



Christmas Appeal thanks

Thank you to all of our supporters who gave so generously to our 2015 Christmas Appeal.

This year's appeal featured the story of Ray Watson, who participated in a clinical trial investigating a new treatment regime for the wet form of macular degeneration.

The treatment restored Mr Watson's vision to a level where he can once again practice his passion – the finely detailed work of restoring classic cars.

Your support helps save the sight of people just like Ray and is much appreciated.



LEI Open Day

Every year, the LEI throws open its doors to give Western Australians an insight into all the work that goes on behind the scenes of a major eye research body.

Our most recent open day in November last year was well-attended and had a lot on offer, including Coffee with a Prof, with David Mackey, Ian McAllister, Geoffrey Crawford and Angus Turner taking questions from visitors.

Eye disease simulator glasses and a station with information on the LEI's upcoming renovation proved popular. Molecular Ophthalmology, Clinic and Day Surgery, Laser Vision and Clinical Trials were also represented.

Thank you to everyone who made the day such a success. We hope to see you at our next Open Day.

Yes, I want to save sight

Please accept my donation of: \$..... (Donations over \$2 are tax deductible)

Please find enclosed my Cheque Money Order OR, please debit my Mastercard American Express Visa

Card No: / / Expiry Date: /

Cardholders name: Signature:

Tax Receipt Details

Name:

Address:

Suburb: Postcode:

Telephone:

Email:

Please send me information on how I can include the Lions Eye Institute in my Will.

I have already provided for the Lions Eye Institute in my Will.

Your donation helps eradicate blindness

Mail to:
Lions Eye Institute,
Reply Paid 62815
Nedlands WA 6009
(No stamp required)

A ride to save sight

Mark Dutton and his daughter Natasha set out on a 1550km ride to save sight and raise funds for the Lions Eye Institute. This is their story.

Eight years ago, my daughter Kim was diagnosed with uveitis. Aged just six at the time, the condition caused an inflammation of Kim's inner eye, which would have led to tissue damage and severe visual impairment.

It required immediate treatment by Professor Tay-Kearney at the Lions Eye Institute (LEI) and since Kim's initial diagnosis, she has received weekly injections and medication to manage her condition. Kim is not cured but it seems the most critical stage has passed.

Uveitis affects one in 4500 people and is estimated to account for 15 per cent of visual impairment in Australia. The consequences have a larger than average impact on society as uveitis largely affects the young and working age group.

The LEI is a not-for-profit leader in eye research with a mission to save sight. Recent government changes mean the Institute's traditional funding sources are being cut back.

To help raise funds, my eldest daughter Natasha, 18, and I rode from Land's End in Cornwall to John O'Groats in Scotland in June last year. Over 12 days we covered 1550km and the total elevation climbed was the equivalent of Everest twice (18,000 metres). I'd forgotten how hilly Cornwall is! It was nice to do a flat ride around Perth's Swan River under blue skies again.



Prof. Ian McAllister

The UK "heatwave" reached the low 30s so it wasn't a major challenge for us having trained through the Perth summer.

We had one long, bleak and stormy day crossing Rannoch moor in Scotland. It's a beautiful spot regardless of weather but the back-up car had to rescue us with some extra dry gear and thermals. Otherwise, we were very lucky.

I can't stress how glad I am that we did this trip. It was 18 months in the making and I'm pleased to say that Natasha and I are still talking after the weeks the two of us spent on the road alone!

This was the third time I'd cycled this route and I thought it would be my last. Hence I was a bit floored when my younger twin daughters suggested for their turn that I go north with one and then south with the other. It's still hard to imagine doing it again – never mind turning around and cycling south straight after so I am working on that!

Natasha and I are now back in Perth having raised approximately \$15,000 for the Lions Eye Institute. We are very thankful for everyone's support.

You can help save sight by donating to the LEI. Call 9381 0777 or donate online at www.lei.org.au

What's the Fuss campaign?

The LEI supports the *What's the Fuss?* campaign, which is coordinated by the Medical Research Future Fund (MRFF) Action Group, an alliance of peak bodies representing health and medical researchers and patient groups, along with community and business leaders who support health and medical research.

Health and medical research is critical to our nation's future as it affects the health and eye health of all Australians.

Support for medical research makes economic sense too, with every dollar invested in Australian health and medical research returning on average \$2.17 in health benefits.

Investment in health and medical research by the National Health and Medical Research Council – the main source of Government funding for health and medical research – between 2000-2010 is estimated to have saved \$966 million in costs to the health system, with a further \$6 billion in projected gains linked to increased wellbeing.

The MRFF was legislated last year by the Federal Government and will build over time to provide extra funding to medical research and innovation.



UniPrint 130176



Vision News

AUTUMN 2016

Tearing away risks to sight

By Cathy Saunders

Stars in your eyes are one thing. Flashes of light are quite another.

They can be one of two signs of a potential semi-emergency – a tear in the retina.

The other key sign is a sudden increase in the number of "floaters" in your eye, like a little cloud of flies, warns leading ophthalmologist Professor Ian McAllister, director of clinical services at the Lions Eye Institute (LEI) in WA. Floaters are thin strands, squiggly lines, dark dots, or cobwebs and can be seen by looking at a clear, light-coloured uniform background, such as the blue sky (not the sun!).

Professor McAllister explained that the posterior chamber of the eye is filled with a vitreous gel, consisting of a lattice framework of fibrous collagen. With time, the gel structure starts to collapse and the fibres clump together, often causing benign floaters. The gel eventually pulls away from the back of the retina and, in some people, instead of pulling away cleanly, it causes a small tear.

If anyone has flashes of light and a sudden surge of floaters, which are probably small clumps of blood

from a tear, they should go straight away to see a GP for a potential referral to an ophthalmologist. "The aim is really to ensure that they don't have a precursor tear that will go on and cause a detached retina," Professor McAllister said.

Autopsy studies had shown about 12 per cent of people post-mortem had retinal tears, he said. The majority were probably asymptomatic and did not cause any problem but the symptomatic tears were the ones of concern.

Professor McAllister warned that if a retinal tear was ignored and not mended, it could lead to a retinal detachment. A much more serious eye condition, a retinal detachment could result in blindness if left untreated.

The symptoms of a detached retina were different from those of a retinal tear.

"The person might start off with the floaters and flashes and then, as the retina detaches, they would be aware of a blank area in their vision like a curtain coming down or a curtain coming in from the side or above or below that they can't see through," Professor McAllister said.

"If someone does have those symptoms, we really do want to try to get them before their central



Prof. Ian McAllister

vision detaches because we can usually get virtually all of their vision back. If their central vision has detached ... we may not get quite the full amount of vision for them."

Early treatment of a retinal tear was straightforward and usually involved only "stitching" by laser for about 10 minutes in the ophthalmologist's surgery with a follow-up a month later to check that the tear was fully mended and no new tears had developed.

Treatment of a retinal detachment was more complex and involved

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a one-hour in-hospital operation, either involving re-attachment using a scleral buckle or by vitrectomy in which the vitreous gel was removed and the retina pushed back into place with gas. The tears were also mended.

“Some people are a bit more prone to developing tears in the retina than others,” Professor McAllister said.

Although age was the main risk factor, tears could occur in younger people with other eye conditions (see box).

There was no prevention but if one tear had occurred, it was wise not to jog for a month after laser treatment until the follow-up check-up gave the all clear.

“It is just until everything stabilises,” Professor McAllister said. “Then I tell everyone to go back and live their life normally.”

Once the vitreous gel had completely pulled away from the retina over time – a process which only occurred once – the risk of retinal tears was greatly diminished, he said.

Signs of a retinal tear

- Flashes of light and a sudden surge of floaters.
- Tears affects men and women equally.

Risk factors for a retinal tear

- Age. The majority of tears are in the 50-plus age group.
- Significant myopia (short-sightedness).
- Cataract surgery.
- Previous trauma to the eye, such as a blunt injury, including by a cricket or soccer ball.
- Previous inflammatory disorders of the eye, such as retinal vasculitis.
- A family history of retinal detachment.

This story first appeared in *The West Australian's Health and Medicine section and is reproduced here with permission.*



John and Penelope Smith with Prof. McAllister

LEI celebrates 20 years

Friends of the LEI, including patients and other guests, joined a celebratory afternoon tea on January 19.

The event marked the 20th anniversary of the official opening of the LEI building and also provided an opportunity for guests to hear about exciting areas of research from some of our top scientists.

Professor McAllister spoke about his research into Central Retinal Vein Occlusion (CRVO). Many of the guests in the room had experience with this disease and were interested in learning more about the latest treatments.

CRVO is one of the three major causes of blindness but doesn't receive the same level of attention as macular degeneration and diabetic retinopathy.

Professor McAllister's research has resulted in a laser treatment that redirects blood flow in the retina. This treatment has proven very effective, resulting in the gradual increase of sight which lasts significantly longer than other treatments.

Professor Mariapia Degli-Esposti, LEI's Head of Research, presented information on immunology. She explained how our immune system responds to infection and how pathogens can assist the chance of an improved immunity. She provided guests with an overview of the LEI's unique ocular immunology program and the immune response in the eye.

Afternoon teas hosted by the LEI's clinicians and researchers are held throughout the year. If you would like to attend one, please contact Sue McLennan on 9381 0738 or email suemclennan@lei.org.au

New clinic design on track

The LEI's clinic is undergoing a major redesign and expansion to meet future demand and ensure our high standards are maintained.

The ground floor renovation design, incorporating a new clinic and ancillary services, continues to progress under the guidance of a project manager and team of external consultants.

The new design will include:

- A revitalised and refreshed lobby area, including a new coffee shop, alfresco and reception areas
- Additional consultation rooms and testing areas to meet the increasing demand of patients
- Ancillary services such as photography, additional injection suites and patient administrative services
- A dedicated clinical trials suite for the ongoing and essential research commitments of the LEI

Coupled with the installation of a new passenger lift, the new ground floor renovations will herald a dramatic improvement in the care and well-being of all visitors to the Lions Eye Institute.

It will mean Retina patients attending the new clinic and ancillary services will no longer need to travel to other floors or buildings during their visit.

Patient flow throughout the new floor layout will be greatly improved with new signage as well as designated waiting areas aligned to our doctors to minimise confusion.

Patient comforts will be enhanced with more tea and coffee facilities and comfortable waiting areas within a light and bright clinic.

The inclusion of a separate injection suite will include its own injection waiting area, injections rooms, recovery bays and administrative functions.

Construction works are expected to begin this year, with completion anticipated before Christmas 2016.

Young scientist brings new skills

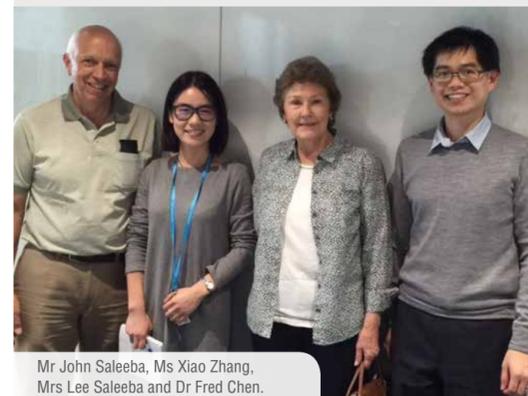
Xiao Zhang is one of the LEI's newest research recruits. She graduated from Wenzhou Medical University in June 2015 and started working as a research assistant in the Ocular Tissue Engineering group in October last year.

Reporting to Dr Fred Chen, Xiao's research is focused on improving our understanding of hereditary retinal degeneration, such as retinitis pigmentosa. She is studying how these conditions occur and developing and testing personalised treatments using stem cells. First skin cells are collected from patients with incurable retinal diseases and these are grown into cells of the retina.

Xiao will then use a new technique called gene editing to remove mutations from these stem cells. By growing two lots of retinal cells from these stem cells, one with and one without the mutation, she aims to discover how the various mutations cause retinal disease. Mutations in more than 260 genes can cause retinal degeneration.

Xiao is experienced in the recently discovered technique of gene editing. She worked with this cutting edge technology in Professor Zi-Bing Jin's Laboratory for Stem Cell and Retinal Regeneration at Wenzhou Medical University's School of Optometry and Ophthalmology. She had a dream of coming to a leading laboratory in Australia and using her knowledge of gene editing. The generous support of the Saleeba family has allowed her to take up the position at the LEI.

Xiao will continue her search for understanding into hereditary retinal diseases as she completes her PhD studies at The University of Western Australia.



Mr John Saleeba, Ms Xiao Zhang, Mrs Lee Saleeba and Dr Fred Chen.

Eye study investigates short-sightedness in Asian students



The rise in rates of blindness from pathological myopia, retinal detachment, myopic maculopathy, and glaucoma is a major focus for top researchers at the LEI.

Worldwide there is an epidemic of myopia – most evident in East Asian cities where 90 per cent of high-school graduates are myopic.

The environmental factors that contribute to myopia, including lack of outdoor activity and higher levels of education, have their effect during childhood. Major international research collaborations are identifying genetic pathways involved in myopia. Understanding genetic risk factors and how they interact with environmental risk factors will allow us to predict which children are at the highest risk for developing myopia and target new interventions.

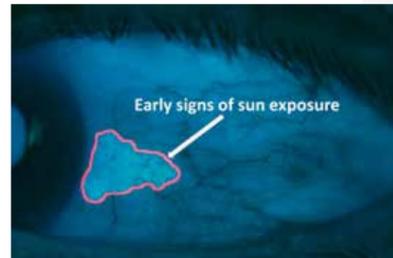
Preventing and managing myopia will soon be the primary area of work for paediatric ophthalmologists.

A staggering 95 per cent of Chinese medical students doing a winter school in WA were myopic. This contrasts with 45 per cent of WA-born Chinese 20-year-olds and 20 per cent of WA-born Caucasian 20-year-olds in the Raine Study. Similar figures were seen with the Sydney Myopia Study.

As part of our international collaborations with the Consortium for Refractive Error and Myopia (CREAM) group, we hope to identify the specific risk factor differences between East Asian and Australian myopia rates such as time outdoors, levels of illumination or levels of study. Hopefully this will allow interventions that can be implemented in China and Singapore.

The project is focused on research which is likely to highlight the health and lifestyle benefits for families and students in particular, who travel to WA to live or study.

If we could demonstrate reduced myopia progression in students who come to WA to study, for example, an Australian education may be an attractive option for Chinese parents.



The LEI aims to recruit Chinese students studying in schools and universities in Western Australia for a baseline refraction and test them every six months for four years to assess progression of their myopia, axial length, vitamin D levels and conjunctival autofluorescence. We will compare age and education matched students remaining in Singapore, Shanghai and Wenzhou.

The researchers are keen to connect with Chinese business people and organisations who may be interested in becoming involved or help us with funding this important project.

If you would like to donate funds or assist with our research please contact Lisa Booth on 9381 0707 or lisa booth@lei.org.au