Lions Eye Institute

2014 ANNUAL REPORT

Growing, continually improving, achieving our goals

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A digital version of this report is available on our website:
www.lei.org.au

Lions Eye Institute

Lions Eye Institute

2014

Vision and mission

Vision

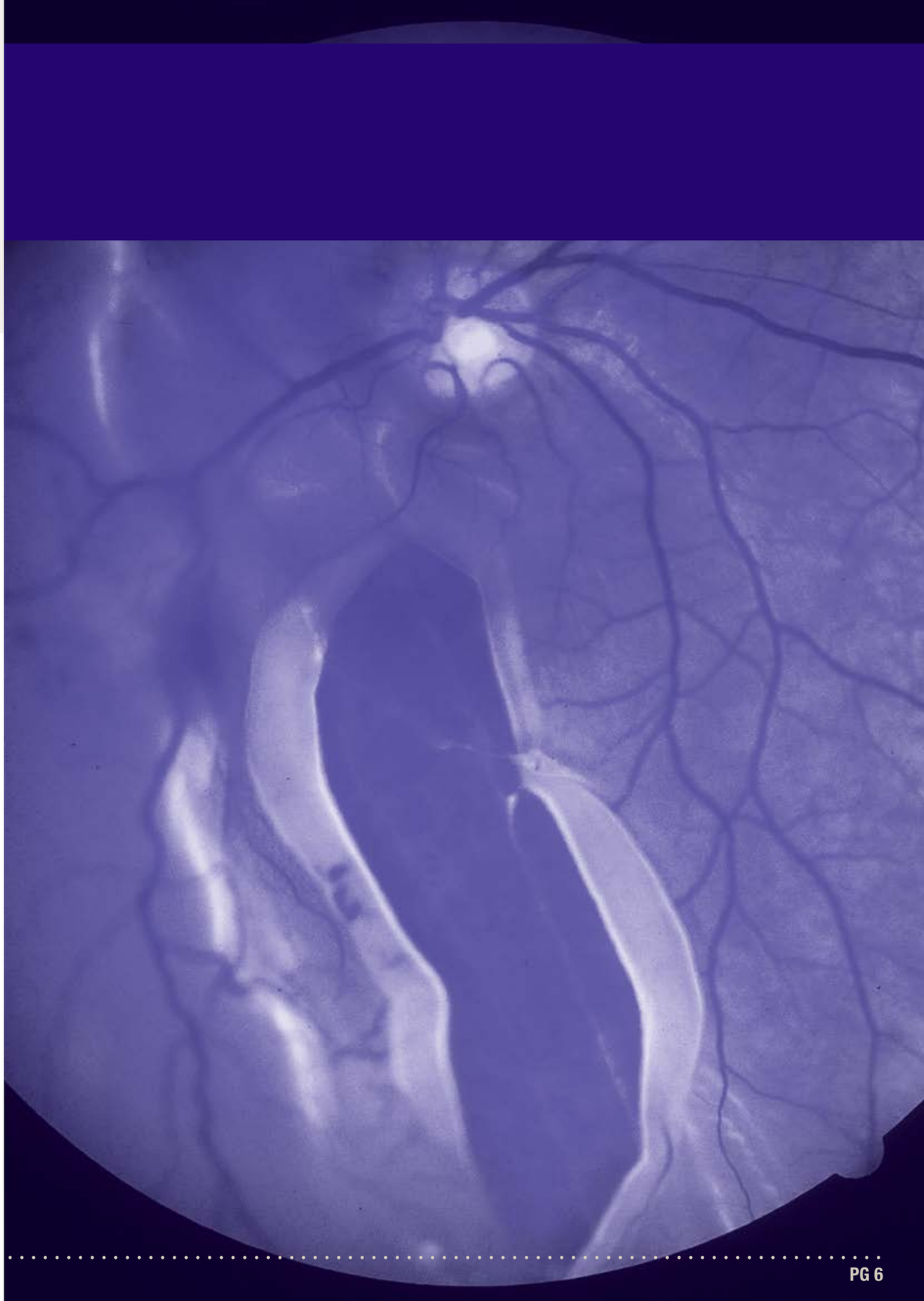
To prevent and cure blindness and eye disease

Mission

To achieve leadership in scientific research and clinical practice in the prevention of blindness and eye disease through:

- global leadership in scientific research
- translation of research into community outcomes
- a commitment to growing the reach of our research capabilities and clinical services
- development and training of outstanding eye care professionals and researchers
- community engagement and education to build awareness, maintain a high reputation and increase funding

The LEI holds the top level number “five” in the Federal Government’s Excellence in Research for Australia (ERA) ranking. ERA assesses research quality within Australia’s higher education institutions, using a combination of indicators and reviews given by highly experienced and internationally-recognised experts.



Chairman's report

2014 was a year of activity and achievement for the Lions Eye Institute.

The official opening of state-of-the-art research laboratories at the Harry Perkins Institute of Medical Research building in May was a highlight in a successful and busy year.

The physical relocation of most research groups to the new laboratories has made space available for the expansion of the clinic operations. When complete this will increase clinical capacity, accelerate growth and most importantly provide for a better patient experience.

Stephen Pearce.

A strategic review of all LEI operations in 2013 began to bear fruit in 2014, with the implementation of key operational goals to guide growth and advancement from 2014 to 2016.

Of particular focus for the Board is financial sustainability of the LEI and in this regard I am pleased to report that the Institute generated a modest operating surplus for the year of $688,000. Without the commitment of our donors and their philanthropic support this would not have been possible, and I sincerely thank them for the contribution that they make to our work. The donations we receive and the funds that are generated by our world class Clinical Services have all been committed to providing our research teams with the financial support, facilities and infrastructure that they need to operate effectively.

Of great potential long term significance is the collaboration that the LEI now has with its US-based research partner Avalanche Biotechnologies, Inc., which listed on the NASDAQ in July 2014. Avalanche is conducting clinical trials of a treatment for age-related macular degeneration - leveraging ground breaking research conducted over many years by LEI researchers Professor Ian Constable AO, Professor Elizabeth Rakoczy, and the invaluable members of their teams.

In other areas of operational focus, our medical researchers continued to operate at the highest levels of international excellence. Just one example of this was the work of Professor Mariapia Degli-Esposti's Immunology group, whose research into the impact of viral infections in triggering or worsening autoimmune diseases attracted international attention. In addition, there was pleasing growth in our clinical services and teaching and training capacity was also extended.

The LEI is fortunate to have many supporters who are as passionate about the cause of saving sight as we are. I make special mention of the Lions Save-Sight Foundation (LSSF) and Australian Foundation for the Prevention of Blindness (AFPB) for their unwavering support, but also our many donors, institutional partners, trusts and foundations and those who have chosen to bequest money to the LEI during 2014.

The retirement of our highly esteemed Board Chairman David Eiszele was announced at the opening of the new research floor in 2014.

David Eiszele and Brian King, both former Chairs of the LEI, with Stephen Pearce.

David, a former Managing Director of Western Power, joined the LEI Board in 2003 and was appointed Chairman in 2004.

I was very honoured to assume the role of Chairman upon David's departure and feel privileged to lead such a capable and knowledgeable group of Directors.

I take this opportunity to welcome Peter Forbes, who joined the Board in 2014, and brings a wealth of finance and medical indemnity industry experience to our deliberations.

Finally on behalf of the Board, I wish to thank the LEI leadership team under Professor David Mackey and our committed staff and volunteers who do so much to support the vital work of the LEI.

Stephen Pearce
Non-Executive Chairman

Managing Director's report

2014 saw the LEI focus on implementing a raft of organisational goals identified in a strategic review of all our operations.

These goals, which will guide our growth and development through to 2016, focus on growing and improving our research capabilities, clinical services, teaching and training, community engagement and financial sustainability.

It has been an exciting year for our research teams with the LEI's human gene therapy for wet AMD advancing toward commercialisation.

Over the course of 2014, US biotechnology start up Avalanche Biotechnologies Inc raised significant venture capital and listed on the NASDAQ in a very successful IPO, based on the potential of a new treatment for wet AMD.

David Mackey

The LEI has been collaborating with Avalanche since at least 2008, and our discovery research has made an important early stage contribution to the development of this treatment, in particular the work of Professor Ian Constable, Professor Elizabeth Rakoczy and Dr Chooi-May Lai. The LEI has been heavily involved in conducting the Phase 1 and Phase 2 clinical trials for Avalanche.

If clinical trials prove successful, this is potentially a once in a generation breakthrough in medical science, of which the LEI has been a key part.

The LEI's Immunology research group has also reported significant research outcomes during 2014, in particular the work of Dr Iona Schuster, Assistant Professor Chris Andoniou and Professor Mariapia Degli-Esposti in assessing the impact of viral infections on the triggering or exacerbation of autoimmune diseases.

The Genetic and Epidemiology group using data from the Busselton Healthy aging study identified an important link - that spending more time outdoors reduces the risk of myopia (short sightedness) but increases the risk of skin cancer.

In addition we found wearing swimming goggles does not seem to increase the risk of glaucoma in the general population.

Several new genes associated with glaucoma were also identified as part of the International Consortium for Refractive Error and Myopia.

The Ocular Tissue Engineering Laboratory, led by Associate Professor Fred Chen, continued to develop personalised cell-based therapy to treat macular and retinal degenerations. The group also examined clinical methods to detect disease progression and response to cell-based therapy and other novel treatments of retinal degeneration.

Major projects for the group in 2014 included retinal pigment epithelium transplant, the use of clinical imaging tools to monitor disease progression and novel treatments for macular degeneration.

Physiology and Pharmacology successfully relocated all laboratories and offices from the ground floor of the LEI to the first floor to allow works on a new clinical facility to begin. The group also initiated two new collaborations with researchers in Canada and Singapore.

The Lions Eye Institute

Our Clinical Services continued to grow in 2014, with a record number of 58,000 patient treatments. Patients through the Elsie Gadd Clinic increased by almost five per cent on the previous year.

Capacity at our Murdoch clinic, adjacent to the new Fiona Stanley Hospital, increased following a major expansion project. All four main sub-specialty groups - retinal, glaucoma, corneal and oculoplastics - are now offered at Murdoch.

Many of the LEI's research and administration staff moved to the new Harry Perkins Institute of Medical Research building in 2014.

The LEI occupies the fourth floor, with its state-of-the-art research capabilities, access to cutting edge equipment and a design that encourages collaboration not only internally but between the State's leading medical research institutes.

Planning and some works began on the relocation of Clinical Services, which will move to the ground floor of the LEI's Verdun St building. This will increase capacity for medical services and clinical trials, bringing these services to the ground floor.

The redevelopment will also see the commissioning of a second operating theatre to support a growing number of day surgery cases, with completion of this major project expected in 2016.

The LEI continued its commitment to improving eye health outcomes to Western Australia's remote and Indigenous communities.

Lions Outback Vision, under the leadership of Associate Professor Angus Turner, enjoyed a year of remarkable growth in terms of both staff and service delivery, treating 5969 patients in 2014, compared to 3235 the year before.

Clinical Trials also continued to expand through the development of specialist skills within the group and now oversees 30 active studies, making the LEI one of the largest ophthalmological clinical trials research centres anywhere in the world.

Our Volunteer program continued to be a key strength in 2014, supporting many of our community activities, including the Harry Perkins building inauguration ceremony, Visionaries luncheon, LEI Open Day, Ian Constable Lecture and Telethon.

Volunteers also continued to provide an important support role for patients and visitors.

We said a sad farewell to Volunteer coordinator Lyne Thomas, who was involved from the program's inception in May 2010.

I thank Lyne for helping to design the program and recruit the volunteers who have done so much to improve the day-to-day running of the LEI.

We also said farewell to our Property Manager Phil Newman-Martin and Chief Financial Officer Chee-Peng Yao. Both played crucial roles in the development of the LEI over many years.

Chris Whitelock, formerly from the Association for the Blind, subsequently took on the CFO role and also that of UWA school manager.

At Board level, we welcomed a new Chairman in Stephen Pearce following David Eiszele's retirement from the Board.

I thank David for his outstanding leadership as Chairman and acknowledge the enormous skills and experience Stephen brings to the role.

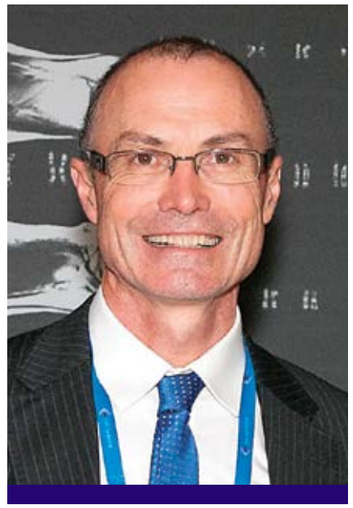
My thanks also to all Board members for the outstanding role they played during the year in skilfully navigating the LEI during a period of transition and challenge.

Professor David Mackey

Board of Directors

Stephen Pearce

Stephen Pearce joined the Board in 2012 and was appointed Chairman in 2014. He is Chief Financial Officer of Fortescue Metals Group Limited and has nearly 30 years' experience in senior management roles in the mining, oil and gas and utilities industries. Prior to joining Fortescue, Mr Pearce served as Managing Director and Chief Executive Officer of Southern Cross Electrical Engineering Limited and Chief Financial Officer of Alinta Limited. He has previously served as Chairman of Amadeus Energy Ltd., and Chairman of Surtron Technologies Pty Ltd. Mr Pearce served as a member of the Western Australian Business and Industry Committee for the Salvation Army for seven years. He received a Bachelor of Business from the Royal Melbourne Institute of Technology and a Graduate Diploma in Company Secretarial Practice. He is a Fellow of the Institute of Chartered Accountants, a Chartered Secretary and Member of the Australian Institute of Company Directors.



Professor David A Mackey

Professor David A Mackey was appointed Managing Director of the LEI and Professor of Ophthalmology at UWA in March 2009. He heads UWA's Centre for Ophthalmology and Visual Science. Professor Mackey studied medicine at the University of Tasmania and trained in ophthalmology at the Royal Victorian Eye and Ear Hospital in Melbourne subsequently doing a fellowship in paediatric and genetic eye diseases at the Royal Children's Hospital, Melbourne. After fellowships at the Johns Hopkins Centre for Hereditary Eye Diseases in Baltimore and Moorfields Eye Hospital and the Great Ormond St Hospital for Sick Children in London he returned to Australia to specialise in genetic eye diseases. He is president of the International Society for Genetic Eye Disease and Retinoblastoma, a member of the Board of the Ophthalmic Research Institute of Australia and Chair of the ORIA Scientific Advisory Committee, Australian representative on the Council of the Asia Pacific Academy of Ophthalmology, and an executive committee member of the Glaucoma Research Society. Professor Mackey was the Clinical Professor at the University of Tasmania and Associate Professor at the University of Melbourne. Professor Mackey is a member of the Investment Committee.

Dr Stephanie Allen

Dr Stephanie Allen is a Partner at PwC. She leads the health and government practices for PwC in Western Australia and has a national role around healthcare productivity. She holds a PhD, MSc and BA Joint Honours degrees from the University of Oxford. Stephanie has over 15 years' experience in healthcare consulting both in Australia and the UK. She has led a number of high profile projects for WA including sustainable cost improvement programs across the public and private healthcare system. Dr Allen has also worked extensively with the primary, aged care and disabilities sector - typically supporting organisations to develop robust business cases for the diversification or rationalisation of services as demand and funding changes.

Peter Forbes

Peter Forbes joined the Board of the LEI in 2014. A chartered accountant, Peter Forbes is a former CEO of specialist medical indemnity mutual, MDA National and former Managing Director of its wholly owned insurer, MDA National Insurance Pty Ltd. He is Chair of Victorian health fund provider Transport Health. Mr Forbes was a founding partner of the WA branch of HLB Mann Judd, chartered accountants, and a former managing partner of that firm. He was also a director of LawCover, the NSW statutory insurer for NSW solicitors, from 2004 to 2010.

Rudolf Brunovs

Rudolf Brunovs joined the Board in 2005. He is a Fellow of the Institute of Chartered Accountants and the Australian Institute of Company Directors, and holds a Masters of Business Administration. Mr Brunovs retired as a partner of the chartered accounting firm Ernst & Young after 27 years as a partner in a number of their offices. He is currently a Director and the Principal of Mainstay Consulting Pty Ltd and a Director of Deep Yellow Limited.

Tony Joyner

Tony Joyner joined the Board in 2013. He has more than 25 years' experience as a commercial and corporate lawyer and is currently the Managing Partner of the Perth office at Herbert Smith Freehills. Mr Joyner heads the Western Australia corporate technology and intellectual property group, and is a senior member of the projects team in Perth. He has an honours Bachelor of Jurisprudence and Bachelor of Laws degree from UWA. He sits on several committees, including the WA Chamber of Commerce Business Policy Forum, Services Committee and Telecommunications and Innovation sub-committees.

Professor Ian McAllister

Professor Ian McAllister joined the Board in 2011. He studied medicine at UWA and completed his ophthalmological training in hospitals in Western Australia and a fellowship in vitreoretinal disorders at the Cleveland Clinic Foundation in Cleveland, Ohio. He has been with the LEI since 1988 providing vitreoretinal services to metropolitan hospitals and has also been involved in research into disorders affecting the retina. Professor McAllister holds a number of NHMRC grants as well as numerous minor grants and has published over 120 papers in scientific journals. He was also recently awarded an American Academy of Ophthalmology Achievement award for distinguished service to ophthalmology. Professor McAllister is the Director of Clinical Services at the LEI and has extensive experience in research and eye health care. He is a consultant ophthalmologist at RPH and SCGH.

Sir James Cruthers AO Patron

Sir James Cruthers AO has been a long standing patron of LEI. He had a long career in the media and entertainment industry, receiving his knighthood for service to commerce, the community and the arts. After war service he was appointed a journalist with the Perth Daily News. In 1958 he became founding General Manager of TVW Channel 7 and later Chairman. Past chairmanships include the Australian Film Commission and News American Publishing Inc where he was personal adviser to Mr Rupert Murdoch. Sir James is a philanthropist who established TVW Telethon and the WA annual Christmas Pageant. He actively supports many charitable groups.

Grow and continually improve our research capabilities

Genetics and population health

Research projects

The Western Australian Eye Protection Study

Outdoor sports involve exposure to sun, which has both beneficial and potentially harmful effects on eyesight. For example, outdoor exposure seems to protect adolescents from developing short-sightedness (myopia) but excess UV exposure increases the risk of damage to the front of the eye, causing pterygium. Thus a balance is important. Wearing hats and sunglasses is practical for some sports and outdoor activities but it is less so for others. Researchers at the LEI continue to look for the optimal balance of sun exposure that can reduce the risk of sun-related eye disease, while also preventing short-sightedness.

In 2014, 207 people were examined throughout the year bringing the total number of WA Eye Protection Study (EPS) participants to 728. Rowing groups continued to be a centre of the investigation into the use of eye protection and the prevalence of early signs of eye damage in sporting groups. The EPS research team attended several high school rowing regattas over the year, providing the rowing community with information about the research and an opportunity to participate. Several members of the UWA Rowing Club took part in the study in place of one of their training sessions.

In addition, high school students taking part in a UWA 'RealScience' program came to the LEI to learn about the research and to participate.

The WA Eye Protection Study was also chosen to participate in a Crowd Research campaign by UWA, an initiative designed to engage and involve the Western Australian community in research. In order to promote the EPS, the research team designed a webpage www.mackeylab.org/eps/ to connect with the community and provide an online avenue of communication.

LEI Managing Director and Genetics and Population Health Group leader Professor David Mackey launched the WA Eye Protection Study Crowd Research campaign at Cottesloe beach in 2014.

Translation of Genetic Eye Research

Researchers involved in the NHMRC's Centre of Research Excellence project The Translation of Genetic Eye Research ran a successful "OMICS for ophthalmologists" training course at RANZCO's 45th annual scientific congress in Brisbane in November 2014. Under the same project, a new genetic testing centre has been established in South Australia, consolidating glaucoma data and bio-specimens in one national register. This registry is an addition to the national inherited retinal diseases database and DNA Bank service in Western Australia that has been coordinating DNA testing for retinal diseases.

Raine Eye Health Study

The Raine Study is a longitudinal study that is one of the world's largest and most successful studies of the influences of genetics, pregnancy, childhood and adolescence on subsequent health and developmental outcomes. The 20-year-old follow-up of 1350 cohort participants had a predominant focus on eye health and was one of the first studies of eye health and diseases in young adults.

Data from this study have been shared with two international consortia that have identified genes involved in variation of many eye measures between individuals and risk factors for eye diseases such as refractive error and keratoconus. Several studies exploring the environmental factors influencing eye health of young adults have also been published.

Western Australian Strabismus Inheritance Study

Strabismus (misalignment of the eyes) affects about five per cent of the general population. It is often associated with amblyopia, a failure of normal visual development (otherwise known as a lazy eye) and reduced or absent binocular (stereoscopic) vision. Thus early diagnosis and treatment enables optimal visual outcomes.

We have been collaborating with the Engle laboratory at the Children's Hospital, Boston, affiliated with the Harvard Medical School, since 2003 as part of the Strabismus Inheritance Studies in Tasmania and Western Australia with a primary focus a common type of strabismus - esotropia. This year, researchers completed the collection of data in this disease subtype and they are working towards its analysis.

Busselton Healthy Ageing Study

The Busselton Study is a major population health study that has been ongoing since the 1960s. In 2010, the Busselton Population Medical Research Foundation started a study - the Busselton Health Ageing Study - to explore why some people are able to remain healthy and active throughout their senior years, whilst others suffer ongoing illness and infirmity. There is an eye component within this study, for which the LEI through Professor David Mackey is providing financial and equipment support.

Eye Injury Epidemiology and Injury Prevention

This project is funded by the Joyce Henderson Paediatric Ophthalmology Bequest Fund. In 2014 significant progress was made in determining the incidence and nature of paediatric ocular trauma in Western Australia. A retrospective review of children's eye injuries presenting to Princess Margaret Hospital for Children was conducted by the Joyce Henderson Research Fellow. The data analyses included eye injuries from 2002 to the end of 2014. Information about the nature of injuries will be fundamental in the development of eye injury prevention strategies.

Eye protection is known to reduce the incidence of eye injuries in sport. Currently in Australia a standard exists for sports eye protection

for squash and face shields for cricket. The LEI was instrumental in the development of a Sport's Eye Protection proposal approved in late 2014 by Standards Australia. This project will commence early in 2015. The LEI continues to actively participate in International Organization for Standards (ISO) and Standards Australia (SA) committees to develop eye protection and sunglass standards.

Grants / Funding

Channel 7 Telethon Trust

NHMRC

Staff

Professor David Mackey
(Group leader)

Ms Tracey-Anne Dickens
(Research team leader)

Dr Alex Hewitt PhD
(NHMRC Research Fellow)

Dr Justin Sherwin
(Research Associate)

Mr Paul Sanfilippo
(Research Associate)

Ms Kate Hanman
(Research Assistant)

Ms Lisa Booth
(Research Assistant)

Ms Julie Crewe
(Research Fellow)

Mr George Gooden
(Research Assistant)

Ms Emily Hunyh
(Research Assistant)

Mr Kashif Syed
(Data Management Officer)

Dr Anne-Marie Yardley
(Research Fellow)

Ms Annette Clayfield-Hoskin
(Joyce Henderson Research Fellow)

Students

Ms Seyhan Yazar
(PhD)

Dr Hannah Forward
(Masters by research)

Dr Charlotte McKnight
(Masters by research)

Three UWA Year 4 medical students completed an IMED R&D project

Four students from China undertook a three-week research assignment as part of UWA's Winter School studies

The LEI's Seyhan Yazar with Channel 7 Chairman Kerry Stokes and Prime Minister Tony Abbott.

Immunology

Overview

The Division of Immunology comprises four research groups: Ocular Immunology and Autoimmunity led by Professor John Forrester and Dr Matthew Wikstrom, Cell Signalling and Apoptosis led by Assistant Professor Chris Andoniou, Viral Immunology led by Dr Jerome Coudert and Experimental Immunology led by Professor Mariapia Degli-Esposti.

In 2014 the Division relocated to their new state-of-the art LEI laboratories.

One of the Division's main research projects during the year focused on understanding how a common viral infection affects vision. Mouse cytomegalovirus (MCMV) has been used as the model virus, due to its similarity in structure and biology with human cytomegalovirus (HCMV). This virus causes a chronic viral infection that can result in significant systemic disease, as well as severe ocular complications, especially in individuals whose immune systems are compromised.

The LEI's Immunology Division moved into new state-of-the-art research laboratories in 2014.

During 2014 many advances have been made on establishing new in vivo models that more closely mimic the natural history of human eye infections. In these more physiological models of viral eye infection there is reduced access of the virus to the eye, however there are profound changes in most eye compartments, including the neural retina. How these changes affect vision, and whether these effects are temporary or long-term, is being investigated.

Research

Models of Inflammatory Eye Disease

An additional focus of our immunology research is inflammatory ocular disease or uveitis. Uveitis is an inflammatory disease that affects the eye, damaging the retina and causing blindness. Uveitis mainly occurs in the 20-50 year age group, and can affect one or both eyes. Uveitis is an important problem and accounts for 10 per cent of blindness in people of working age in the western world. Little is known about the cause of uveitis and it remains one of the most important unsolved problems in ophthalmology.

Winthrop Professor John Forrester, Brian King Fellow Doctor Matthew Wikstrom and Doctor Valentina Voigt are investigating the development of autoimmune uveitis using a novel mouse model of spontaneous disease.

In addition, the Ocular Immunology and Autoimmunity Group is developing models to study inflammatory ocular diseases, including virally-induced uveitis.

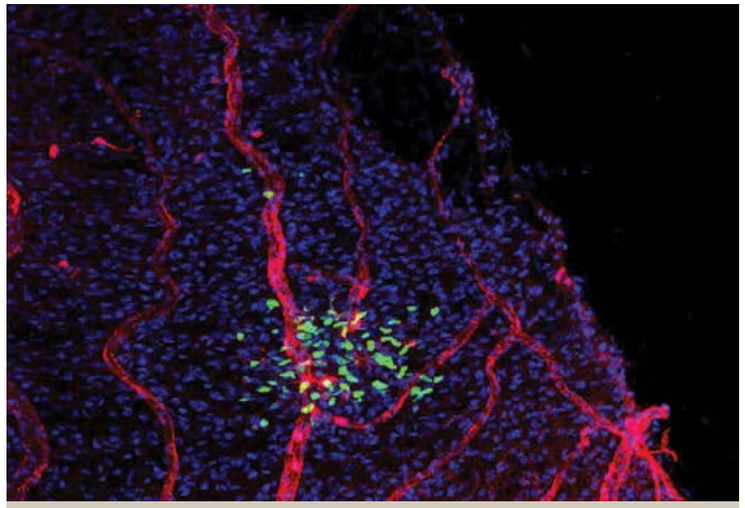
Together with our collaborators we have also developed mouse models to define the causes of uveitis that occurs as a complication of other autoimmune diseases. These studies, undertaken by Geraldine Brizard, were the first to describe a model of spondylarthritis where uveitis occurs as part of the disease process, as is the case in humans. It is hoped that ultimately the insights gained from these studies will lead to improved treatments for these ocular conditions and autoimmune diseases in general.

Regulating susceptibility to autoimmunity, a newly described role for Natural Killer (NK) cells

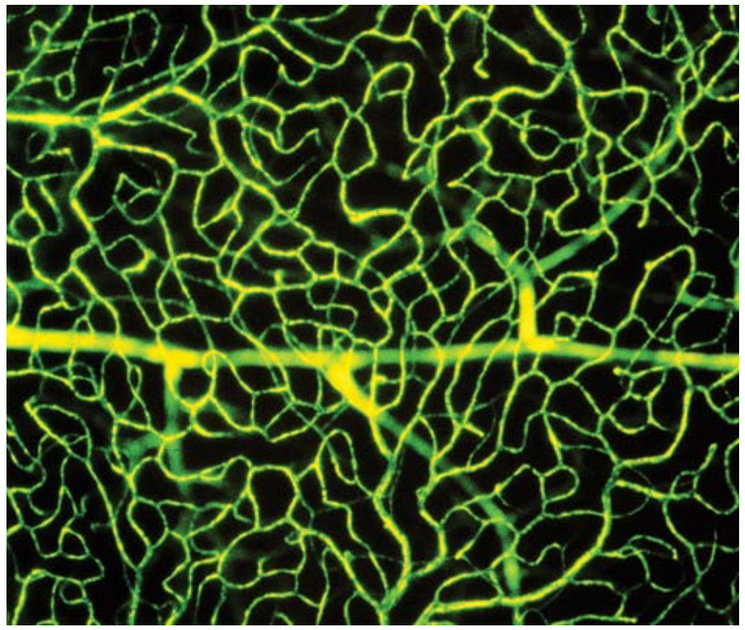
Dr Iona Schuster, Assistant Professor Chris Andoniou and Professor Degli-Esposti are assessing the impact of viral infections on the triggering or exacerbation of autoimmune diseases. Through detailed manipulation of the murine CMV infection model, they have been able to demonstrate the role of viral infection in the development of a Sjogren's-like Syndrome. The pathology that develops in this model is defined by the focal accumulation of lymphocytes in exocrine glands, including the salivary gland, and is associated with the development of specific autoantibodies. This model is very similar to human Sjogren's disease, including the clinical manifestations. Indeed, there is a significant reduction in saliva and tear production, which are cardinal characteristic of the human disease. In work published in the prestigious international journal Immunity, research completed to date described how natural killer (NK) cells regulate CD4 T cell responses to limit the development of autoimmunity. The important interaction between NK cells and CD4 T cells in the salivary glands involves the TNF-related apoptosis inducting ligand (TRAIL). If this molecule is removed by genetic manipulation, or if NK cells are depleted, normal regulatory processes are impaired and a Sjogren's-like Syndrome develops. This study has made a number of important discoveries; it has proven a link between chronic viral infection and autoimmune disease, has generated a model of the second most common autoimmune disease in humans, affecting millions of people worldwide and has provided critical insights into immune pathways that might be targeted to improve treatments for a common and debilitating human condition.

Dancing with death: Host/Viral interactions

Assistant Professor Chris Andoniou and Peter Fleming have made significant discoveries in the area of programmed cell death or apoptosis. One of their major on-going studies aims to investigate the interplay between viral and host proteins which regulate the sensitivity of specific cell populations to apoptotic death. Apoptosis is an important physiological process and dysregulation in apoptotic pathways can lead to a number of degenerative disorders, including many which affect the eye. Therefore, a better understanding of the processes that regulate apoptosis is critical to improve the treatment of these diseases including for example retinal degenerative disorders.



An example of infection in the eye is illustrated in this photomicrograph, which is taken from a wholemount of a mouse eye. Cells infected by MCMV stain green, blood vessels stain red, and cellular nuclei are labelled blue.



In related work published in the influential journal Plos Pathogen, Assistant Professor Andoniou and Professor Degli-Esposti showed the deleterious consequences of possessing a natural variant of a gene encoding a protein involved in cell killing. These studies showed that mice possessing a naturally occurring variant to granzyme B are highly susceptible to infection with MCMV and develop a fulminant pathology. In collaboration with colleagues at the Peter MacCallum Cancer Centre, work is continuing to assess the mechanism that underlies the deleterious pathology that results from an ineffective anti-MCMV response.

Viral escape from NK mediated immunity

Dr Jerome Coudert leads a research program aimed at better understanding how a key component of early immune responses, NK cells, function and what molecules or pathways may be manipulated to change these activities in disease or therapeutic settings.

Together with Catherine Forbes, Dr Coudert has reported a novel interaction of the MCMV immunoevasin m157 with both an activating (Ly49H) and inhibitory receptor (Ly49C) expressed by mouse NK cells. As the receptors expressed on NK cells varies between mouse strains, this helps explain why mouse strains vary in their susceptibility to MCMV infection. In 2014, they published in PLoS Pathogens their recent study where they investigated the mechanisms that enable the viral immunoevasin m157 to abrogate the NK cell response and to impair mouse resistance to infection by MCMV. In addition, they demonstrated that in some mouse strains, NK cell had developed unusual molecular mechanisms that counter m157-mediated viral evasion. They showed that self-molecules expressed on the surface of NK cells can mask the Ly49C receptors and prevent m157-induced inhibition. Variability of NK cell receptors and self-molecules expressed between mouse strains reflects what occurs in human. Since NK cells are critical for the control of viral infections and malignancies in all mammal species, these studies have uncovered information that pave the way to manipulating NK cell function for therapeutic purposes.

Investigating the profound effects of Graft Versus Host Disease

With our collaborators at the QIMR Berghofer Medical Research Institute, we have established a program to investigate complications that occur during bone marrow transplantation (BMT) and have developed unique mouse models. One common complication following BMT is ocular graft versus host disease (ocular GVHD). Symptoms of ocular GVHD include blurry vision, severe light sensitivity, chronic conjunctivitis (pink eye), dry eyes, burning sensation and general eye pain. In severe cases, ocular surface disease with corneal perforation can ensue. Our studies are addressing whether immune-mediated mechanisms participate in the pathology of ocular GVHD, and whether this complication is exacerbated by concomitant viral infection. Ultimately, we aim to develop improved therapies for this important ocular condition.

Immunology Division

Head of Division

Professor Mariapia Degli-Esposti

Group Leaders

Professor John Forrester

Assistant Professor Christopher Andoniou

Dr Jerome Coudert

Dr Matthew Wikstrom (PDG Brian King Research Fellow)

Research Staff

Dr Valentina Voigt

Dr Iona Schuster

Dr Monique Ong

Dr Serani van Dommelen

Dr Andrew Lucas

Peter Fleming

Catherine Forbes

Geraldine Brizard-Mandin

Slavica Pervan

Molecular ophthalmology

Overview

The Human Gene Therapy Trial which is the culmination of the basic research work of Molecular Ophthalmology, completed patient recruitment and recruitment is now closed. The trial remains the largest gene therapy trial in ophthalmology in the world with the highest number of patients treated with gene therapy.

Projects and Outcomes

Recombinant adenoassociated virus mediated gene therapy trial

Molecular Ophthalmology staff continues to provide laboratory support and analysis for the trial patients by handling, processing and testing and analysing thousands of patient samples.

Professor Elizabeth Rakoczy wearing the Professorial gown of the University of Amsterdam. She was invited to serve on the University's Doctoral Committee in 2014.

Diabetic Retinopathy

The Akimba mouse model developed at the Department of Molecular Ophthalmology accelerates the identification of the complex disease processes of diabetic retinopathy and to test novel drug candidates for diabetic retinopathy in a murine model.

The LEI and Experimentica Ltd., a global ophthalmic contract research organisation (CRO) entered into an exclusive license agreement for the Akimba mouse model for diabetic retinopathy for contract research.

"We are excited to add the Akimba and Kimba mouse models to our diabetic retinopathy portfolio", said Dr. Giedrius Kalesnykas, CEO and Founder, Experimentica Ltd.

"The Akimba model will enable our clients to obtain new insights in the pathogenesis of diabetic retinopathy and accelerate drug discovery for this devastating disease."

In 2014 Molecular ophthalmology developed close collaboration with the Ocular Angiogenesis Group Department Cell Biology and Histology, Academic Medical Center at the University of Amsterdam.

Our research application to the Dutch Diabetes Research Foundation was successful and the funding will facilitate the visit of Dutch scientist to Molecular Ophthalmology.

As part of this collaboration Professor Rakoczy was invited to serve on the Doctoral Committee of the University of Amsterdam.

Grants/Funding

Richard Pearce Bequest

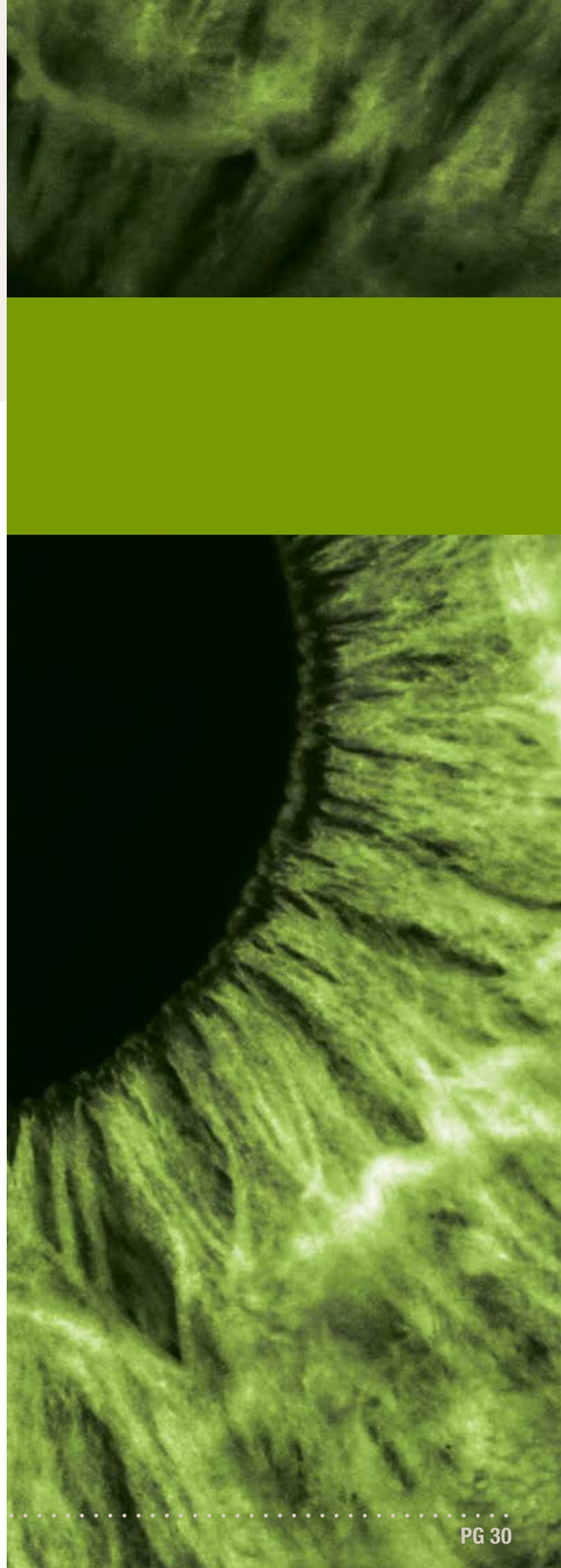
Avalanche Biotechnologies, USA

Staff

Professor P. Elizabeth Rakoczy

Associate Professor May Lai

Dr Aaron Magno



Physiology and pharmacology

Overview

2014 saw the Physiology and Pharmacology group successfully relocate all laboratories and offices from the ground floor of the LEI to the first floor to allow works on a new clinical facility to begin.

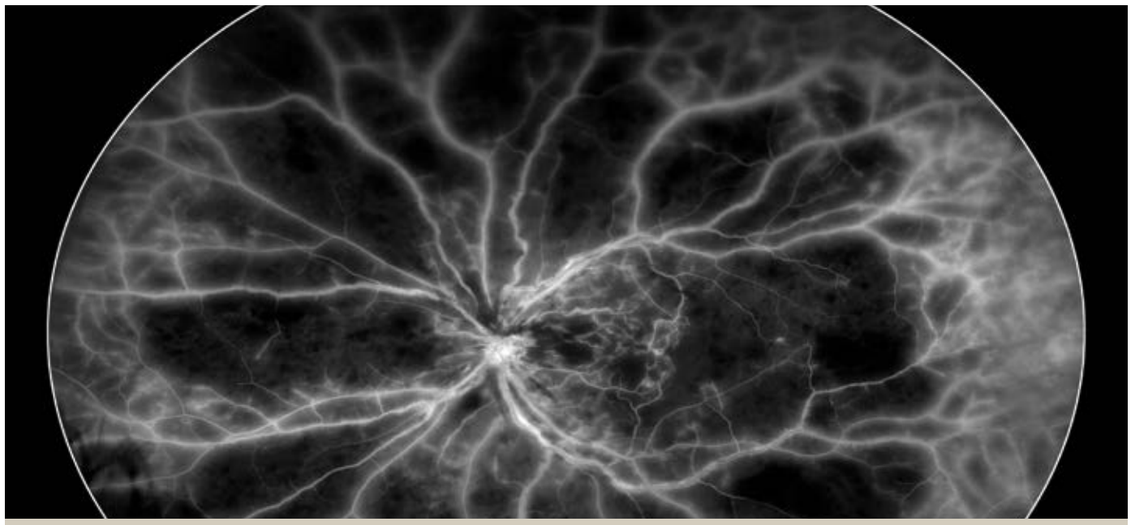
The group published 13 papers in the ophthalmic literature and established a collaboration with a team in Canada looking at a new form of ocular coherence tomography which can view the human retinal vasculature at the capillary level.

Another collaborative project with a team at the Singapore Eye Institute is looking at the genetic differences in the mitochondria in specific layers of the human retina. The mitochondria are essential to the process of energy metabolism in the retina.

Physiology and Pharmacology also conducted preliminary work in preparation for five different NHMRC project grant applications in 2015.

Another highlight was design improvements to a new fundus imaging tool to measure oxygen levels in the blood vessels of the eye.

This was done in collaboration with Heidelberg Engineering, the leading manufacturer of fundus viewing equipment.



During 2014, the LEI's Physiology and Pharmacology group entered into a collaboration with Canadian researchers to look at a new form of ocular coherence tomography to view human retinal vasculature at a capillary level.

Staff

Professor Dao-Yi Yu (Director)

Professor Ian McAllister

Professor Stephen Cringle

Professor William Morgan

Associate Professor Er-Ning Su

Associate Professor Paula Yu

Associate Professor Sarojini Vijayasekaran

Dean Darcey

Kathryn Morgan

Dr Chandra Balaratnasingam

Graeme Hewitt

Fraser Cringle

Students

Dr Min Kang

Dr Priscilla Tan

Dr Geoffrey Chang

Dr Naeem Fatehee

Ocular tissue engineering laboratory

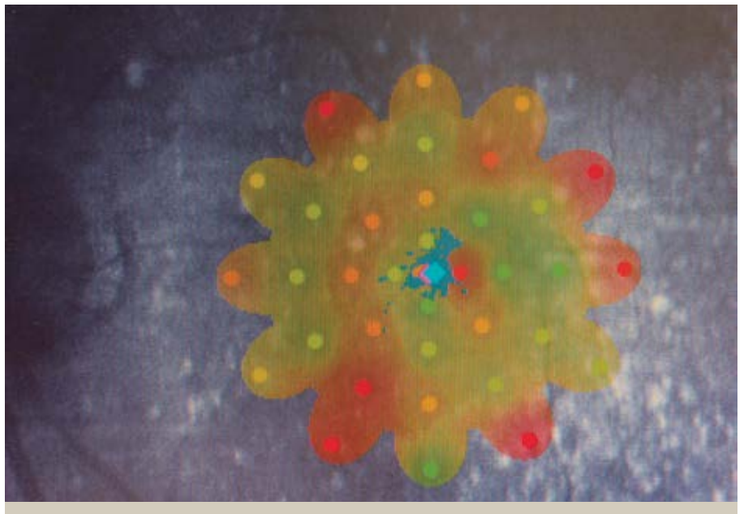
Overview

Associate Professor Fred Chen is the Director of the Ocular Tissue Engineering Laboratory (OTEL). The purpose of OTEL is to develop personalised cell-based therapy to treat macular and retinal degenerations. The scope of OTEL also encompasses investigation into clinical methods that can detect disease progression and response to cell-based therapy and other novel treatments of retinal degeneration.

Research

Development of retinal pigment epithelium transplant

It has been more than 30 years since the first retinal cell transplantation and yet this strategy to treat retinal degeneration is not widely used. The main impediment to clinical application of this technique is difficulty in selecting the right patient, lack of suitable retinal cells for transplantation and complexity of surgery and its high complication rate. The rationale for continued effort in exploring this treatment approach is that visual loss in macular and retinal degeneration is due to irreversible loss of cells within the retina. Therefore, the only prospect of preserving or restoring sight in retinal degeneration is through replacement of the missing cells within the retina.



This image was taken using a microperimeter. During 2014, the OTEL team completed a validation study in microperimetry and a natural history study in dry macular diseases.

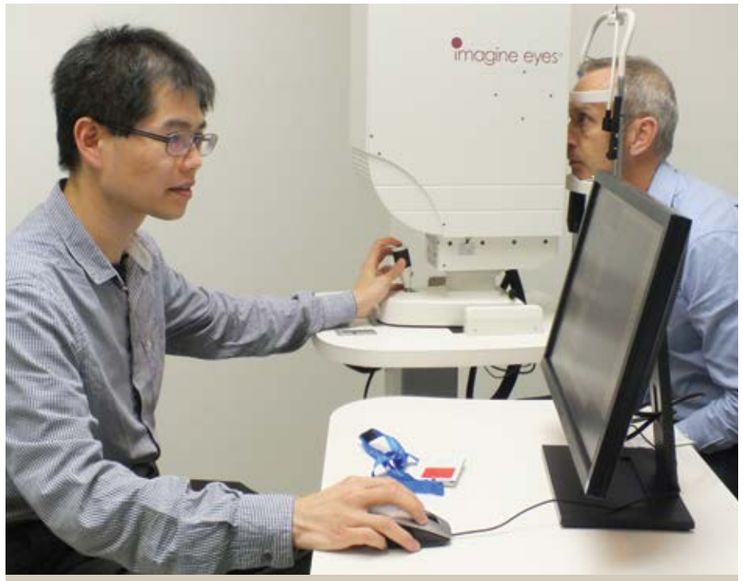
In 2014, our laboratory demonstrated the possibility of deriving retinal cells from adult stem cells found within the cornea.

We used surplus human donor corneal tissue to isolate limbal stem cells. These cells have special properties that allow them to be grown into various types of retinal cells. We examined the various conditions that will enhance these cells to grow into retinal cells. One of these was the matrix in which these cells are grown. Our work in 2014 has branched into investigation of (1) retinal potential of the neural stem cells within the limbus, (2) engineering of tissue scaffold to enhance retinal differentiation and (3) transplantation of neural stem cells in models of retinal degeneration.

Investigation of clinical imaging tools to monitor disease progression

A major obstacle in cell-based therapy is choosing the right patient at the right time to perform cell transplantation. For many of the retinal degeneration, disease progression is slow and the conventional visual acuity testing is unable to detect disease progression. Even with detailed photography of the retina, the resolution is too low to allow timely detection of disease progression.

In 2014, we completed the validation study in microperimetry and the natural history study in dry macular diseases. Large amounts of clinical information is currently being processed to determine if microperimetry is clinically useful and superior to visual acuity in detecting disease progression. We also acquired a new retinal camera in April with funding from individual donations, the LEI, the NHMRC equipment grant and the AFPB Trust. The new camera has the capability of visualising individual retinal cells within the retina. This enhanced resolution of the camera will help clinicians in identifying patients at risk of rapid disease progression within a shorter time frame.



Associate Professor Fred Chen leads the OTEL team.

Novel treatments of macular degeneration

Age-related macular degeneration (AMD) causes 50 per cent of blindness and affects one in seven people over the age of 50. By 2030, more than 300,000 Australians will lose their vision due to the late form of AMD and over 1.4 million will have the early form of AMD. The total cost of vision loss associated with AMD in Australia was estimated to be over $5.15 billion dollars in 2010.

The current recommendation for individuals with early forms of AMD is self-monitoring of central vision, cessation of smoking and dietary supplement of vitamins and minerals as recommended by the AREDS2 trial. Despite these approaches, over 20 per cent of those affected will progress to the late form of AMD and visual impairment.

In 2014, Associate Professor Chen was part of a multicentre study investigating the use of nanosecond laser in treatment of early AMD. It is hypothesised that this new six-monthly laser treatment will reduce the progression rate even further

over the next three to four years. Other clinical trials for AMD were also set up in 2014 and these include (1) a novel combination treatment regime for idiopathic polypoidal choroidal vasculopathy (the most common form of AMD in Asia), (2) novel drugs for geographic atrophy (the dry form of AMD currently still untreatable) and (3) five to ten outcomes of Lucentis therapy in wet AMD patients.

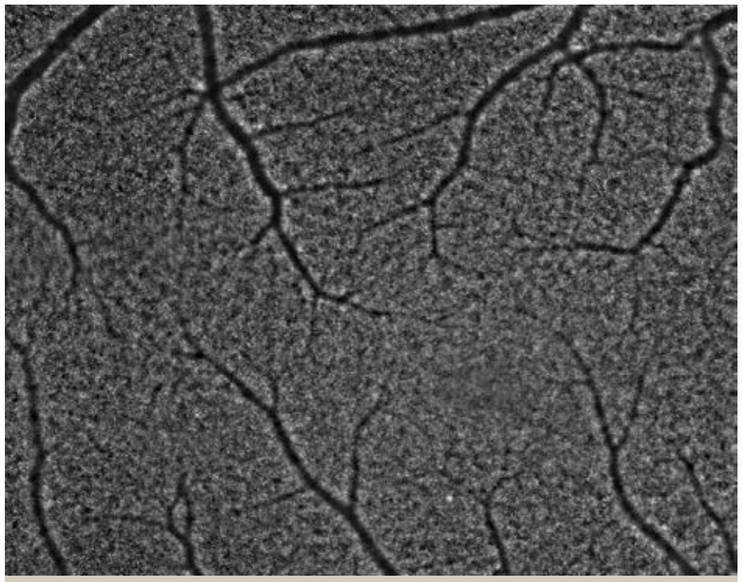


Image of cones in the retina.

Research Team

Staff

Associate Professor Fred Chen (Director)

Dr Samuel McLenachan (Senior Scientist)

Dr Dana Zhang (Senior Scientist)

Visiting Research Fellows & Research Doctors

Dr Ling Zhang

Dr Erwei Hao

Dr Jinping Wang

Dr Wei Chen

Dr Jo Khoo (RPH)

Dr Erandi Chandrasekera (SCGH

Student

Dr Evan NX Wong

Competitive Grant Support in 2014

Bayer Global Ophthalmology Award
$59,000

NHMRC Equipment Grant - Adaptive optics camera
$62,794

NHMRC Project Grant - in collaboration with QUT
CIB

Medical Research Foundation - RPH
CIE

Donation and Industry Funding

Bone Family - Macular degeneration research program

Miocevich Family - Autoimmune retinopathy fellowship

Novartis - Long-term outcome of Lucentis therapy

Lions Outback Vision

Vision

To eliminate preventable blindness and vision loss in people living in regional and remote Western Australia.

Mission

To achieve leadership in clinical practice and scientific research in the prevention of blindness and vision loss through:

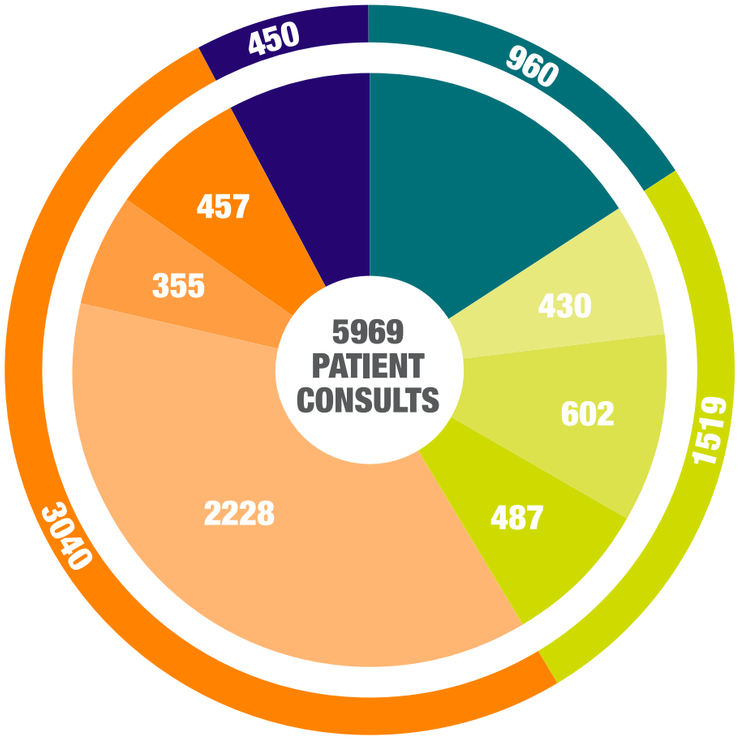
- delivering equitable, timely and cost-effective outreach services so that Western Australians can enjoy better health outcomes irrespective of where they live
- providing a coordinated eye health service integrating retinal screening, optometry and ophthalmology services
- improving access to best practice eye health services in regional and remote WA
- translating best clinical practice into scientific research

Dr Angus Turner operating.

Activities

Lions Outback Vision (LOV) has enjoyed a year of remarkable growth in terms of both staff and service delivery. In 2013, LOV treated 3235 patients. In 2014, this grew to 5969 patients.

Attendances in 2014



Telehealth

- Consultations

Retinal Screening

- Photos over 22 sites

Ophthalmology

- Pre and post-operative visits
- Theatre procedures
- Outpatients

Optometry

- Custom-made glasses
- Ready-made glasses
- Non required

Highlights

- Secured funding from WA Country Health Services for a Statewide Telehealth Manager to coordinate telehealth services, commencing in January 2015
- Successfully advocated for new coordination roles in regions, including the engagement of a Diabetic Eye Health Coordinator (Alex Ramirez) based in Newman
- Successful integration of full-time registrar training post into LOV's service delivery
- Expansion of the telehealth program, include integration by the Visiting Optometrists Scheme which enables telehealth access into remote communities
- Advocacy for changes to the Medicare Benefit Scheme to include telehealth referrals from optometrists, supported by report written in collaboration with McKinsey & Co
- Established a new partnership with Diabetes WA, resulting in a $70,000 donation toward a laser machine and monthly collaborations at Derbarl Yerrigan Health Service in East Perth
- Received $221,000 from the Commonwealth Government to purchase three ocular coherence tomography scanners to assist in the screening of diabetic patients
- Expansion of outreach services to new sites including Warnum, Looma, Derby prison and Wyndham
- Hosted a training conference held in Broome in May 2014 with regional health workers

Health workers at Looma (standing left to right) Hessom Ravazi, from LOV, Ellen West, Matthew Cruice, Susan Hicks and Joss Meyers, from LOV. Kneeling are Kyle Patmore and Lucille Carniato.

New projects in 2015

- The Outback Vision Van project is gaining momentum and is expected to be launched in 2015, with significant fundraising and partnerships in progress
- New research into patient non-attendance rates will tackle this challenging issue, with the aim of developing a set of practical solutions to increase attendance rates
- Qualitative patient/practitioner satisfaction survey of tele-ophthalmology
- A qualitative patient and practitioner survey of teleophthalmology will be critical to maximising the potential of this new technology to address the burden of eye disease in regional and remote areas

Associate Professor Angus Turner leads the Lions Outback Vision team.

2014 saw Lions Outback Vision expand its outreach services throughout Western Australia. This boy from the Looma community 120km from Derby is undergoing an eye examination.

Grants and Funding

LEI

UWA

McCusker Charitable Foundation

The RANZCO Eye Foundation

The Fred Hollows Foundation

Staff

Associate Professor Angus Turner, Director

Julie Maiolo, Outreach Administrator

Hessom Razavi, Senior Registrar

Helen Wright, Optometry Coordinator

Stephen Copeland, Optometrist

Josephine Muir, Research Manager

Alex Ramirez, Pilbara Diabetic Eye Health Coordinator

Students

Verity Moynihan

Connie Smith

Clinical trials

Overview

The LEI conducts a wide range of clinical trials, including the testing of new drugs or devices, the collection of information from patients to better understand a particular ophthalmic condition and audits of patient medical notes to establish treatment outcomes and ways in which patient outcomes may be improved.

2014 has seen continued growth of the Clinical Trials Department. With more than 30 active studies, the LEI now houses one of the largest ophthalmological clinical trials research centres anywhere in the world.

The LEI is unique in having scientists work in close association with clinicians to bring laboratory-generated ideas and techniques to the level where they can be of benefit to patients.

In many cases, patients with specific eye disorders are given access to new treatments before they are available to the general public.

A major example of this bench-top to bedside approach is the LEI's award winning research work on human gene therapy to develop a new treatment for wet AMD. LEI research that started as a basic project has translated into a potential revolutionary treatment for patients with wet AMD.

The translation of clinical research into safe and effective treatments for patients is a key aim of the LEI's Clinical Trials group.

All trials run by the group are subject to the approval of a Human Research Ethics Committee and comply with stringent national and international regulations and guidelines.

Major trials

Novel treatments for dry AMD

Age-related macular degeneration (AMD) is a leading cause of vision loss in older people. There are two types of the disease - dry and wet AMD. Dry AMD is the most common type of macular degeneration, affecting 90 per cent of people with the condition.

There is currently no proven therapy for dry AMD but the LEI is trialling a novel laser-based approach.

Dry AMD may progress to wet AMD, which is currently treated with an anti-VEGF (Vascular Endothelial Growth Factor) therapy.

The LEI is analysing patient outcomes for each of the currently available anti-VEGF regimes as well as reviewing the most appropriate treatment protocols and trialling novel compounds for AMD treatment.

Retinal Vein Occlusion

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 from the affected blood vessel. The swelling of the macular results in distortion of the central vision.

Branch Retinal Vein Occlusion (BRVO) can also result in leakage of fluid and visual disturbances in the region of retina supplied by the affected vessel.

The LEI is involved in ongoing trials for both CRVO and BRVO, refining treatment protocols and regimes.

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, both eyes are involved and symptoms may include decreased vision, eye pain, ocular redness, tearing, photophobia (pain and/or sensitivity to light), elevated intraocular pressure, intraocular scarring, macular oedema and even vessel occlusion.

Uveitis can lead to vision loss. We are currently 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.

Non-treatable Eye Diseases

Macular telangiectasia type 2 (MacTel) is a rare degenerative condition of the macula that may cause progressive loss of vision. Currently, there is no effective treatment for MacTel.

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

The continued success of Clinical Research at the LEI is only made possible by the study participants who are happy to take part in our studies and the dedication and professionalism of our clinicians, nurses, coordinators and staff. Thank you.

The Clinical Trials team

Clinical Research Manager

Tracey-Anne Dickens

Clinical Trial Coordinators

Toni Busby

Robert Cowles

Amelia Jason

Gareth Lingham

Kate Maslen

Rachel Matthews

Richard McKeone

Cora Pierce

Lynne Smithies

Jordanna Wilson

Clinical Trials Administration

Diana Bowman

Publications

Genetics and Population Health

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Ocular Tissue Engineering Laboratory

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Clinician-Scientists

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Associate Professor John Fingert, from the University of Iowa speaking at WA RANZCO meeting.

Grow and continually expand our clinical services

Clinical services

Clinical Services welcomed a record number of patients through its doors during 2014 with the majority of growth occurring in the clinic environment.

Patient numbers through all departments increased to almost 58,000. The Elsie Gadd Clinic treated 53,300 patients this year - an increase of 4.7 per cent compared to 2013.

The increase in intra-vitreal injections was similar and has now reached 7000 per annum.

A major expansion project of our satellite clinic at Murdoch doubled the capacity of the facility with a focus on improving patient flows and amenities.

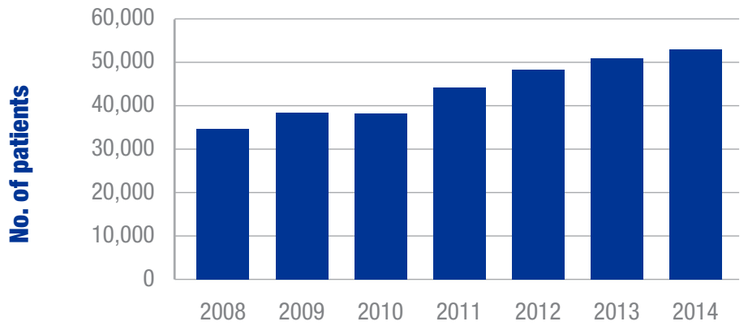
All four sub-specialty groups - retinal, glaucoma, corneal and oculoplastics - are now providing services at Murdoch.

The installation of additional equipment has also reduced the need for patients to travel to Nedlands for diagnostic evaluation. The commissioning of a dedicated minor procedure room with a hepa filtration system has added to the suite of services now available to LEI patients south of the river.

The rooms at Hollywood were decommissioned in September 2014 and those patients transitioned to the Verdun St facility.

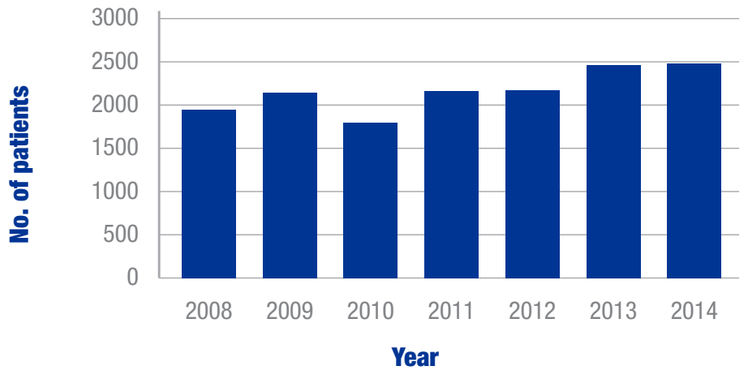
The LEI's Clinical Services were busy in 2014, with record patient numbers seen, while plans to expand day surgery capacity are already well underway.

Annual Patient Throughputs (Clinics) 2008-2014

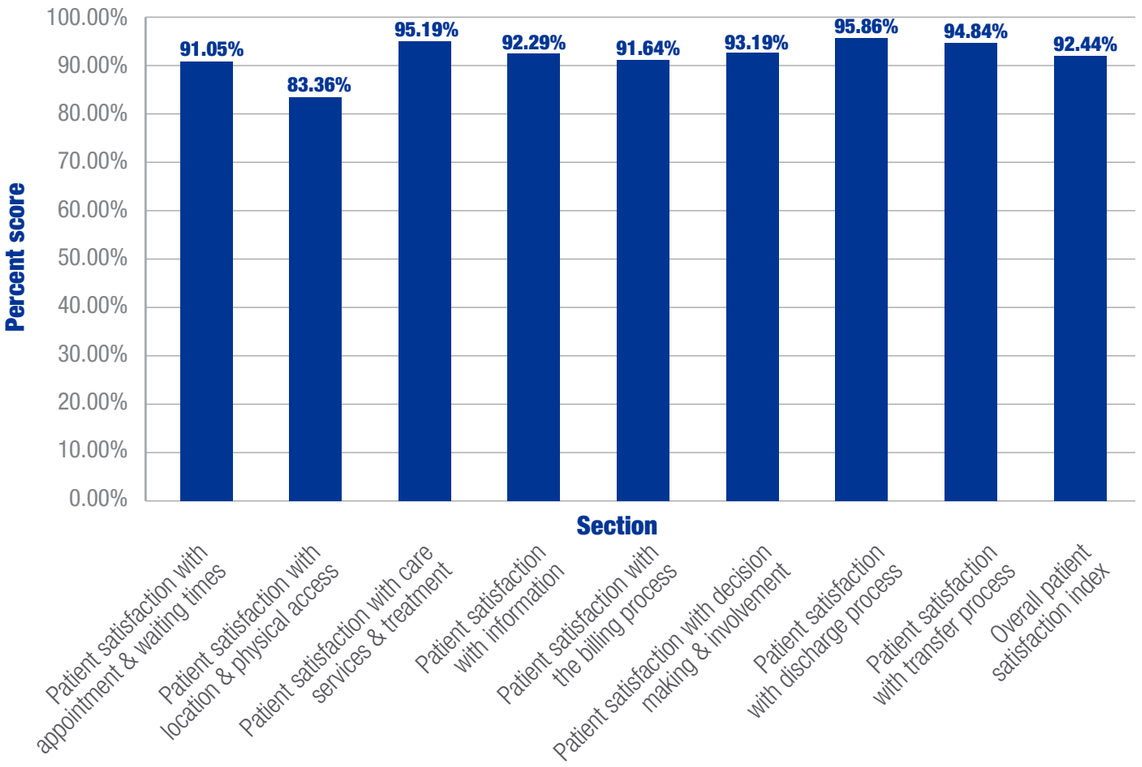


Day Surgery procedures remained static after a substantial increase in 2013. Patient satisfaction with our services remains at a high level with an overall average across all criteria of 90 per cent.

Day Surgery Procedures 2008-2014



Patient Satisfaction - Section Results - Total % Score LEI - Day Surgery 2014



In December 2014 Clinical Services successfully completed the triennial quality recertification. The many improvements to our systems were acknowledged throughout the audit and this was the first time all departments had been surveyed under the new National Safety and Quality Health Service Standards (NSQHSS).

Clinical Services will gain certification under both the NSQHSS and ISO 9001:2008 Core Standards for Safety and Quality in Healthcare. All Clinical Services staff are congratulated for their efforts and engagement in this process.

In early 2014 a project manager was appointed to lead and facilitate a major expansion and refurbishment of the Verdun St premises. Key milestones achieved in 2014 included:

- Appointment of architects (Silver Thomas Hanley)
- Relocation of the Physiology and Pharmacology Group from the ground floor to the first floor
- Completion of services audits including electrical, mechanical and hydraulic
- Commencement of consultation with user groups
- Scoping and ordering of the new lift

The purpose of this project is to:

- Improve patient flows and amenities
- Provide purpose built facilities for the sub-specialties
- Expand and redesign the Day Surgery
- Relocate the Corneal Group and Laser Vision Centre into one functional area
- Integrate Clinical Trials and Clinical Research into the clinic environment
- Provide capacity for future growth and ensure the financial sustainability of the LEI

It is anticipated that work on this project will commence in the first half of 2015 (ground floor clinics Retinal and Glaucoma).

Clinical Services continues to provide an outstanding service to the community. Our clinicians, nurses, allied ophthalmic team, clerical, secretaries and other support staff are commended for their team work and dedication.

Clinicians

Dr Andrea Ang

Dr Andrea Ang trained in ophthalmology in Perth (MBBS (Hons) UWA) and the USA (MPH, Harvard) before undertaking fellowships in cornea, anterior segment and external diseases at the Cincinnati Eye Institute, USA, and the Singapore National Eye Centre, Singapore. Dr Ang is a consultant ophthalmologist at RPH and a member of FRANZCO.

Areas of Expertise

Management of cornea, anterior segment and external diseases; corneal surgery; pterygium surgery, corneal transplantation (penetrating keratoplasty, deep anterior lamellar keratoplasty, endothelial keratoplasty); ocular surface reconstruction; limbal cell transplantation and keratoprostheses; cataract surgery, refractive surgery, LASIK, PRK.

Professor Graham Barrett

Professor Graham Barrett trained in ophthalmology in Perth, Western Australia, and undertook specialty training in the USA. He is a consultant ophthalmic surgeon and Head of Department at SCGH. Professor Barrett is founding and current president of the Australasian Society of Cataract & Refractive Surgeons, and president of the Asia Pacific Association of Cataract and Refractive Surgeons. He is the recipient of major international awards including the Ridley Medal (European Society of Cataract & Refractive Surgeons), the Binkhorst Medal (American Society of Cataract and Refractive Surgeons) and the Ridley Medal (Congress of German Ophthalmic Surgeons).

Areas of Expertise

Cataract and refractive surgery, corneal and anterior segment disorders and surgery.

Associate Professor Fred Chen

Associate Professor Fred K Chen was born in Taiwan and studied medicine at UWA. After ophthalmology training at RPH, he moved to London to do research and clinical fellowships in medical and surgical retina at the University College of London Institute of Ophthalmology and Moorfields Eye Hospital. There, he also completed a doctorate in philosophy (PhD) in surgical techniques of retinal pigment epithelium transplantation for treatment of dry and wet macular degenerations. Associate Professor Chen returned to Perth, also as a consultant vitreoretinal surgeon at RPH and PMH, to establish an Ocular Tissue Engineering Laboratory and a Functional Ocular Imaging Laboratory at the LEI.

Areas of Expertise

Surgical retina: retina detachment and macular hole repair, epiretinal membrane peel, complicated cataract surgery. Medical retina: dry and wet macular degeneration, Avastin, Lucentis and Eylea injections, Stargardt's disease, retinitis pigmentosa and retinal vascular diseases.

Professor Ian Constable AO

Professor Ian Constable AO trained in ophthalmology in New South Wales before being appointed as Clinical Retinal Fellow at the Massachusetts Eye and Ear Infirmary and a Lecturer at Harvard University. He is a consultant retinal surgeon at RPH, SCGH and PMH and was Managing Director of the LEI from 1983 to February 2009.

Areas of Expertise

Vitreoretinal surgery, retinal vascular disease, diabetic retinopathy, macular degeneration, complex referrals and cataracts.

Professor Geoffrey Crawford

Professor Geoffrey Crawford completed his ophthalmic training in Western Australia and is a RANZCO Fellow and a Fellow of the Royal Australasian College of Surgeons. He completed further sub-specialty training in oculoplastic surgery at Moorfields Eye Hospital in London and then cornea and refractive surgery at Emory University in Atlanta, Georgia, USA. He is the Director of Surgical Services and the Director of the Lions Laser Vision Centre at the LEI and a consultant ophthalmic surgeon at RPH and PMH.

He was a co-inventor of AlphaCor artificial cornea and AlphaSphere orbital implant and developed the surgical techniques for these.

Areas of Expertise

Refractive surgery: LASIK, PRK, Phakic IOL's; refractive lens surgery, corneal transplantation, plerygium surgery, corneal collagen crosslinking, insertion of Intra-corneal ring segments, management of keratoconus, ocular surface tumours, cataract surgery. He is a pioneer in many of these techniques.

Dr Jean-Louis deSousa

Dr Jean-Louis deSousa trained in ophthalmology in Perth before completing fellowships in ophthalmic plastic and reconstructive surgery in Oxford and East Grinstead in the UK. He is a member of the Australian and New Zealand Society of Ophthalmic Plastic Surgeons. A consultant ophthalmologist at RPH, he also provides ophthalmic services to the central wheatbelt from Merredin. Dr deSousa is the basic sciences examiner for RANZCO.

Areas of Expertise

Oculoplastic surgery – eyelid tumours, eyelid malposition, cosmetic surgery, non-surgical cosmetic procedures. Orbital disease – tumours, trauma and inflammatory orbital disease. Lacrimal surgery – endoscopic lacrimal surgery.

Professor John Forrester

Professor Forrester graduated from the University of Glasgow in 1970 and is currently Cockburn Professor of Ophthalmology at the University of Aberdeen. He has been Editor of the British Journal of Ophthalmology and has over the years received 16 awards and Visiting Professorships, including the London Hospital Prize for Original Research in Ophthalmology in 1977, the Duke Elder Medal and the Ida Mann Medal in 1991. His research interests are in the areas of diabetes, retinal disease, inflammation, autoimmunity and immunology of the eye.

Areas of Expertise

Ocular immunology, uveitis, autoimmune disease; wound healing and experimental corneal transplantation; diabetic retinopathy, angiogenesis, endothelial cell function; clinical studies in uveitis, translational research in ophthalmology, imaging in ophthalmology.

Associate Professor Adam Gajdatsy

Associate Professor Adam Gajdatsy trained in ophthalmology in Western Australia before undertaking fellowship training at the University Hospital of Wales in Cardiff and at Moorfields Eye Hospital in London in oculoplastic, lacrimal and orbital surgery. He is currently operating as an ophthalmic surgeon consultant at the LEI, Osborne Park Hospital and Murdoch Surgicentre. He also acts as an honorary ophthalmologist consultant at PMH. Associate Professor Gajdatsy sits on the Curriculum Review Committee of RANZCO. He is also President Elect of the Australian and New Zealand Society of Ophthalmic Plastic Surgeons (ANZSOPS). He is the coordinator of ophthalmology teaching at UWA.

Areas of Expertise

Lid malposition repair (droopy lid corrections), lid cancer management, cosmetic eyelid surgery, tear drainage surgery, eye socket surgery and orbital surgery.

Dr Antonio Giubilato

Dr Antonio Giubilato underwent specialty fellowship training in glaucoma at the Royal Victorian Eye and Ear Hospital after training in ophthalmology in Perth, Western Australia. This included both clinical and surgical management of glaucoma as well as research into new therapies for the condition. He is presently consultant ophthalmologist in the Glaucoma Clinic at RPH and also consults at Bentley Hospital for public patients. Dr Giubilato is currently Director of Training for the WA branch of RANZCO and an LSSF Board Member.

Areas of Expertise

Glaucoma.

Dr Tim Isaacs

Dr Tim Isaacs studied medicine in the UK, and underwent ophthalmic training at the Western Ophthalmic Hospital and Moorfields Eye Hospital in London. He completed sub-specialty training in vitreoretinal surgery at RPH and SCGH. He is currently a consultant ophthalmologist at RPH and also practices at the LEI's satellite clinic at Murdoch. His research interests include the diagnosis and management of intraocular tumours, evaluation of new therapies for diabetic retinopathy and macular degeneration.

Areas of Expertise

Vitreoretinal surgery, diabetic retinopathy, macular degeneration, retinal vascular disease, ocular oncology, choroidal melanoma.

Professor David Mackey

Professor David Mackey is Managing Director of the LEI and Professor of Ophthalmology/Director of the Centre for Ophthalmology and Visual Science (COVS) at UWA. Professor Mackey is a world authority on the genetics of eye disease, with his research extending beyond the laboratory to cascade genetic screening for at-risk individuals. He was born and educated in Tasmania, studying medicine at the University of Tasmania, completing fellowships in Melbourne, Baltimore and London. He is on the NHMRC Human Genetics Advisory Committee and chief investigator for the NHMRC Centre of Research Excellence – Translating Genetic Eye Research. Professor Mackey is also president of the International Society for Genetic Eye Disease and Retinoblastoma.

Areas of Expertise

Hereditary and genetic eye diseases. He sees patients at the LEI for second opinions on rare genetic eye diseases and more common genetic eye diseases involving new genetic research.

Professor Ian McAllister

Professor Ian McAllister undertook training in Western Australia with additional sub-specialty training in vitreoretinal disorders in the USA. He is Director of Clinical Services at the LEI and a consultant ophthalmologist at the Royal Perth and Sir Charles Gairdner hospitals. Professor McAllister is actively involved in research for cures for vitroretinal disorders – especially retinal vascular disorders – and has held 10 NHMRC grants in this area as well as numerous minor grants. He has been involved for many years in statewide diabetic retinopathy screening and treatment and was vice chairman of the Ophthalmic Research Institute of Australia and chairman of the research board for many years. He has published more than 100 papers in scientific journals and has given more than 150 papers at meetings as an invited guest speaker. He has received an achievement award for distinguished service to ophthalmology from the American Academy of Ophthalmology.

Areas of Expertise

Vitreoretinal surgery and disorders, retinal vascular disease, diabetic retinopathy, macular degeneration, ocular trauma, cataract surgery.

Professor William Morgan

Professor William Morgan initially trained in Perth, Western Australia, and undertook his fellowship at COVS. He is Head of Department of Ophthalmology and consultant ophthalmologist at RPH, consultant ophthalmologist at PMH, a Professor at UWA and co-Director of the LEI's McCusker Glaucoma Centre.

He has completed a doctorate in philosophy studying the response of the optic nerve to pressure, particularly in relation to glaucoma. Professor Morgan maintains an active research interest in glaucoma as well as in the epidemiology of blinding eye disease and eye diseases within Aboriginal populations.

Areas of Expertise

Glaucoma, ophthalmic public health.

Associate Professor Mei-Ling Tay-Kearney

Associate Professor Mei-Ling Tay-Kearney completed her medical training in Perth, Western Australia, before pursuing postgraduate study at Johns Hopkins Hospital in Baltimore, USA. In 2003, she was appointed Head of Department of Ophthalmology at RPH. She is a senior lecturer at UWA and a member of the Australian Society for HIV Medicine and the Australian Uveitis Study Group. She is the Chair of Qualifications and Education as well as an examiner for the RANZCO Part 2 College Examinations.

Areas of Expertise

Ocular infections, uveitis and inflammatory disorders of the eye.

Associate Professor Angus Turner

Associate Professor Angus Turner completed medical training at UWA before studying at Oxford University and completing a Masters of Evidence Based Medicine. Ophthalmology training was undertaken in Melbourne, followed by post-graduate training at the University of Sydney in refractive surgical procedures. As Director of Lions Outback Vision (LOV), Associate Professor Turner is actively involved in the delivery of specialist outreach services to remote and Indigenous communities in the Kimberley, Pilbara, Goldfields, Great Southern and South-West regions. He is an Associate Professor at UWA, where he is engaged in a number of research projects at the LEI, focusing on service delivery for remote and Indigenous people. Dr Turner is also a consultant at Fremantle Hospital and an ophthalmology teacher for the Rural Clinical School.

Areas of Expertise

General ophthalmology.

Associate Professor Steven Wiffen

Associate Professor Steven Wiffen trained in ophthalmology in Western Australia before undertaking fellowships at the Corneo-Plastic Unit, East Grinstead, UK, and at the Mayo Clinic, Rochester, Minnesota, USA. Associate Professor Wiffen is a consultant ophthalmologist at Fremantle Hospital and a Senior Lecturer at UWA. He is the Director of the Lions Eye Bank of Western Australia.

Areas of Expertise

Ocular surface disorders, corneal and refractive surgery, anterior segment disorders and surgery.

Lions Laser Vision

Overview

The Lions Laser Vision Centre continues to stay at the forefront of laser vision correction with the latest upgrade from Schwind installed in December 2014.

The smart pulse upgrade makes the laser experience even smoother for patients. Laser vision correction is a high technology endeavour and we continually invest to remain the first option for people wanting to see the world through their own eyes.

Patient safety is the centre's number one priority and investment in the latest technology supports this goal. The Lions Laser Vision centre prides itself on offering the latest, fastest and safest laser technology in Australia.

We now offer laser vision consultations at the Murdoch clinic as well as Nedlands meaning we now have improved access for patients south of the river.

LASIK is the gold standard of laser refractive surgery and the second most commonly performed eye operation in the world after cataract surgery.

Our investment in the latest and most advanced technology in the world, combined with the extensive experience of the Lions Laser Vision Centre's surgeons, means patients will have the best possible visual outcome after laser vision correction.

The history of the Lions Laser Vision Centre has been one of firsts - the first refractive laser centre in Western Australia; the first centre to perform laser PRK surgery in Australia in 1991, the first centre to perform LASIK in Western Australia in 1996 and the first and still the only accredited laser vision centre in Western Australia.

The Lions Laser Vision Centre offers the latest technology with the latest Schwind laser installed during 2014.

Lions Eye Bank

The Lions Eye Bank of Western Australia

Established in 1986, the Lions Eye Bank is the only facility in WA that coordinates the collection, processing and distribution of eye tissue for transplantation.

Over 4200 corneal transplants have been performed to date - 180 of those in 2014 - with 162 corneas sourced locally and 20 from interstate. In addition to corneal transplants, scleral tissue was used in 167 other surgical procedures.

All donor tissue is used either for transplantation or, if unsuitable, for ethically approved research or surgical training with the consent of the donor's family. This tissue is crucial to advancing research and developing surgical techniques.

New storage methods have contributed to the most significant growth in almost 30 years of eye banking in WA.

Where some patients used to wait more than two years for a graft, transplants are now being performed within a matter of weeks. State-of-the-art surgical techniques have evolved so only the diseased portion of the cornea is replaced, enhancing the recovery period and visual outcome for the patient. Previously, the entire cornea was replaced regardless of the diagnosis.

Ten surgeons perform corneal grafts for both public and private patients including LEI clinicians Professor Graham Barrett, Professor Geoffrey Crawford, Associate Professor Steven Wiffen and Dr Andrea Ang.

Glaucoma surgeons Professor William Morgan and Dr Antonio Guibilato use scleral grafts as part of the surgery to reduce intraocular pressure.

As a member of the Eye Bank Association of Australia and New Zealand (EBAANZ), the Lions Eye Bank works collaboratively with other eye banks to maintain consistently high levels of quality, safety, proficiency and ethics. Excess tissue is shared when appropriate and emergency requests for tissue are always supported.

As an independent organisation, the Lions Eye Bank of Western Australia is self-funded through cost recovery and is supported by the Lions Save-Sight Foundation.

Team effort results in sight-saving surgery for Burmese Reverend

Thanks to the generosity of Dr Andrea Ang, St John of God Hospital Subiaco and the Lions Eye Bank of WA, the sight of a Burmese Reverend has been saved.

Reverend Thang was born in a small province in Burma in 1944. He was a high school teacher for 11 years before he joined a seminary in India.

He earned a Bachelor of Divinity at the University of Sarampol and then served as a pastor in Korea for many years.

Reverend Thang returned to Burma in 1983 and is now a pastor and principal of the All Nations Theological Seminary in Rangoon. He travels around giving Christian lectures.

The sight of Burmese Reverend Thang was restored with a procedure not available in his homeland.

Dr Dimitri Yellachich performed charity surgery on the Reverend at SJOG for a macular hole.

During follow up in Myanmar in 2014, Dr Yellachich found the Reverend's vision reduced due to Pseudophakic Bullous Keratopathy, requiring a corneal endothelial keratoplasty - an operation not available in Burma and subsequently arranged with the support of the Lions Eye Bank.

Project management

Growing patient demand drives expansion

Nedlands

With the opening of the LEI's new research floor in the Harry Perkins Institute of Medical Research, planning and work began on the renovation of the existing Verdun St facility in Nedlands during 2014.

A decision was made to renovate the entire facility to better accommodate the services of the LEI and meet demand for eye health services from a growing number of patients.

A Project Manager was appointed in January 2014 to oversee the design and construction of the Nedlands facility.

The first major achievement was the relocation of the Physiology and Pharmacology Research team from the ground floor to 1st floor to make way for the two busiest clinics along with other ancillary services to the ground floor.

Given the scale of works and the need to develop a facility with current and future needs in mind, an architect was engaged to undertake a site measure and develop scaled drawings for all design work preparation. The architects and services consultants were also tasked with facilitating design aspects of the new facility.

Input from staff has been critical, with an excellent response from more than 95 staff members to a survey seeking input on key design and functional elements.

Results of the survey were forwarded to the architects for reference and construction of the ground floor will commence in 2015.

A new lift car will also be installed in 2015, which should eliminate some of the current issues regarding transportation between floors.

Open day.

Murdoch

The LEI's clinic at Murdoch, near the new Fiona Stanley Hospital, has also seen a large growth in demand from patients.

During 2014, an opportunity to expand current facilities into an adjoining vacated suite was realised.

Expansion and renovation works were completed, resulting in a vastly improved facility that is now able to accommodate additional clinics and increased patient volumes.

Key improvements included:

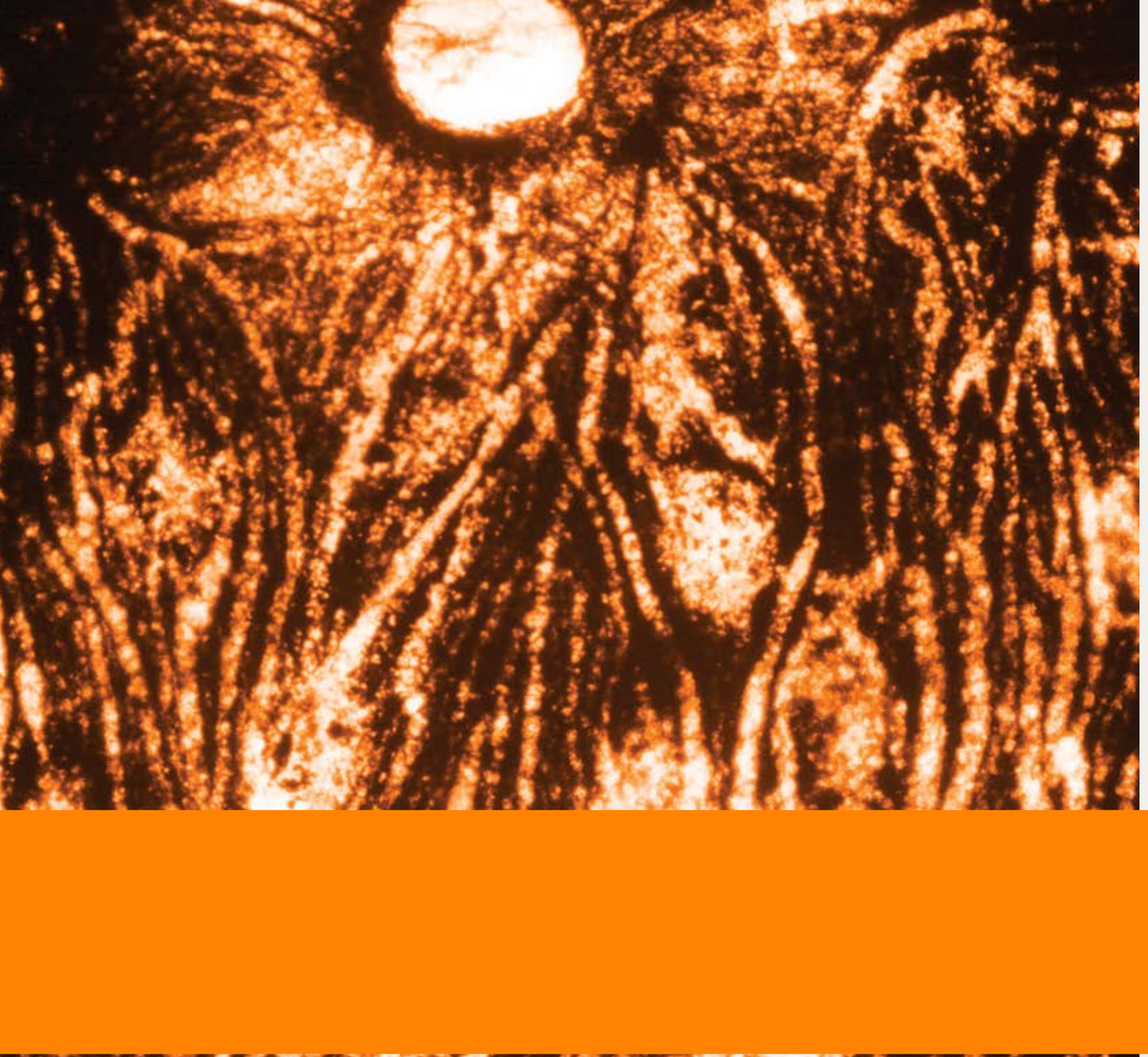
- An additional waiting room for patients consisting of tea/coffee facilities and television entertainment.
- A secured patient files area for housing of all patient files.
- A dedicated laser room adjacent to a consult room.
- Three additional consult/optometry rooms.
- A dedicated treatment room complete with Hepa Filtration.
- A new HRT/testing room.

The entire facility was also freshly painted and fitted with new carpets, window treatments and improvements to lighting in consult rooms. New cabinetry and shelving units also improved storage capabilities at Murdoch.

With the pending renovations to Nedlands and expansion of Murdoch, a decision was made to decommission the LEI suite at Hollywood Private Hospital.

The new consulting rooms at the LEI's Murdoch facility were designed to meet additional patient demand.

The new waiting area.



Renew and expand our teaching and training divisions

Collaborators and visitors

Population and Health Genetics

Visitors

Associate Professor John Fingert Associate Professor of Ophthalmology and Visual Sciences, Carver College of Medicine, University of Iowa, USA, and UWA Raine Visiting Professor

Professor Wallace LM Alward Frederick C. Blodi Chair in Ophthalmology, Professor and Vice-Chairman, Department of Ophthalmology and Visual Sciences, University of Iowa, USA, and UWA Raine Visiting Professor

Professor Zi-Bing Jin Laboratory for Stem Cell & Retinal Regeneration, Division of Ophthalmic Genetics, Wenzhou Medical University, China

Dr Livia Carvalho Harvard Medical School, USA

Dr Ashwin Mallipatna Paediatric Ophthlamologist Narayana Nethralaya Hospital, Bangalore, India

Dr Gary Phelps with Raine Visiting Professors Professor Lee Alward and Associate Professor John Fingert at the RANZCO conference in Kalgoorlie.

Collaborators

Associate Prof Kathryn Burdon University of Tasmania

Professor Minas Coroneo University of Sydney, New South Wales

Associate Professor Jamie Craig Flinders University, Adelaide, South Australia

Professor Jonathan Crowston Centre for Eye Research Australia, University of Melbourne, Royal Victorian Eye and Ear Hospital, Melbourne, Victoria

Dr Elizabeth Engle Howard Hughes Medical Institute Engle Lab & Center for Strabismus Research, Children's Hospital, Boston, USA

Associate Professor Jeremy (Jez) Guggenheim Hong Kong Polytechnic University

Professor Chris Hammond King's College London School of Medicine, London, UK

Dr Alison Hardcastle UCL Institute of Ophthalmology, London, UK

Professor Mingguang He Zhongshan Ophthalmic Centre, Sun Yat-sen University, Guangzhou, China

Dr Alex Hewitt University of Tasmania

Dr Simon John The Jackson Laboratory, Bar Harbor, Maine, USA

Associate Professor Geoff Lam PMH, Perth, Western Australia

Dr Stuart MacGregor Queensland Institute of Medical Research, Brisbane, Queensland

Professor Nick Martin Queensland Institute of Medical Research, Brisbane, Queensland

Professor Paul Mitchell Centre for Vision Research, Department of Ophthalmology and Westmead Millennium Institute, University of Sydney, New South Wales

Professor Grant Montgomery Queensland Institute of Medical Research, Brisbane

Professor Anthony (Tony) Moore Institute of Ophthalmology, University College, London, UK

Associate Professor Craig Pennell School of Women's and Infants' Health, UWA, Perth, Western Australia

Professor Carmel Toomes Leeds Institute of Molecular Medicine, Leeds University, UK

Professor Ian Trounce Centre for Eye Research Australia, University of Melbourne, Royal Victorian Eye and Ear Hospital, Victoria

Dr Rohit Varma Doheny Eye Centre, Los Angeles, California, USA

Dr Cathy Williams University of Bristol, UK

Dr Mary Wirtz Oregon Health & Science University, Portland, USA

Professor Tien Wong Singapore Eye Research Institute, Singapore

Dr Terri Young University of Wisconsin, Madison, USA

Centre for Experimental Immunology

Visitors

Professor Alan Stitt McCauley Chair of Experimental Ophthalmology, Queen's University Belfast, Northern Ireland

Collaborators

Professor Matt Brown Diamantina Institute, University of Queensland, Brisbane

Professor Chris Goodnow College of Medicine, Biology and Environment, Australian National University, Canberra

Professor Geoff Hill Bone Marrow Transplant Laboratory, Queensland Institute of Medical Research, Brisbane, Queensland

Dr David Huang Molecular Genetics of Cancer Division, The Walter and Eliza Hall Institute of Medical Research, Melbourne, Victoria

Professor Wallace Langdon School of Pathology and Laboratory Medicine, UWA, Perth, Western Australia

Professor Paul McMenamin Department of Anatomy & Developmental Biology, Monash University, Melbourne, Victoria

Emeritus Professor John Papadimitriou School of Pathology and Laboratory Medicine, UWA, Perth, Western Australia

Professor Mark Smyth
Cancer Immunology Program, Peter MacCallum Cancer Centre, Melbourne, Victoria

Professor Joseph Trapani
Cancer Immunology Program, Peter MacCallum Cancer Centre, Melbourne, Victoria

Professor Ranjeny Thomas
Diamantina Institute, University of Queensland, Brisbane, Queensland

Professor George Yeoh School of Chemistry and Biochemistry, UWA, Perth, Western Australia

Professor Laurence Zitvogel Institut Gustave Roussy, Villejuif, France

Molecular Ophthalmology

Visitors

Professor Jesus Ruberte
Department of Animal Health and Anatomy, School of Veterinary Medicine, Universidad Autonoma de Barcelona, Spain

Collaborators

Professor Chong-Lye Ang
Singapore Eye Research Institute, Singapore

Dr Lee Shu Yen Singapore Eye Research Institute, Singapore

Dr Nigel Barnett Vision, Touch & Hearing Research Centre, School of Biomedical Sciences, University of Queensland, Brisbane, Queensland

Prof Miranda Grounds School of Anatomy and Human Biology, UWA, Perth, Western Australia

Professor Paul McMenamin
Department of Anatomy & Developmental Biology, Monash University, Melbourne, Victoria

Professor Kristina Narfstrom
College of Veterinary Medicine, University of Missouri, Columbia, USA

Professor Luis Serrano Centre for Genomic Research, Barcelona, Spain

Physiology and Pharmacology

Collaborators

Professor Balawantray
Chauhan Dalhousie University, Nova Scotia, Canada

Professor Mark Gillies
University of Sydney

Professor Wan L Wong Singapore Eye Research Institute, National University of Singapore

Professor Tin Aung Singapore Eye Research Institute, National University of Singapore

Dr Marinko Sarunic Simon Fraser University, British Columbia, Canada

Professor Jan Provis Australian National University, Canberra

Professor Xinghua Sun Fudan University, Shanghai, China

Dr Xiaobo Yu Fudan University, Shanghai, China

Dr Gerhard Zinser Heidelberg Engineering, Germany

Dr Hongfang Yang Fudan University, Shanghai, China

Professor Martin L Hazelton
Massey University, Palmerston North, New Zealand

Professor Chris RP Lind
School of Surgery, UWA

Dr Aamar Abdul-Rahman Manukua Health, Auckland, New Zealand

Professor Wenyi Guo Fudan University, Shanghai, China

Professor Mark Humayun
Doheny Eye Institute, Los Angeles, California, USA

Aquesys USA

Ocular Tissue Engineering

Visitors

Associate Professor Damien Harkin School of Biomedical Sciences, Faculty of Health, Queensland University of Technology and Queensland Eye Institute

Professor Robyn Guymer
Centre for Eye Research Australia, University of Melbourne, Victoria

Dr Alice Pébay Senior Research Fellow, Department of Ophthalmology, University of Melbourne, Victoria

Professor Alan Stitt McCauley Chair of Experimental Ophthalmology, Queen's University Belfast, Northern Ireland

Collaborators

Professor Rod Dilley Ear Sciences Centre, School of Surgery, UWA, Perth, Western Australia

Professor Grant Morahan
Centre for Diabetes Research, Western Australian Institute for Medical Research, Perth

Professor Robyn Guymer
Centre for Eye Research Australia, University of Melbourne, Victoria

Assistant Professor Mårten Brelén
Department of Ophthalmology and Visual Science, The Chinese University of Hong Kong

Associate Professor Aron Chakera Department of Nephrology, SCGH, Perth, Western Australia

Associate Professor Damien Harkin School of Biomedical Sciences, Faculty of Health, Queensland University of Technology and Queensland Eye Institute

Dr Michael Edel Research Institute of Hospital Val d Hebron, Barcelona, Spain

Dr Robert Johnston Cheltenham General Hospital, Cheltenham, UK

Dr Lyndon Da Cruz Moorfields Eye Hospital, London, UK

Dr Nandor Jaroos Vision Eye Institute, Melbourne, Australia

Professor Mel Ziman
School of Medical Science, Edith Cowan University

Dr Elin Gray School of Medical Sciences, Edith Cowan University

Clinical researchers

Collaborators

Professor Ian Constable

Professor Mark Blumenkranz
Chairman of Ophthalmology, Byers Eye Institute at Stanford University, USA

Professor Steven Schwartz
Head of Vitreoretinal Surgery, Jules Stein Eye Institute, University of California, Los Angeles, USA

Professor Richard Samulski
Professor of Molecular Biology, University of North Carolina, USA

Dr Jean-Louis deSousa

Dr Dini Dharmawidiarini John Fawcett Foundation, Bali, Indonesia

Professor Ian McAllister

Professor Mark Gillies Sydney Eye Hospital, New South Wales

Professor Paul Mitchell Westmead Hospital, New South Wales

Professor Tien Wong Singapore National Eye Center

Associate Professor Mei-Ling Tay-Kearney

Dr Yogesan Kanagasingam
Research Director CSIRO, Western Australia

Associate Professor Adam Gajdatsy

Dr Alex Hewitt Royal Victoria Eye and Ear Hospital, Melbourne, Victoria

Dr Jwu Jin Khong Royal Victoria Eye and Ear Hospital, Melbourne, Victoria

Associate Professor John Walsh
SCGH, Perth, Western Australia

Conferences and invited lectures

February

Constable IJ. Wet macular degeneration. Bali International Ophthalmology Retreat, Bali, Indonesia.

Min Kang. Optic nerve endothelium – its relevance in CRVO. Australian and New Zealand Glaucoma Interest Group Annual Scientific Meeting, Perth, Australia. *Awarded the best scientific presentation prize.

Morgan WH. Fun in the space around glaucoma. 2014 Gillies Lecture. Invited speaker, Australia and New Zealand Glaucoma Interest Group, Perth, Australia.

Morgan WH. Molteno tube surgery complications. Invited speaker, Australia and New Zealand Glaucoma Interest Group, Perth, Australia.

Morgan WH. Glaucoma – a review. Invited speaker, Bali International Ophthalmology Retreat, Jimbaran, Bali.

Morgan WH. Angle closure glaucoma. Invited speaker, Bali Australian Memorial Eye Hospital Angle Closure Symposium, Sanur Bali.

Wong EN, Morgan WH, Chen FK. Repeatability of retinal sensitivity measurements on MAIA microperimetry in patients with fixation-threatening glaucoma. Oral presentation at: Australia and New Zealand Glaucoma Interest Group / Singapore Glaucoma Society Congress, Perth, Australia.

March

Barrett G. 1) Phaco techniques & Fluidics. 2) Presbyopic solutions: Monovision versus the rest. 3) Monofocal IOLs & optical Quality: quo vadis? Invited Speaker, OSSA, March 13-17, Drakensberg, South Africa.

Crawford GJ. Australian and New Zealand Cornea Society. Delegate, Brisbane, Australia.

Degli-Esposti M. World Immunoregulation Meeting. Participant, Davos, Switzerland.

Ravazi H. Telehealth economics and privacy. Rural Health West, Perth, Australia.

Turner A. Australian Telehealth Conference. Invited speaker and panel member, Melbourne, Australia.

April

Barrett G. International video: Symposium of challenging cases and complication management. ASCRS Course. ASCRS, Boston, USA.

Barrett G. The role of the posterior capsule in predicting refractive outcome – Effective lens position. ASCRS Symposium. ASCRS, Boston ,USA.

Barrett G. Extended depth of focus IOL & modest monovision. New Technologies Session: International Panel Member. ASCRS, Boston USA.

Barrett G. Flight of the arrow. 1st Place ASCRS Film Festival. ASCRS, Boston USA.

Constable IJ. "Gene therapy." World Ophthalmology Congress, Tokyo, Japan.

Crawford GJ. World Ophthalmology Congress. Delegate, Toyko, Japan.

Mackey DA. "GWAS success in ophthalmology." Invited speaker, Glaucoma session. World Ophthalmology Congress, Tokyo, Japan.

McAllister I. New developments in the treatment of retinal vein occlusions. Invited Speaker, Malaysian Ophthalmological Society Symposium, Kuala Lumpur, Malaysia.

McAllister I. Advances in the management of macular degeneration. Invited Speaker, Malaysian Ophthalmological Society Symposium, Kuala Lumpur, Malaysia.

McAllister I. Update on treatment for diabetic retinopathy. Invited Speaker, Optomax. WA Optometric annual congress.

McAllister I. Recent trials in the treatment of diabetic retinopathy and how they affect our management. Invited Speaker, Bali International Ophthalmic Retreat, Bali, Indonesia.

McAllister I. Management of subretinal haemorrhage. Invited Speaker, Bali International Ophthalmic Retreat, Bali, Indonesia.

Morgan WH. Role of cerebrospinal fluid and retinal venous pressure in glaucoma. Invited speaker, World Ophthalmology Conference, Tokyo, Japan.

May

Chen FK, Wong EN. Inter-observer and inter-device agreement in choroidal and scleral thickness measurement between Spectralis and Atlantis OCT systems. Poster. ARVO Orlando.

Crawford GJ. "Lasers in ophthalmology". Speaker, Optomax Optometric Conference, May 4, Perth, Australia.

Crawford GJ. RANZCO (Victoria) Scientific Meeting. Delegate, Melbourne, Australia.

Degli-Esposti M. Peter MacCallum Cancer Centre Seminar Series. Invited Seminar, Melbourne, Australia.

Morgan WH. Glaucoma surgery: where has it come from and where is it going to? Australian Ophthalmic Nurses Association annual state branch meeting, Perth, Australia.

Rakoczy EP. "One-year follow-up report on the rAAV.sFLT-1 Phase 1 Gene Therapy Trial for Exudative Age-Related Macular Degeneration." ARVO, Orlando, USA.

Ravazi H. "Patient consent." Broome Eye Conference, Broome, Australia.

Turner A. "Telehealth cases from the outback." Invited speaker, Optomax Optometric Conference, Perth, Australia.

Turner A. "Teleophthalmology: design success factors." Invited speaker and panel member, American Telehealth Association, Baltimore, USA.

June

Chen FK. "The story unfolds." Oral presentation. Annual Retina Symposium, Australian and New Zealand Society of Retinal Specialists, Sydney, Australia.

Chen FK. "A new disease". Oral presentation. Australian and New Zealand Society of Retinal Specialists, Sydney, Australia.

Mackey DA. "Retinal genetic testing: what can we do in 2014?" Invited speaker. Australian and New Zealand Society of Retinal Specialists, Sydney, Australia.

Turner A. Invited speaker. Rural Health West, Aboriginal Health Conference.

Turner A. Invited speaker. Indigenous eye health, Super Sunday Conference. Optometry Association of Australia, Sydney, Australia.

July

Barrett G. AUSCRS, July 31-August 2, Port Douglas, Australia.

Crawford GJ. Cataract surgery with an abnormal cornea. Speaker. AUSCRS, Port Douglas, Australia.

Degli-Esposti M. ASCIA WA

Immunology Day. Invited Plenary Lecture, Perth, Australia.

Mackey DA. Glaucoma endophenotypes: genome-wide association studies. Invited speaker. International Society for Eye Research XXI Biennial meeting, San Francisco, USA.

Rakoczy EP. One year follow-up of a Phase 1 gene therapy trial with subretinal rAAV.sFlt-1 for the longterm treatment of wet AMD. International Society for Eye Research, San Francisco, USA.

Turner A. Diabetic retinopathy and telehealth. Invited speaker. Abbott Medical Symposium, Sydney, Australia.

August

Chen FK. Surgical case: retina around the world. Oral Presentation. Annual meeting of the American Society of Retina Specialists, San Diego, USA.

Chen FK. Medical case: an unusual retinal dystrophy associated with bilateral macular vitelliform lesion, megalopapilla and peripheral retinal non-perfusion. Oral Presentation. Annual meeting of the American Society of Retina Specialists, San Diego, USA.

Chen FK, Shaw A, Chandrasekera E, Wong E. A comparison of subfoveal thickness and the type of choroido-scleral boundary morphology as visualised on Atlantis and Spectralis OCT scans. Poster. Annual meeting of the American Society of Retina Specialists, San Diego, USA.

Chen FK, Chandrasekera E, Shaw A, Wong E. Factors affecting discrepancy between manual and automated choroidal thickness measurements using the Topcon swept-source DRI OCT-1 Atlantis system. Poster. Annual meeting of the American Society of Retina Specialists, San Diego, USA.

Turner A. Screening and treatment of diabetic retinopathy for Indigenous Australians. Invited speaker. Centre for Eye Research Australia/Alcon Visiting Professor Program, Melbourne, Australia.

Turner A. Telehealth: bridging gaps in eye healthcare. Invited speaker. Centre for Eye Research Australia/Alcon Visiting Professor Program, Melbourne, Australia.

Yu D-Y. Energy metabolism and blood supply of RGCs and ONH. Invited speaker, Glaucoma Research Society, Jackson Hole, Wyoming, USA.

September

Barrett G. Femto into the future – you no longer need a surgeon. ESCRS, London, UK.

Barrett G. Video symposium of challenging cases. ESCRS, London, UK.

Barrett G. Flight of the arrow. 1st Place ASCRS Film Festival. ESCRS, London, UK.

Barrett G. Presbyopic solutions – monovision vs the rest. Invited Speaker and Co-chair. Congress of Chinese Ophthalmological Society, Xian, China.

Barrett G. Flight of the arrow – Prediction of IOL power. Congress of Chinese Ophthalmological Society, September 17-20, Xian, China.

Crawford GJ. Cataract surgery with an abnormal cornea. Speaker, RANZCO (WA branch) Scientific Meeting, Kalgoorlie, Australia.

Degli-Esposti M. IgV, Invited Plenary Interstate Speaker, Melbourne, Australia.

Hoskin A. Children's eye injuries in Western Australia. Presentation. WAVE Optometry WA Conference, Perth, Australia.

Hoskin A. Mining and eye injuries. Invited speaker. 2014 RANZCO WA Branch Scientific Meeting, Kalgoorlie, Australia.

Mackey DA. Markers of ourdoor activity and myopia from Australian studies. Invited speaker. Consortium for Refractive Error and Myopia meeting, Hong Kong.

Mackey DA. How close are we to routinely using genetic testing to predict glaucoma in the general population? Invited speaker. Asia-Pacific Glaucoma Congress – 10th International Symposium of Ophthalmology, Hong Kong.

McAllister I. Laser induced chorioretinal anastomosis and their role in the management of CRVO. Invited Speaker, Euretina meeting, London, UK.

McAllister I. Intravitreal Aflibercept (IVT-AFL) Improved Vision-Related Function in Patients with Macular Oedema Secondary to Central Retinal Vein Occlusion (CRVO): 24-Week and 52-Week Results from the COPERNICUS and GALILEO Studies. Invited Speaker. Euretina meeting, London, UK.

Morgan WH. Glaucoma surgery: where has it come from and where is it going to? Invited speaker, University of Indonesia Ophthalmology (RSCM Kirana(Departmental meeting.

Morgan WH. Glaucoma – judging progression. Invited speaker, Perdami Ophthalmology meeting, Bali Memorial Eye Hospital, Bali.

Ravazi H. Telehealth economics and privacy. 2014 RANZCO WA Branch Scientific Meeting, Kalgoorlie, Australia.

Turner A. Teleophthalmology education modules. Invited speaker. 2014 RANZCO WA Branch Scientific Meeting, Kalgoorlie, Australia.

Yu D-Y. New technique for glaucoma filtration surgery. Invited speaker, A*STAR-SERI Ophthalmic Medtech Forum, Singapore.

October

Constable IJ. Occasional address: 50th Anniversary of the Sydney University Department of Ophthalmology, Sydney, Australia.

Coudert J. NK cell response to MCMV is tuned in cis. Oral presentation, NK Cell Symposium, Hanover, Germany.

Degli-Esposti M. ARVO Ocular Immunology Meeting. Invited Chair, Ft Lauderdale, USA.

Morgan WH. Glaucoma drainage device surgery. Invited speaker, Perdami Ophthalmology meeting – Bali Memorial Eye Hospital, Bali.

Turner A. Invited speaker. APAO Leadership Development Program, Vietnam. (Also attended March program in Japan)

Yu DY. New technique for glaucoma filtration surgery. Invited Speaker, A*STAR-SERI Ophthalmic Medtech Forum, Singapore.

November

Barrett G. Perfect cut, perfect clarity…perfect prediction. CSCRS Plenary, co-chair. APACRS, Jaipur, India.

Barrett G. Facets of phaco. Symposium co-chair. APACRS, Jaipur, India.

Barrett G. Barrett phaco axe. Presented at Symposium: Surgical Instruments & Devices. APACRS, Jaipur, India.

Barrett G. Monovision. Presented at Symposium: Presbyopia solutions – uncut Stones. Co-chair. APACRS, Jaipur, India.

Barrett G. Symposium: Prediction pearls – the survival guide – Co-chair. Symposium: Court martial in ophthalmic surgery – Honorary Jury Member. Symposium: Top cataract tips – Chair. APACRS, Jaipur, India.

Hoskin A. Sports-related eye injuries. Abstract presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

Hoskin A. TASER eye injuries. Poster presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

Mackey DA. ORIA: Highlights of Australian and New Zealand research. Invited Chair. RANZCO Annual Scientific Congress, Brisbane, Australia.

Mackey DA. What are "Omics?" How does this differ from genetics? OMICS for ophthalmologists training course. Invited Chair and panel speaker. RANZCO Annual Scientific Congress, Brisbane, Australia.

Magno AL, Lai CM, Pierce C, Chalberg TW, Schwartz S, Blumenkranz MS, French M, Constable IJ, Rakoczy EP. One year follow-up of phase 1 gene therapy

trial with subretinal rAAV.sFlt-1 for the longterm treatment of wet age-related macular degeneration. The Fifth Margaret River Region Forum.

Min Kang. Vascular-glial unit in optic nerve head; interspecies quantitative comparison. RANZCO Annual Scientific Congress, Brisbane, Queensland.

Min Kang. Axonal cytoskeleton proteins in optic nerve head: relation to preferential axonal damage pattern in glaucoma? RANZCO 45th Annual Scientific Congress, Brisbane, Queensland.

Morgan WH, Rahman A, Yu DY, Hazelton ML, Betz-Stablein B, Lind C. New photo-plethysmographic technique accurately detects retinal vessel pulsation. RANZCO Annual Scientific Congress, Brisbane, Queensland.

Moynihan v, O'Halloran R, Frost E, Turner A. Diabetic retinal screening in WA: An audit of the Lions Outback Vision Program. Poster presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

Ravazi H, Copeland S, Turner A. Increasing the impact of telehealth in rural and remote Western Australia. Poster presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

Ravazi H. Cultural competency in ophthalmology. RANZCO Annual Scientific Congress, Brisbane, Australia.

Smith C, Copeland S, Turner A. Collaborative care between ophthalmologists and optometrists using telehealth for better eye health care in rural and remote Australia. Poster presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

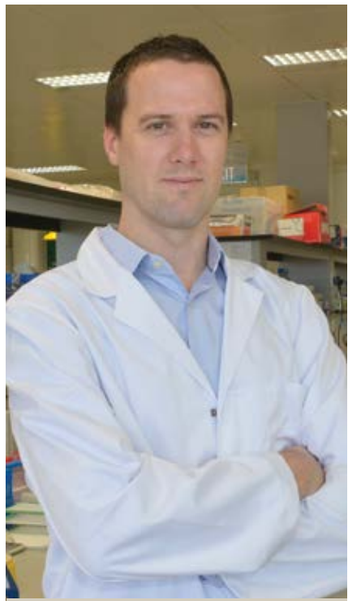
Yardley AM, Hoskin A, Hanman K, Lam G, Mackey DA. The wild wild west: paediatric eye injuries requiring hospitalisation in Western Australia from 2002-2013. Abstract presentation. RANZCO Annual Scientific Congress, Brisbane, Australia.

December

Degli-Esposti M. QIMR Immunology and Infection Seminar Series. Invited seminar, Brisbane, Australia.

2014 Ian Constable lecture

The 2014 Ian Constable Lecture was delivered on September 9 by Professor Ryan Lister.



Professor Ryan Lister.

Professor Lister leads an experimental research group based at UWA exploring the epigenome in a variety of systems, including plants, the human brain and stem cells.

In his lecture - Exploring the Epigenome: from stem cells to your brain, and in between - Professor Lister focused on a central challenge in biological research: determining how the information contained in one genome gives rise to the hundreds of specialised cell types in a complex organism.

He also discussed the cutting edge DNA sequencing techniques that have led to the production of the first comprehensive maps of the human epigenome.

Shortly after delivering the annual Ian Constable Lecture, Professor Lister was recognised as one of six of Australia's best scientists and science teachers - receiving the Frank Fenner Prize for Life Scientist of the Year as part of the 2014 Prime Minister's Prizes for Science.

At a ceremony in the Great of Hall in Parliament House, Canberra, the Prime Minister spoke of how Professor Lister's work had the potential to transform agriculture, regenerative medicine and our understanding of the workings of the brain.

Professors David Mackey and Ian Constable.

Grow and continually improve our engagement with and support from the community

Acknowledgements

The LEI wishes to thank all of our generous supporters, including:

Bequests in Perpetuity

The Alan and Lillian Cameron Charitable Endowment

The Joyce Henderson Bequest Fund

The Harry and Margaret Kerman Trust Fund

Bequests

Estate of the Late Jennie Allen

Estate of the Late Doreen Crogan

Estate of the Late Linda Debnam

Estate of the Late Hugh Douglas Fortescue

Estate of the Late Linda Martin

Estate of the Late Walter Thomas

Memorial gifts, honouring

Mr Thomas Bone

Mr Jim Hughes

Ms Margaret Jones

Ms Margaret Okwell

Mr Mark Sandom

Ms Connie Simpson

Mr Robin Smith

Special gifts

Associate Professor Fred Chen

Mr and Mrs David and Kathy Aspinall

Mr William Bloking

Mr Bruno Camarri

Mr John Cruickshank

Mrs Patrina Freedman

Ms and Mr Kathy and Graham Hardie

Mr Kerry Harmanis

Mr and Mrs Malcolm and Tonya McCusker

Mrs Elva Moore

Mrs Gwynneth Roberts

Ms Jenny Larner

Oxford Compounding

Professor Geoffrey Crawford

Professor Ian McAllister

Sweet Melodies Pty Ltd

Trusts and Foundations

Brightfocus Foundation

Bowen Foundation

Channel 7 Telethon Trust

Constantine Foundation

Ferris Family Foundation

Freehills Foundation

Harvard Club of Australia Non-profit Fellowship Program

Lions Club International Foundation

Lions Save-Sight Foundation

Quality of Life Foundation

Raine Medical Research Foundation

RANZCO Eye Foundation

Stan Perron Charitable Foundation Ltd

Major Institutional Support

Apache Energy Ltd

ARC Centre of Excellence

Bayer Global Ophthalmology Awards

Cancer Council WA

Diabetes WA

Federal Government of Australia

National Health and Medical Research Council

Government of Western Australia

Department of Health

Country Health Service

Lotterywest

Novartis Pharmaceuticals Pty Ltd

Ophthalmic Research Institute of Australia

Retina Australia WA

The University of Western Australia

Wesfarmers Ltd

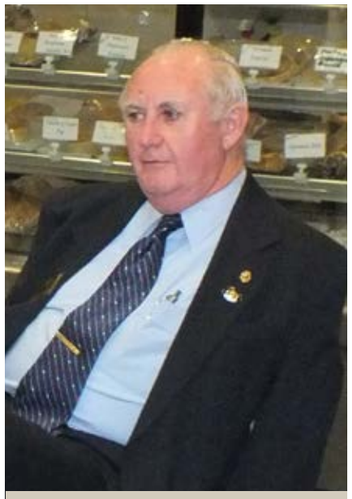
To find out more about leaving a gift in your Will, donations and partnerships please contact Kari Legge on (08) 9381 0823 or on karilegge@lei.org.au

Governor and Tonya McCusker experience vision impairment.

Andrea Ang in Myanmar.

Lions Save-Sight Foundation

Again, the Lions Save-Sight Foundation (LSSF) has enjoyed a year of strong support for the LEI.



LSSF Chairman Ambrose Depiazzi.

From humble beginnings in 1971 the LSSF has continued to live up to the challenge Helen Keller issued to Lions in 1925 to "become knights for the blind in this crusade against darkness". The spawning of the LEI out of the LSSF in 1983 has not caused any reduction in this support from the Lions Clubs of Western Australia.

The expansion of the LEI on the fourth floor of the Perkins Institute of Medical Research Building in early 2014 was indeed a milestone event in our history. The cost of establishing a new facility such as this is an enormous challenge and I am proud to be able to report that the LSSF through the support of Lions Clubs International Foundation, the Australian Lions Foundation and Lions Clubs in Western Australia were able to hand over $179,308 towards the equipping of this new facility.

During the year we were approached by the Lions Outback Vision group of the LEI concerning funding of the Judy Glover Memorial Scholarship Fund.

This fund, established some years ago by a legacy from the estate of the late Judy Glover, was in danger of not continuing as funding was drying up. The fund had previously provided funding for four optometry students to undertake a month's work experience in non-metropolitan areas with a view to encouraging them to work in such areas when qualified. The cost per annum for this project has been $45,000 per annum. I am pleased to report that the LSSF has agreed to commit to fund $22,500 or 50 per cent of this cost over the next three years. We consider it an important initiative and shows support for remote areas, many of which have Lions Clubs which in turn support the LSSF.

In establishing the Chair of Ophthalmology at UWA, a condition precedent was for the LSSF to underwrite certain funding and costs. We continue to honour this commitment along with partial funding of the salary of the Director of Research and co-funding the post-doctoral Brian King Fellowship. This significant funding contribution is a sign of our faith in the excellent work being undertaken by the LEI.

In regard to support, it is certainly not a one-way street. I would like to thank Professor David Mackey and the team for their support in many ways, but I would mention two areas in particular. Firstly over the last year, a study has been undertaken in regard to reviewing the effectiveness of our used spectacles collection project. This could not have occurred effectively without the support of the LEI and I especially wish to recognise Sue Ling Wan who headed up the team and Professor David Mackey who set up the review.

Secondly, this year we re-established our visitation program whereby members of Lions Clubs and their associates were able to undertake a tour of the facilities after working hours. These tours require LEI staff to remain behind at the end of a busy day and act as guides for the group. The Clubs which have so far visited the facility are in awe of what they have seen and I am sure this will help gain future support for the LSSF. Without the support of LEI staff this would not be possible and we extend our sincere thanks.

As we acknowledge the year that has been, we look forward to 2015 with optimism and I wish all involved in the LEI the very best for the year ahead.

Ambrose Depiazzi
Chairman, Lions Save-Sight Foundation (WA) Inc.

Lions Youth of the Year.

Volunteers

It was a busy and productive year for the LEI's Volunteer Program. It was also a year of change with Volunteer Coordinator Lyne Thomas leaving the position to be closer to family in Melbourne.

Lyne was instrumental in establishing the program in May 2010 and worked with the LSSF and the LEI's Julie Robson to design the program, recruit volunteers, organise uniforms and information packs and establish a welcome desk in the building foyer. Her energy, enthusiasm and guidance will be missed by all.

Kay Hooper took on the role of Volunteer Coordinator, working with the Manager of Clinical Operations for the remainder of 2014, to ensure volunteers continue to form an integral part of the LEI.

Volunteer numbers stand at 30 and during the year they supported many activities of the LEI, including the inauguration ceremony, Visionaries luncheon, Open Day, Ian Constable Lecture and Telethon.

Volunteers continued to provide an important support role for patients and visitors - escorting the elderly and vision impaired, collecting medications from the QEII pharmacy on behalf of patients and providing safe access to refreshments.

Other work involved assistance with Christmas decorations and festivities, maintenance of brochures and magazines in the Robert Linton Library, development of a brochure for new volunteers and participation in regular Consumer Advisory Group meetings to ensure consumer and community engagement was maintained.

Lyne Thomas' farewell.

Interest in joining the Volunteer Program remained strong and those who did underwent a formal orientation provided by the LEI Training Manager.

Volunteers were also trained in other areas of relevance, including Hand Hygiene Australia initiatives and wheelchair use.

An important event for volunteers was the luncheon held to coincide with National Volunteer Week - recognising and thanking the enormous contribution of volunteers to the smooth running of the LEI.

Lyne Thomas welcomes her succesor Kay Hooper.

Volunteer desk.

Visionaries luncheon

LEI supporters gather for Visionaries Luncheon

The 2014 Visionaries Luncheon was held at the UWA Club, with 50 bequestors and supporters gathering to celebrate the LEI and its future.

LEI Managing Director Professor David Mackey spoke on the LEI's future plans, while Associate Professor Angus Turner spoke about the practical and evidence-based approach of his Outback Vision team in helping patients living in rural and remote parts of Western Australia access equitable eye health services.

Professor David Mackey addresses bequestors and supporters at the LEI's Visionaries Luncheon.

To be financially sustainable

Grants

GRANT	CHIEF INVESTIGATORS
Australian Competitive Grants	
NHMRC Senior Principal Research Fellowship	Degli-Esposti, M
NHMRC Program Grant Immunological therapies for cancer, chronic infection and autoimmunity	Degli-Esposti, M
NHMRC Centre of Research Excellence Translation of genetic eye research integrating education, counselling and testing with gene discovery and gene based therapies for eye disease	Mackey, D Hewitt, A Burdon, K Craig, J
NHMRC Project Grant Genome-wide association study (GWAS) for juvenile onset myopia and its component measures to identify molecular pathways to prevent myopia	Mackey, D Pennell, C Hewitt, A Young, T Hammond, C Coroneo, M
NHMRC Project Grant Genetic etiologies of congenital esotropia	Mackey, D Engle, E Hewitt, A Macgregor, S
NHMRC Project Grant Understanding the role of CD4 T cells in viral infection a means of improving anti-viral immunotherapy	Degli-Esposti, M Andoniou, C
NHMRC Project Grant Developing a new glaucoma surgery using precision ablation of the trabecular meshwork	Yu, D-Y Morgan, W Cringle, S
NHMRC Project Grant Imaging the human fundus to simultaneously generate an oxygenation and blood flow map	Yu, D-Y Cringle, S McAllister, I
NHMRC Project Grant Improving inner retinal oxygenation: developing a new form of retinal laser photocoagulation therapy	Cringle, S Yu, D-Y
NHMRC Project Grant Pathogenic role of changes in the extracellular environment of retinal ganglion cells in glaucoma	Yu, D-Y Morgan, W Cringle, S
NHMRC Project Grant Non-invasive retinal vein pulsation pressure	Morgan, W Yu, Dao-Yi
NHMRC Development Grant Developing a protype laser system forintraocular surgery	Yu, D-Y McAllister, I Cringle, S
NHMRC Development Grant Non-invasive intra-cranial Pressure Measurement	Morgan, W
NHMRC Equipment Grant	Mackey, D
NHMRC Scholarship Grant	Kang, M
NHMRC Early Career Fellowship	Chen, F
ARC Centre of Excellence Centre of Excellence in Vision Science	Yu, D
Ophthalmic Research Institute of Australia Collaborative Care between ophthalmologists and optometrists using telehealth for better eye health care in remote Australia	Turner, A
Retina Australia Accelerating therapeutic discoveries for Retinitis Pigmentosa	Mackey, D
Clive and Vera Ramaciotti Foundation Developing a patient-specific model for glaucoma	Hewitt, A
Government Grants	
Commonwealth Department of Health Equipment Grant	Turner, A
Government of Western Australia Department of Health Round 17 MHRIF	
WA Country Health Service	Turner, A

Other Grants	
Cancer Council WA Interplays between anti-viral and allo-responses in the context of graft versus host disease	Degli-Esposti, M
Diabetes WA Equipment Grant	Turner, A
Channel 7 Telethon Trust Outdoor Environment and Vision follow up study	Mackey, D
RANZCO	Turner, A
Novartis Equipment Grant	Turner, A
McCusker Charitable Foundation	Turner, A
Fred Hollows Foundation	Turner, A
Raine Medical Research Foundation	Mackey, D
Visiting Professor Lecture Series	
Raine Medical Research Foundation Priming Grant	McLenachan, S
Sir Charles Gairdner Hospital Scholarship	Tan, P
University of Western Australia AA Saw Scholarship Top up	Kang, M
University of Western Australia Alvina King Living Allowance	Yazar, S
University of Western Australia Safety Net Grant	Coudert, J
University of Western Australia Centre for Ophthalmology and Visual Science Infrastructure Funding	
Lions Save-Sight Foundation Research Support	
International Grants	
BrightFocus Foundation	Mackey, D
GOAP Bayer	Chen, F
TOTAL GRANTS 2014	$4,958,409

Financial statements

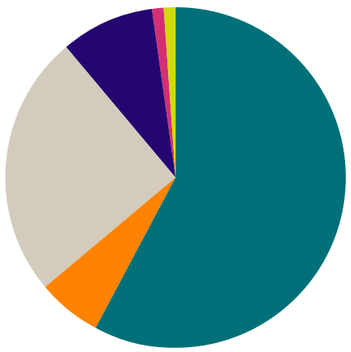
The Lions Eye Institute

The summary below is an aggregate of the Institute's financial results and research grants administered by the Institute.

INCOME STATEMENT	2014	2013
For the year ended 31 December	$	$
Total income including research grants	20,596,746	20,186,614
Total expenditure including research expenses	(20,518,533)	(18,634,151)
Operating profit before significant items	78,213	1,552,463
Changes in market value of investments	609,387	1,287,635
Operating profit after significant items	687,600	2,840,098
Accumulated profit at the beginning of the year	31,949,945	29,109,847
ACCUMULATED PROFIT AT THE END OF THE YEAR	**32,637,545**	**31,949,945**

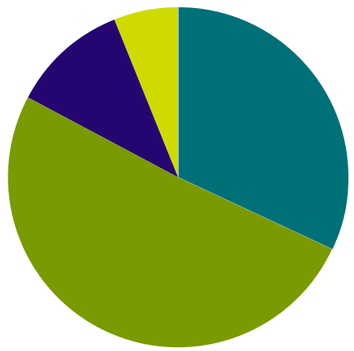
BALANCE SHEET	2014	2013
At 31 December	$	$
TOTAL FUNDS	**32,637,545**	**31,949,945**
Represented by		
Cash assets	18,337,101	18,855,137
Other assets	2,472,646	1,647,489
Other financial assets	18,157,868	16,064,911
Property, plant and equipment	8,110,447	7,743,145
TOTAL ASSETS	**47,078,062**	**44,310,682**
Payables	2,665,536	1,645,992
Research grant funds not yet spent	10,479,404	9,605,633
Provision for employee entitlements	1,295,577	1,109,112
TOTAL LIABILITIES	**14,440,517**	**12,360,737**
NET ASSETS	**32,637,545**	**31,949,945**

Income 2014



- Clinic 58%
- Bequests and donations 6%
- Grants 25%
- Investment income 9%
- Optics 1%
- Others 1%

Expenditure 2014



- Staffing salaries 32%
- Research and clinic 51%
- Equip, deprn, maint 11%
- Admin and overheads 6%

STATISTICAL SUMMARY	2014	2013	2012	2011	2010
	$	$	$	$	$
Total income	20,596,746	21,474,249	20,395,495	19,444,853	14,357,478
Total expenditure	(20,518,533)	(19,921,786)	(17,201,118)	(15,700,861)	(13,655,814)
Net assets	32,637,545	31,949,945	29,109,847	24,739,217	20,995,225
Property, plant and equipment (net)	8,110,447	7,743,145	8,052,039	7,141,125	7,595,237
AVERAGE NO. OF FTE STAFF	**126**	**115**	**93**	**85**	**82**

Australian Foundation for the Prevention of Blindness Trust

The following summary financial report reflects the financial position of the AFPB Trust for the year ended 31 December 2014.

	2014	2013
	$	$
INCOME		
Donations and subscriptions	700	850
Interest and investment income	44,319	49,667
Dividends and trust distributions	601,150	94,955
Fair value adjustment of investment to market value	(378,936)	414,128
TOTAL INCOME	**267,233**	**559,600**
LESS EXPENDITURE		
Donations	-	50,000
Administration Expenses	5,704	5,428
TOTAL EXPENDITURE	**5,704**	**55,428**
NET PROFIT FOR THE YEAR	**261,679**	**504,172**
Accumulated funds at the beginning of year	3,429,021	2,924,849
ACCUMULATED FUNDS AT THE END OF THE YEAR	**3,690,700**	**3,429,021**
Represented by		
CURRENT ASSETS		
Cash at bank	1,237,915	1,164,938
Other Assets	10,298	9,686
	1,248,213	**1,174,624**
NON-CURRENT ASSETS		
Investments	2,445,487	2,257,285
TOTAL ASSETS	**3,693,700**	**3,431,909**
CURRENT LIABILITIES		
Other Creditors	3,000	2,888
NET ASSETS	**3,690,700**	**3,429,021**

The Lions Eye Institute is on a quest to save sight. We offer a full range of eye health care services through our clinic, with profits directly supporting our world-leading medical researchers, like Professor Mariapia Degli-Esposti. By choosing the Lions Eye Institute, you are helping us in our drive to eradicate blindness.

PROFESSOR
MARIAPIA DEGLI-ESPOSTI
Immunology

Visit our website:
lei.org.au

Lions Eye Institute

Acronyms used in this report

AFPB	Australian Foundation for the Prevention of Blindness Trust
AICD	Australian Institute of Company Directors
AMA	Australian Medical Association
ANZSOPS	Australian and New Zealand Society of Ophthalmic Plastic Surgeons
APACRS	Asia-Pacific Association of Cataract and Refractive Surgeons
ASCRS	American Society of Cataract and Refractive Surgery
AUSCRS	Australasian Society of Cataract and Refractive Surgeons
COVS	Centre of Ophthalmology and Visual Science, The University of Western Australia
FRANZCO	Fellow of the Royal Australian and New Zealand College of Ophthalmologists
IOL	Intraocular lens
LASEK	Laser epithelial keratomileusis
LASIK	Laser-assisted in-situ keratomileusis
LEI	Lions Eye Institute
LOV	Lions Outback Vision
LSSF	Lions Save-Sight Foundation
NHMRC	National Health and Medical Research Council
OTEL	Ocular Tissue Engineering Laboratory
PMH	Princess Margaret Hospital
PRK	Photorefractive keratectomy
RANZCO	Royal Australian and New Zealand College of Ophthalmologists
RPH	Royal Perth Hospital
SCGH	Sir Charles Gairdner Hospital
UWA	The University of Western Australia

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