaving people dependent upon glasses for the rest of their lives. Despite the rapidly growing aging population, patient options have stagnated at suboptimal. Whether a monofocal or a multifocal "Premium IOL" (described below), currently available IOLs are flat and rigid and either necessitate the use of eyeglasses or cause negative side effects.

Adaptilens restores aging eyes to their youthful state of a natural, continuous range of vision. With its novel material and simple design that imitates nature, the Adaptilens AIOL will improve the quality of life of millions of people.

In 2020, Adaptilens received \$1.6M in seed funding from Pillar VC and Accanto Partners, and in 2024, Adaptilens closed its \$17.5M Series A raise, led by the Perceptive Xontogeny Venture Fund.

Key milestones include:

2021: Proprietary Bottle Brush Polymer material for the lens was developed in collaboration with the Becker Lab at Duke University

2022: First working AIOL prototype demonstrated 4 Diopters of Accommodation, more than enough to allow for spectacle-free vision over a range of distances (people require 2.-3D of accommodation to read a book).

2022: First PreSub Meeting with the FDA

2024: Preliminary rabbit safety study demonstrated safety and biocompatibility

2024: Initiated partnership with polymer manufacturing group to manufacture Adaptilens' proprietary polymer in a GMP facility

2024: Initiated partnership with CRO to manufacture the Adaptilens AIOLs in an ISO-certified clean room

2024: Partnered with a leading IOL inserter-system manufacturer to help develop and manufacture the system to insert the AIOL into the eye during cataract surgery.

2025: Initiated preclinical testing of our IOL and inserter system in preparation for our First in Human clinical trials.

2025: Selected a regulatory consultant group and two First in Human sites in Mexico, with plans to initiate First in Human studies in Q4 2025.

History of the development of the solution/product (Intellectual Property, preclinical and clinical data, development collaborations):

Adaptilens' unique solution to the current standard of care is an AIOL that recaptures the eye's intrinsic accommodation by responding to its natural signal to focus.

Harvard-educated and Harvard-trained ophthalmologist Dr. Liane Clamen, Founder and CEO of Adaptilens, patented her original idea for the Adaptilens AIOL in 2019. Once she had patent protection for her idea, Dr. Clamen founded Adaptilens in October 2019. In 2020, Dr. Clamen initiated a Sponsored Research Agreement with Professor Matt Becker, a world-renowned polymer chemist at Duke University. After the Becker Lab developed a proprietary polymer for use in the Adaptilens AIOL, Dr. Clamen and her team designed and tested multiple prototypes before settling on the current iteration. Finite Element Analysis and accommodation simulator testing were performed to confirm Proof of Concept.

Adaptilens' patent portfolio is below:

Patent 13/096,729, 10,278,810 (Issued 5/7/2019). Injectable Physiologically Adaptive Intraocular Lenses (IOL'S)

Patent 16/404,523, 11,678,976 (Issued 6/20/2023), Con of 13/096,729. Injectable Physiologically Adaptive Intraocular Lenses (IOL'S)

Patent 17/762,335, 2022/0338976A1, US National Phase of PCT/US20/52316. Injectable Physiologically Adaptive Intraocular Lenses

Patent 63/632,839. Intraocular Lens Delivery System

Patent 18/668,066. Methods to Manufacture a Biomimetic, Accommodating Intraocular Lens

Patent 63/773,135. Accommodating Intraocular Lens with Fluid Channels

Patent 19/086,943. PCT/US2025/020969. Accommodating Intraocular Lens (AIOL) Device

Patent 18/562,590, 2022/276440. Biostable Polymer Brushes with defined viscosity and optical properties

Patent 63/344186, PCT/US23/22953. Photopolymerized Bottlebrush Hydrogels for all-in-one Intraocular Lenses

Patent 63/500,718, PCT/US2024/028439. Fluorinated Copolymer Bottlebrushes for Optical Applications

Adaptilens' novel and transformative technology is in its design and proprietary advanced polymer materials. As it responds to the ciliary muscle inside the eye to change the shape of the lens, the Adaptilens' physiologically adaptive AIOL functions most like the natural, flexible young lens, restoring range of vision to near, intermediate and far without negative side effects or the aid of glasses.

Adaptilens has an experienced and motivated Management Team and Advisory Board. COO Daniel Stanley, MS, is the former Director of IOL Development at Alcon (\$38B market cap), where he was responsible for bringing 30 IOLs from concept to market. At Alcon, he had lead roles on an R&D team that grew a medical device product line from \$10M to \$1B per year. With over 25 years of experience in ophthalmology, Dan brings a wealth of experience to Adaptilens.

CIO and CTO Brett Thomes, PhD, was former Senior Director of Process/Technology Development, New Product Introduction and Integration Lead at Alcon for Surgical IOL

and Instrumentation. He managed a global R&D team of 150+ associates and was accountable for R&D activities including execution, development, scale-up, and product launch for Alcon's IOL portfolio that is >\$1B in annual revenue.

The management team is supported by a Business and Scientific Advisory Board composed of deeply experienced executives from Bausch & Lomb and the biotech and medical device industries, as well as practitioners, renowned experts, and leading researchers in ophthalmology and polymer and materials science.

The lens design has been finalized, and the team has initiated preclinical testing. Adaptilens plans to initiate First in Human studies in Mexico in Q4 2025.

Why this drug or device is innovative, the broad implications for future research, and/or how it will improve the human condition:

According to the World Health Organization, the top two causes of curable vision impairment or blindness globally are cataracts (94M people) and unaddressed refractive error (88.4M people). By curing both cataracts and refractive error, our novel invention could be uniquely situated to cure the world's top two causes of reversible blindness.

Each year, more than 5M cataract surgeries are performed in the US and over 30M are performed worldwide. The standard of care is to remove the cataract and replace it with an intraocular lens (IOL). The majority of IOLs implanted are monofocal lenses that only provide vision at one focal point. For example, after cataract surgery, a person can see far distances when driving but will need glasses to see the dashboard or to read a map. These people are visually impaired at the uncorrected focal points without corrective lenses (ie glasses or contact lenses)..

Adaptilens has developed a biomimetic, accommodating intraocular lens (AIOL) for use in cataract surgery that is designed to mimic the natural human lens and provide patients with clear distance, intermediate, and near vision without eyeglasses or contact lenses. The Adaptilens AIOL is the only IOL that imitates the young, healthy lens of our youth. By imitating nature, the Adaptilens AIOL will restore youthful vision to the aging population. The Adaptilens AIOL will not only improve the quality of life of millions of people, it will also improve the safety of our communities by decreasing the incidence of accidents related to decreased visual acuity.

The majority of implanted IOLs are monofocal, providing either near or far vision. Presbyopia-correcting Premium IOLs (such as multifocal, trifocal, and Extended Depth of Focus IOLs) allow for vision over a range of distances. However, these current options are pseudo-accommodative. In other words, these IOLs split incoming light into multiple focal points (near, intermediate, and far). The result is that less light reaches each focal point so images often appear less sharp, especially in low-light settings such as night

driving. Light diffraction caused by multiple focal zones also creates negative side effects: patients often report seeing halos around lights, glare, or starbursts. In addition, while multifocal IOLs often provide good near and distance vision, intermediate (computer distance) vision may be blurry. Patients with EDOF IOLs often require reading glasses.

Adaptilens believes its unique AIOL will capture the dominant share of the Premium IOL segment and drive the broader market to Premium IOLs because of our superior lens. AIOLs currently in the pipeline are complex, with many moving parts. Adaptilens will be the only AIOL to offer a simple and elegant solution that mimics the natural lens.

Early-stage acquisitions by Alcon (Power Vision \$424M), Abbott (Visiogen \$400M), and Bausch+Lomb (Eyenics \$400M) underscore the accelerated demand for an effective AIOL. Adaptilens aims to receive approval to market by 2030. Assuming 20% of the US cataract surgery market, Adaptilens will have a \$2.8B annual revenue initially, and that will grow each year as the Adaptilens AIOL captures a larger share of the IOL market.

Please provide appropriate references (PubMed, Abstract, Website):

Adaptilens website: www.adaptilens.com

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“A New Vision for Aging Eyes.” <https://innovationlabs.harvard.edu/articles/adaptilens>

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