



Krembil Neuroscience Program: Vision Loss

Overview

Ophthalmology is the medical and surgical treatment of disorders of the eye. Disorders commonly treated include cataracts, retinal detachment, glaucoma, macular degeneration and eye conditions caused by complications of diabetes. Vision loss can be the result of any one of these disorders.

UHN's Ophthalmology department is the largest of its kind in Canada, and one of the most highly advanced. In addition, it is the only ophthalmology clinician-scientist training program in the country. Each year, staff in this department care for more than 55,000 outpatients and conduct more than 4,000 surgeries. Areas of specialties include vitreoretinal surgery, medical retina, cornea and external disease, glaucoma, neuro ophthalmology, adult strabismus and ocular genetics. UHN is also home to the largest retinal surgery unit in North America treating the most complex retinal cases.

Thanks to recent technological developments and research in ophthalmology, ophthalmologists are able to restore vision to many patients in cases where, even just a few years ago, it might not have been possible.

UHN Milestones/Innovations

- Development of method for detecting gene mutations that enhance care for families with retinoblastoma. (2003)
- Discovery of a novel gene site on chromosome 9 that may have implications for age-related cataracts. (2001)
- Surgical repair of complicated retinal detachment.
- Repair of macular holes to restore vision.
- Revolutionary use of photodynamic therapy using special dye and lasers to identify and destroy abnormal eye tissue (2002)
- The use of intravitreal Avastin for neovascular Macular Degeneration (2006)
- The development of a ultra high speed digital indocyanine green angiogram coupled with a diode laser for the closure of feeder vessels in neovascular macular degeneration (2006)

Scope of Work

Eye clinic

- Vitreoretinal service
- Corneal external diseases services
- Glaucoma service
- Low vision service
- Adult genetic service
- Adult strabismus service

Ocular oncology

- Assessment and diagnosis of eye cancer or related disease
- Consultations
- Leading-edge treatment, including the use of radiation, surgery, and ultrasound
- Weekly clinic for assessment and follow-up
- Participation in the Collaborative Ocular Melanoma Study (COMS), the largest clinical trial ever supported by NIH and the National Cancer Institutes in ophthalmology, as well as other clinical trials

Integration of Care

Physicians, clinicians and other staff members that make up the Ophthalmology program believe the best patient care involves the integration of modalities. Patients may receive care of consultation from:

- Vitreoretinal surgeons
- Medical retina specialists
- Cornea and external disease specialists
- Glaucoma specialists
- Neuro-ophthalmologists
- Adult strabismus specialists
- Ocular geneticists

<p>Basic science research includes investigations into:</p> <ul style="list-style-type: none">• Characterization of matrix- and membrane-proteins involved in retina ganglion cell axon outgrowth• Role of membrane protein RGM on progenitor cell migration in the retina• Molecular genetics of blinding eye disease and brain disorders• Biophysics and psychophysics of glaucoma	<p>Clinical science research includes investigations into:</p> <ul style="list-style-type: none">• Intravitreal implants• Retinal detachment• Retinal capillary blood flow in diabetics• Hypobaric chamber studies of patients with intraocular gas bubbles• Pharmacologic treatments• Eye movement control mechanisms
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