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- [Eye Health / Optometry](#)
- [Abortion](#)
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- [Allergy](#)
- [Alzheimer's](#)
- [Anxiety](#)
- [Arthritis](#)
- [Asthma / Respiratory](#)
- [Autism](#)
- [Bio-terrorism / Terrorism](#)
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- [Bipolar](#)
- [Bird Flu / Avian Flu](#)
- [Blood / Hematology](#)
- [Body Aches](#)
- [Bones / Orthopaedics](#)
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- [Cancer / Oncology](#)
- [Cardiovascular / Cardiology](#)
- [Caregivers / Homecare](#)
- [Cholesterol](#)
- [CJD / vCJD / Mad Cow Disease](#)
- [Cleft Palate](#)

[< back to previous page](#)

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## First Pair Of Glasses To Help Hemianopia Patients Awarded Small Business Grant

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Article Date: 03 May 2006 - 11:00am (PDT)

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Boston, MA, and White River Junction, Vermont--Chadwick Optical, Inc., a small cutting-edge optical business in Vermont, received the second phase of an NIH Small Business Innovation Grant this week. The grant--\$ 750,000--will allow the small woman-owned company to continue a collaboration with the Schepens Eye Research Institute, an affiliate of Harvard Medical School, to further refine the first glasses to significantly improve quality of vision and life for sufferers of hemianopia. More than a million Americans have this vision problem--caused by [stroke](#), head injury or tumor--in which half the visual field in both eyes is blind.

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"We are very excited about the opportunity to continue to refine and improve these prism glasses, which offer the only real option for patients with this debilitating problem," says low vision expert Dr. Eli Peli, Schepens Institute senior scientist and the Moakley Scholar in Aging Eye Research. Peli holds the patent for the glasses and invented them after frustrating experiences with previously proposed aids for his hemianopia patients.

"With the help of the first phase of this grant," says Karen Keeney, president of Chadwick, "we were able to take Dr. Peli's brainchild, create a pair of saleable glasses and make them available to patients within two years." Keeney adds that anecdotal feedback from low vision specialists and patients who have tested the product has been extremely positive. The first phase of the grant also funded a national multi-center trial. The successful results of the study will be made public in the near future.

The NIH Small Business Innovation Research Program, established in 1982, makes it possible for small business to bring novel and needed biomedical technologies to the public safely and quickly. Most biomedical technologies take five years or more to reach the market. Keeney and Peli give credit to the small business grant for making their efforts successful and available for the benefit of the public more rapidly.

With the current (second) award, Keeney will continue to consult with Peli and test new variations on the glasses' original theme to increase their

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usefulness to the greatest number of people suffering from this disorder. Testing will be conducted at the Schepens as well as in a new multi-center study that will be coordinated by the Schepens team.

Hemianopia is a disorder characterized by a reduction in vision in one half of the visual field due to damage of the optic pathways in the brain. Most commonly caused by strokes, it can also be the result of brain damage from tumors or trauma. A patient with this condition is unaware of what he or she cannot see and is frequently bumping into walls, tripping over objects or walking into people on the left or the right side, depending upon which area of their visual field is missing.

Prisms by their nature can grab images from one side and shift them into another. Before Peli's invention, others had tried to develop prism glasses to bring the missing part of the patient's visual field into view. However, these previous techniques brought the image into the center, which resulted in double vision causing further confusion and disorientation.

After considering the adaptation frequently shown by young children with hemianopia, Peli finally hit upon a concept that he believed might work better. It was a pair of glasses with small additional prisms attached to the top and bottom of one lens, leaving the center of the lens untouched. The prisms pull in images missing from the visual field above and below the line of sight and alert the patient, who can then move his head and eyes to see the image directly. In Peli's prototype, the visual field expanded by 20 degrees without obstructing central vision. In the new grant Keeney proposed to expand the effect to 30 degrees and to try a new approach that might bring it to 40 degrees.

At a chance meeting at a conference after he came up with his prototype, Peli and Keeney hatched a plan to bring the glasses to the public as soon as possible.

"With her excellent optical skills and laboratory, I knew I had found the right partner," says Peli.

"We thought about things in the same ways," says Keeney, who then took Peli's temporary prototype, licensed it and began designing a simpler, more elegant and streamlined pair of spectacles, which today are being sold around the country and the world.

The new grant will allow Keeney and Peli to explore new lens and prism powers and increase the width of the visual field to enhance the value of the glasses to patients.

According to patients, the glasses help them resume treasured daily activities. Charles Osler, who suffered a [stroke](#) a year ago, which left him missing vision on the left side of his visual field, says "Now I can go out in public and know that I will not hurt myself or someone else by just walking down the street." Osler, a resident of Falmouth, Massachusetts, who is 66 and retired, is even back on the ice, participating in his favorite sport--curling--which he learned during his Canadian childhood.

"I knew that finding a small business was the way to go," says Peli. Small businesses move quickly and the NIH Small Business grant infused the project at exactly the right time."

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- [Mental Health](#)
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- [Nursing](#)
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For additional information about hemianopia and to see what it is like to have the disorder, go to <http://www.http/www.eri.harvard.edu/faculty/peli/lab/videos/hemi/hemi.htm>

For views of the prism glasses, go to <http://www.http/www.chadwickoptical.com/promotional/Magazine.jpg>

For additional details on Chadwick's NIH Small Business grant go to <http://www.http/www.chadwickoptical.com/mission.shtml>

For more information on the NIH Small Business Innovation Research Program, go to <http://grants.nih.gov/grants/funding/sbir.htm>

Schepens Eye Research Institute, affiliated with Harvard Medical School, is the largest independent research institute in the world.

Chadwick Optical, Inc., a small traditional ophthalmic lens laboratory was co-founded in 1980 by Keeney and her then-husband. When Keeney became sole owner in 2000, she re-invented the business to serve low vision clinicians and their patients. In five years Chadwick Optical has become a resource for low vision professionals worldwide.

Contact: Patti Jacobs  
[Schepens Eye Research Institute](#)

[< back to top](#)

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[< Latest medical headlines](#)

[< Eye Health / Optometry news](#)

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- [Home](#)
- [About Us](#)
- [Advertising](#)
- [News Archive Search](#)
- [RSS/XML News Feeds](#)
- [Free Website Feeds](#)
- [Free Tools & Content](#)
- [Your Opinions](#)
- [Medical Jobs](#)
- [Links](#)
- [Contact Us](#)

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- [Breast Cancer](#)
- [Cardiovascular](#)
- [GI](#)
- [Prostate Cancer](#)
- [Psychiatry](#)
- [Respiratory](#)
- [Learning Resources](#)
- [Urology](#)

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