



WORLD GLAUCOMA WEEK



World Glaucoma Week 2014

World Glaucoma Week is held in March each year to increase awareness. This year World Glaucoma Week ran from March 9 – 15. The Lions Eye Institute (LEI) collected donations for Glaucoma Australia throughout the week. Allergan supported our fundraising efforts by generously providing World Glaucoma Week buttons, patient information cards and a delicious morning tea.



“Six in ten, or sixty percent of Australians say going blind is worse than having a heart attack or losing a limb.” Vision 2020



At the Forefront of Medical Research Into Eye Disease

The Lions Eye Institute (LEI) is at the forefront of medical research into eye diseases and potential new treatments. As a centre of excellence, we are frequently requested to undertake studies testing new therapies being developed by major pharmaceutical companies. We are currently conducting over twenty clinical trials.

Clinical trials are research studies involving volunteers that explore whether a medical strategy, treatment or device is safe and effective for humans. The aim is to advance medical knowledge and help improve patient care.

Ophthalmology clinical trials are conducted to evaluate the safety and effectiveness of a new procedure, medication, or device to prevent, diagnose, or treat an eye disease or disorder. Studies may also involve the collection of information from patients to improve the understanding of a particular condition or highlight areas where improvements to therapy can be made. These studies must adhere to strict scientific and regulatory standards to protect patients and help produce reliable study results.

“The studies that we conduct fall mainly into two categories: multicentre clinical

trials sponsored by major pharmaceutical companies investigating new therapies or new dosage regimens for established medications or research studies translating laboratory-based discoveries into meaningful treatments for patients.” LEI Managing Director Prof David Mackey said.

Current areas of research include:

Age-Related Macular Degeneration

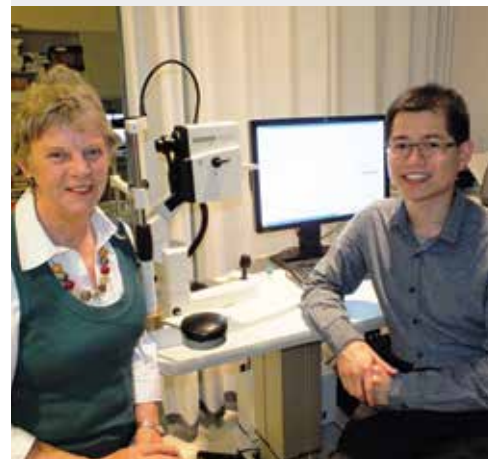
Age-Related Macular Degeneration (AMD) is the leading cause of severe vision loss in the ageing population in Australia and the developed world.

Dry AMD, in which the layer of retinal pigment epithelial (RPE) cells deteriorates, is the most common type of AMD, responsible for 90 per cent of cases. RPE cells provide vital support to the light-sensitive photoreceptor cells that are critical for vision and can affect colour perception. LEI is currently trialing a novel laser-based approach for dry AMD, for which no proven therapy is available.

Dry AMD may progress to wet AMD, which is characterised by the development of abnormal blood vessels under the retina. These vessels leak fluid, bleed and can eventually transform into scar tissue, disrupting the overlying photoreceptors and eventually causing visual impairment.

Thank You

Thanks to all of LEI's generous donors, our Christmas wish for specialised cameras is coming to fruition. The LEI has purchased a high-resolution adaptive optics flood illumination fundus camera. It will be delivered in the next few weeks providing our ophthalmologists a clear view of light receptor cells, rods and cones within the retina. Seeing these cells will allow LEI's ophthalmologists, including Associate Professor Fred Chen, to understand how patients are responding to the new therapies being trialed.



To date approved treatments for wet AMD involve administration of anti-Vascular Endothelial Growth Factor (VEGF) therapy. VEGF is a protein essential for the growth of blood vessels and anti-VEGF drugs work by inhibiting the activity of this protein. Lucentis and Eylea are the anti-VEGF drugs currently available and LEI has been involved in many of the initial and ongoing trials of these medications. LEI is involved in developing a novel genetic therapeutic approach to block VEGF with a normally occurring endogenous splice variant of the VEGF receptor (a small piece of genetic material). The Clinical Trials team is actively recruiting patients with wet AMD to be involved in this study.

This year we hope to raise the funds for an optical coherence tomography camera which has the ability to see single cone cells, something no other camera can do. This specialized camera will be able to help patients diagnosed with glaucoma and myopia as well as diseases of the retina such as AMD.

Diabetic Retinopathy and Related Disorders

Diabetic retinopathy is the most common cause of blindness in individuals between the ages of 20 and 65 years. This is due to swelling of the central retina (macular oedema) causing visual impairment. LEI is involved in trials contributing to the growing body of evidence that anti-VEGF treatment is superior to laser therapy for diabetic retinopathy.

We are also studying the impacts of novel intravitreal slow-release steroid formulations and anti-VEGF treatments to reduce the risk of loss of vision in eyes with advanced macular oedema, for which further laser treatment is unlikely to be beneficial.

Another condition, Macular telangiectasia type 2 (MacTel) can masquerade as diabetic retinopathy but does not respond to conventional therapies used in Diabetic retinopathy. MacTel is a rare degenerative condition of the macula that may cause progressive loss of vision. Currently, there is no effective treatment for MacTel. Recent research implies that photoreceptor cell loss is intrinsic to the disorder rather than being consequent upon blood vessel changes. This discovery has resulted in the development of a therapy to reduce the rate of the photoreceptor layer deterioration.

We are recruiting patients with MacTel to participate in a study investigating this potential new therapy.

Retinal Vascular Occlusive Disease

Retinal vascular diseases, such as vein occlusions, are the second most common retinal vascular permeability disorders after diabetic retinopathy, and can also cause significant visual impairment. In Central Retinal Vein Occlusion (CRVO) there is a build-up of fluid and leakage of the fluid from the affected blood vessel. The swelling of the macula results in distortion of central vision. Branch Retinal Vein Occlusion (BRVO) can also result in leakage of fluid and visual disturbance in the region of retina supplied by the affected vessel.

Laser photocoagulation has been the standard of care for both CRVO and BRVO, but recent trials, in which the LEI was involved have shown better visual results with anti-VEGF therapy. The LEI has also developed a novel treatment for CRVO aimed at creating a by-pass around the blockage. This has been proven effective in a large Australia-wide trial and is the first treatment worldwide aimed at the cause of the disease.

Ocular Inflammatory Disease

Ocular inflammatory diseases, such as uveitis, usually involve inflammation affecting the structures in the eye including the iris, ciliary body, and choroid. The inflammation may affect only one eye structure or multiple structures. In many cases, symptoms may include decreased vision, eye pain, ocular redness, tearing, photophobia, elevated intraocular pressure, intraocular scarring, macular oedema, and even vessel occlusion.

Uveitis can lead to vision loss but symptoms may be relieved by the use of corticosteroids. These drugs suppress the immune system by blocking the production of substances that trigger inflammation.

The LEI is investigating the impact of novel anti-TNF monoclonal antibodies alone or in combination with high-dose corticosteroids

for active or inactive non-infectious intermediate, posterior, or pan-uveitis.

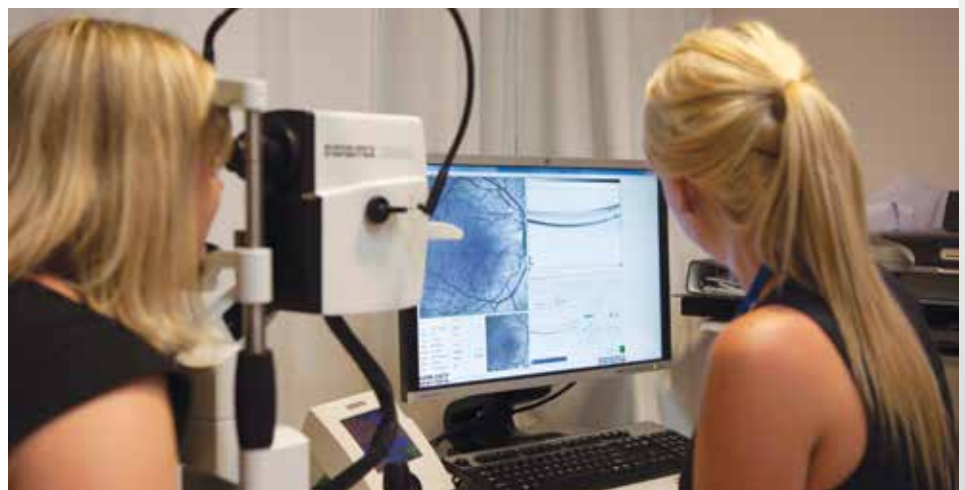
Epidemiological Research

The LEI also undertakes research into the effects of sun damage and the use of protective eye wear, such as sunglasses, in the community. Ultra-violet (UV) radiation from sunlight has both beneficial and harmful effects on the eye. Studies have suggested that increased outdoor activity may protect against myopia, but this needs to be balanced against the risk of sun damage. By measuring levels of UV conjunctival autofluorescence in the eye, which is an indicator of early sun damage, we aim to evaluate the usefulness of eye- and general sun-protection measures. This study should help identify a safe level of sun exposure that will prevent sun damage yet protect against myopia and other sun related eye conditions.

Children are more vulnerable than adults to the effects of UV radiation on their eyes. While the use of hats and sunscreen is commonplace, less than 10% of children regularly wear sunglasses. We should encourage children to wear sunglasses and protect their eyes as well as their face. All sunglasses sold in Australia are required by law to offer a minimum level of UV protection.

Other on-going projects involve collecting genetic material (DNA) and medical histories from volunteers with eye disease or healthy eyes, enabling us to explore avenues for preventing and screening for eye diseases, to further understand the development of eye problems, to develop new treatments and to help predict an individual's risk of developing eye disease.

If you are interested in participating in our studies, or would like to find out more, please email clinicalresearch@lei.org.au or call 08 9381 0750 or visit www.lei.org.au



Celebrating a New Era of Medical Research in Western Australia



The Perkins Institute of Medical Research welcomed Australian Prime Minister the Honourable Tony Abbott to formally open the state-of-the-art research building on Tuesday 11 March, 2014. Distinguished guests included His Excellency the Governor Malcolm McCusker and Mrs Tonya McCusker, Minister for Health the Honourable Kim Hames, Mr and Mrs Stan Perron, research partners and residing research institutes.

The Lions Eye Institute's Managing Director Professor David Mackey spoke at the inauguration signifying the many years of collaborative work, inspiration and dedication. He said "I would like to acknowledge my predecessor, Ian Constable, for his vision in bringing LEI's research laboratories together with the other leading medical research groups in WA within a single facility, where we will not only share expensive equipment, but more importantly share ideas."

Prof. Mackey highlighted the importance of the new research facility as a place important to the future of collaborative medical research. The Lions Eye Institute is privileged to be one of the research institutes housed in the new building, proudly promoting WA research. "We have a wonderful resource in front of us, but we need to continue to support and encourage our younger researchers, so that they can help to deliver real health outcomes to our community and beyond." He said.

The Genetics of Glaucoma

Professor David Mackey, Managing Director of the LEI, has spent more than 20 years studying the genetics of the optic nerve. With over 88 papers published on the subject, he is recognised as an international leader in the genetics of glaucoma. He helped set up the International *Glaucoma Genetics* Consortium since 2013.

In 1993 he initiated the Glaucoma Inheritance Study in Tasmania (GIST), creating one of the largest glaucoma biobanks (blood and tissue storage) in the world. GIST has helped define physical trait-gene (phenotype-genotype) correlations in *myocilin* glaucoma as well as identifying other glaucoma genes.

In 2000 he started the Twins Eye Study in Tasmania and Brisbane to investigate the genetic and environmental factors contributing to eye measurements related to glaucoma and myopia.

Prof Mackey says "Our work has established the heritability for many ocular traits, including glaucoma. If you have been diagnosed as having glaucoma, your family has an increased risk (up to 10 times higher than the general population) of developing glaucoma. Their best protection is to have a regular and comprehensive eye check that includes a review of their optic nerves."

A glaucoma test is more than just an eye pressure test. It usually includes an optic nerve check with an ophthalmoscope, visual field assessment that tests the sensitivity of the side vision where glaucoma strikes first, and an eye pressure check (tonometry).

Prof Mackey's papers indexed as "glaucoma genetics" can be viewed on PubMed.

www.ncbi.nlm.nih.gov/pubmed
search "Mackey DA glaucoma"

Save the Date Monday 19 May

The Lions Eye Institute is proud to announce the inauguration of our new state-of-the-art laboratories on Monday 19 May 2014, from 5 to 7:30pm.

Our new research facilities are located on the 4th floor of the Harry Perkins Institute of Medical Research building. For an invitation to celebrate our opening and see the labs please contact Vinka on 9381 0795.



Help Save Sight

Our vision is to prevent and cure blindness and eye disease. Donations from the community allow us to continue the important work needed to save sight.

Please contact us to unsubscribe to LEI's newsletters.

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