

THE PROMISE OF VISION RESTORATION

At the UW Medicine Eye Institute

Caring for Patients' Vision

At the UW Medicine Eye Institute, your doctors are also your researchers — and research leads to great patient care. We provide comprehensive care for people with glaucoma, cataracts, diseases of the retina, cornea, orbit and nerves, or patients who need general eye-related care.

Director: Russell N. Van Gelder, M.D., Ph.D., Chair of the Department of Ophthalmology and the Boyd K. Bucey Memorial Endowed Chair in Ophthalmology

MILLIONS OF PEOPLE IN THE U.S. SUFFER from retinal degeneration, leading to blindness. These diseases, such as age-related macular degeneration and retinitis pigmentosa, affect more than 10 million Americans, including more than 100,000 people in the Puget Sound region. Low vision and blindness reduce a person's ability to function independently and severely impairs their quality of life.

The UW Medicine Eye Institute is at the forefront of exciting developments in vision restoration research. We are unique among eye institutes in that we take an integrated, multifaceted approach, building on the expertise of researchers who marshal deep institutional strengths in biochemistry, regenerative medicine and genomics. And with revolutionary approaches that include stem cell technology, gene therapy and chemical reanimation, we have made important breakthroughs that may lead to new treatments for vision restoration.

With visionary philanthropic investment, more breakthroughs will be made that have the potential to advance treatments for patients with blinding eye diseases. We invite you to be part of the vitally important research taking place at the UW Medicine Eye Institute, a portion of which is highlighted below.

The Eye Institute: A Multi-faceted Approach to Restoring Vision

These select projects show immense promise for the future of vision research, and all would benefit from philanthropic support.

Using Stem Cells to Restore Vision

Jennifer Chao, M.D., Ph.D., is investigating the use of induced pluripotent stem cells (iPSCs) to restore vision to retinal cells that have been damaged by hereditary retinal degeneration. She and her collaborators have developed methods to turn undifferentiated stem cells, derived from a person's blood, into

almost any cell type found in the retina. Dr. Chao hopes to use these methods to grow healthy retinal cells that can replace the damaged cells, thereby restoring function and sight.

Delivering Gene Therapy to the Eye

By using a genetically engineered vector to deliver new DNA into the eye, gene therapy has the potential to restore missing functions or correct malfunctioning cells attributed to vision loss. Jay Neitz, Ph.D., and Maureen Neitz, Ph.D., are leading a team of UW Medicine researchers in developing techniques to deliver therapeutic genes through a simple injection underneath the retina. The Neitzes also are developing advanced imaging technology to visualize the structure and function of individual cells in a living eye. Their immediate goals are to perfect their gene-therapy delivery mechanisms and to monitor the effectiveness of gene-therapy treatments in restoring vision using advanced imaging.

Curing Retinal Blindness With Chemical Reanimation

Russell Van Gelder, M.D., Ph.D., the Eye Institute's director, has made a breakthrough discovery: using chemical "photo switches" for treating blindness caused by retinal degenerative conditions. He and his collaborators have developed and tested several compounds — AAQ, DENAQ and PhENAQ — that have demonstrated the ability to restore the retina's ability to respond to light. These compounds are activated by certain wavelengths of light, can be turned on or off, and hold great promise for restoring sight to people with retinal blindness. Over the next few years, Van Gelder and his collaborators will be working to ready these compounds for testing with patients.

Your Partnership

Researchers at the UW Medicine Eye Institute are conducting research that has the potential to benefit the lives of thousands of blind and vision-impaired patients.

During the next few, crucial years, extensive testing and refinement will help turn their breakthroughs into safe, effective treatments. However, significant funding is needed for their research to advance.

The UW Medicine Eye Institute is uniquely positioned to advance research for devastating eye diseases, and, with your support, we can make important progress in the very near future.

For more information on the groundbreaking projects taking place at the UW Medicine Eye Institute, please contact Abbey Norris, director for philanthropy, at 206.221.8274 or abbeyn@uw.edu. Thank you for your interest in our work.