Lions Eye Institute

2012 ANNUAL REPORT

A clear vision to the future

OUR MISSION

To achieve excellence in scientific research and clinical practice to prevent blindness.

OUR VISION

- To conduct research into the causes, prevention and treatment of diseases and conditions giving rise to blindness and other ocular disorders on a not-for-profit basis
- To advance the standards of medical eye care through education and training of the medical and allied professions.
- To stimulate public interest in the social and economic impact of eye disease through promotion of eye health awareness.

WE ARE ACHIEVING OUR MISSION

In 2012 LEI leapt from level 3 to the top level 5 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 expert review by committees comprising experienced, internationally-recognised experts.

In 2012 LEI/UWA was funded as a Centre of Clinical Research Excellence by the NHMRC for Translation of Genetic Eye Research.

contents

"WITHIN AUSTRALIA, IT IS ESTIMATED THAT THE RATE OF DISABILITY RESULTING FROM BLINDNESS AND VISION LOSS WILL ALMOST DOUBLE BY 2020 DUE TO OUR AGEING POPULATION."

Lions Eye Institute

CONTACT INFORMATION

Lions Eye Institute ABN 48 106 521 439
2 Verdun Street, Nedlands WA 6009
t +61 8 9381 0777 | **f** +61 8 9381 0700
e enquiry@lei.org.au | **www.lei.org.au**

MEDIA CONTACT

Francesca Robb
p 0409 102 556
e francescarobb@lei.org.au

chairman's report

The Lions Eye Institute's financial performance continued to improve during 2012 with its investments recovering from lost ground in the previous financial year.

Profit from operations of $1.09m and book value improvement in the investment portfolio has resulted in a net surplus of $4.37m. Included in this surplus is $0.66m from the Capital Fundraising Campaign.

As a consequence of the solid performance this year, the Institute remains in a healthy position and is well placed to provide funding support for major research projects planned for the next five years.

Two talented people joined the LEI Board during 2012 - Dr Stephanie Allen and Mr. Stephen Pearce – and we welcome their contribution and commitment.

The new medical research facility at the QEII Medical Centre is expected to be completed in the last quarter of 2013. LEI will occupy a whole floor in the QEII site building under a formal agreement with the Western Australian Institute for Medical Research (WAIMR) and will be responsible for meeting the cost of the specialized research equipment.

The Institute's Capital Fundraising Campaign is also making a major contribution to the new facility, with generous support coming from the government, corporate and private sectors.

During 2012, Clinical Services underwent a major restructure to help manage record numbers of patients. In the past three years, clinic activity has grown more than 25 per cent, with almost 50,000 patients seen in 2012.

The LEI continues to be well supported by the community with a number of major bequests received during the year. One significant bequest of $3 million from the Joyce Henderson Trust has resulted in the creation of the Joyce Henderson Paediatric Ophthalmology Fellowship which will continue in perpetuity.

The Institute also continues to receive much needed support from the Lions Save-Sight Foundation (LSSF) and the Australian Foundation for the Prevention of Blindness Trust (AFPB). Both organisations have shown an ongoing commitment to helping the Institute in many ways and I thank them for their continued support of both the Institute and our Managing Director.

On behalf of the Board, I would like to sincerely express our thanks to the management team at the Institute under the leadership of Professor David Mackey.

The Board looks forward to working with the management team in 2013 to progress our research and clinical services goals.

David Eiszele

Non-executive Chairman

LEI IS BUILDING THE FOUNDATIONS FOR FUTURE GROWTH.

DAVID EISZELE

Chairman

managing director's report

2012 saw the new QEII medical research building rise alongside the current Lions Eye Institute (LEI) building. The LEI will occupy one floor and share common facilities with the Western Australian Institute of Medical Research (WAIMR), The University of Western Australia and Sir Charles Gairdner Hospital researchers.

We are building the foundations for future growth and means the exciting, basic and translational research that has led to improved health outcomes for patients nationally and internationally will continue on the QEII campus. As well, with many major research groups working in the same building, it should enable closer collaborations and cross-linking than has been possible in the past in Western Australia.

The Federal Government's ranking of research productivity - Excellence in Research Australia (ERA) - measured the Centre for Ophthalmology and Visual Science at the top level five - up from level three at the last appraisal. Ophthalmology was the only discipline to increase two levels at The University of Western Australia, clearly demonstrating the quality of the research work being undertaken.

The Institute has a proud history of outstanding translation of medical research. Over the last decade, Professor Ian Constable has been working on a gene therapy for Age-related Macular Degeneration. The last year saw the commencement of a Phase 1 clinical trial for this potential new treatment at the Institute with LEI patients participating. It can often take several decades to translate clinical needs from the research bench to the bedside, a fact sadly often overlooked by funding bodies and governments throughout the world.

In 2012, we welcomed many national and international visitors including Dr Sergey Koslov, a Russian ophthalmologist who visited the Institute as part of a Rotary Group Study Exchange, and Dr Mary Wirtz a research collaborator from the Oregon Health & Science University. We were also privileged to host two Raine Visiting Professors: Chris Hammond from Kings College London and Terri Young from Duke University. Each year the LEI is on the itinerary for the State and National winners of the Lions Youth of the Year awardees. I am always inspired by these exceptional young people, all of whom have outstanding talent and give so much to the community around them.

With a tradition of offering skills training for overseas ophthalmologists, in January the LEI hosted Dr Dini Dharmawidiarini, an ophthalmologist from Bali who works with the John Fawcett Foundation delivering eye care for charity. She spent one month at the LEI observing surgical techniques.

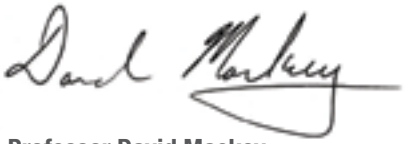
The LEI has increased teaching for high school students, medical and science students, postgraduate students, junior doctors and ophthalmology trainees, with an aim to inspire the next generation of clinicians and scientists. The Institute is proud of the quality of the teaching offered at all levels of education and I was pleased to be recognised with a RANZCO Teacher of Excellence Award.

Our younger clinician-scientists at the LEI also received several awards and honours in 2012. Dr Alex Hewitt - who spent the year in Western Australia as a chief investigator on several NHMRC funded projects - received a Tall Poppy award and an Alcon Young Investigator Award. Alex, who completed his PhD in 2009 and just completed his ophthalmology training, has worked extensively on the genetics of glaucoma with over 100 publications to his name already.

Associate Professor Fred Chen, who established the Ocular Tissue Engineering Laboratory with start-up funds from the LEI and The University of Western Australia, was awarded an NHMRC Early Career Fellowship for the next four years that will enable him to work 40 per cent of his time in a clinical capacity and 60 per cent of the time in research to continue his investigations into retinal stem cells.

Associate Professor Angus Turner, who leads the Indigenous and Remote Eye Health (IREHU) unit, has made major progress in delivering eye health in remote regions of Western Australia and has been selected for the RANZCO leadership program. He was also delighted to accept a personal invitation in November from the Governor-General to join a small dinner party she held at Admiralty House in honour of Prince Charles and Camilla's royal visit.

The public had a unique opportunity to view the ground-breaking work of researchers and clinicians at the LEI when the Institute threw open its doors for a day in October. Tours showcased the Lions Eye Bank, clinic activities, stem cell research, clinical trials, immunology, physiology of the eye, Lions Outback Vision and UV and sun protection. Many thanks to the staff and volunteers who made the day such a success, something we plan to repeat in 2013.



Professor David Mackey

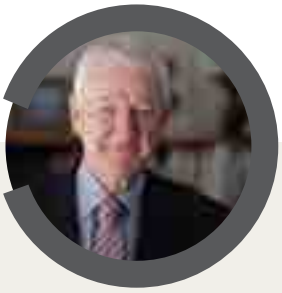
Managing Director

LEI HAS INCREASED TEACHING... WITH AN AIM TO INSPIRE THE NEXT GENERATION OF CLINICIANS AND SCIENTISTS.

DAVID MACKEY

Managing Director Lions Eye Institute

board of directors



DAVID EISZELE
FAICD

Non-executive Chairman

Mr Eiszele joined the Board in 2003 and was appointed Chairman on December 31, 2004. He holds a Diploma of Civil Engineering and a Masters of Business Degree. He is a Fellow of the Australian Institute of Company Directors.

Mr Eiszele was the Chairman of PearlStreet Limited and a former Managing Director of Western Power Corporation - a major government trading entity. He has considerable experience in effecting commercial, strategic and cultural change within a large corporation. He has also held national leadership roles as a member of the Business Council of Australia and past Chairman of the Electricity Supply Association of Australia.

Mr Eiszele is Chairman of Verve Energy, Director of Torrens Energy Limited and past Fellow of the Institution of Engineers Australia and Australian Institute of Management.

PROF DAVID MACKEY
MBBS, MD, FRANZCO, FRACS, AAICD

Managing Director

Professor Mackey was appointed Managing Director of the Lions Eye Institute and Professor of Ophthalmology at The University of Western Australia in March, 2009.

He heads The University of Western Australia 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 completing 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 Western Australian Branch of the Royal Australian and New Zealand College of Ophthalmologists.

Professor Mackey was the Clinical Professor at the University of Tasmania and Associate Professor at the University of Melbourne and is also a member of the Investment Committee.

DR STEPHANIE ALLEN

Non-executive Director
(Appointed 17 April 2012)

Dr Stephanie Allen is a Health Partner with PricewaterhouseCoopers in both the UK and Australia.

She holds a PhD in Criminology, a MSc in Applied Social Studies, a BA Joint Honours in Politics/Sociology and a Diploma in Social Work.

Stephanie has over 10 years experience in healthcare consulting and has led a number of high profile health transformation projects including the WA state wide mental health strategy and Nottingham University Hospitals Trust and Birmingham Children's Hospital strategy.

Stephanie has also worked extensively with the aged care sector – typically supporting organisations to develop robust business cases for the diversification or rationalisation of services as demand and funding changes.

WILLIAM BLOKING
FAICD

Non-executive Director

Mr Bloking joined the Board in 2003. He holds a Bachelor of Science in Mechanical Engineering (Summa cum Laude) from The University of South Carolina. He is a Fellow of the Australian Institute of Company Directors.

Prior to his retirement from the oil and gas industry, Mr. Bloking was President of Australia/Asia Gas for BHP Billiton Petroleum.

Mr Bloking is currently Non-Executive Chairman of Nido Petroleum Limited and Transerv Energy Limited and Executive Chairman and President of KAL Energy, Inc.

He is also a Non-Executive Director of the West Australian Symphony Orchestra, a Governor of the American Chamber of Commerce in Australia and an Adjunct Professor at Murdoch University.

Mr Bloking is the Chairman of the LEI's Building the Vision Capital Campaign.

RUDOLF BRUNOVS
FAICD

Non-Executive Director

Mr Brunovs joined the Board in 2005. He holds a Master of Business Administration and is a Fellow of the Institute of Chartered Accountants, CPA Australia and the Australian Institute of Company Directors.

Mr Brunovs retired from 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.

Mr Brunovs is Chairman of LEI's Audit and Risk Committee and the Investment Committee.

PROF IAN MCALLISTER
MBBS, FRANZCO, FRACS

Non-executive Director

Professor McAllister trained in Western Australia with additional sub-specialty training in vitreoretinal disorders in the USA.

He is Director of Clinical Services at the Lions Eye Institute and a consultant ophthalmologist at Royal Perth and Sir Charles Gairdner hospitals.

Professor McAllister is actively involved in research for cures for vitreoretinal disorders - especially retinal vascular disorders - and has held 10 National Health and Medical Research Council grants in this area as well as numerous minor grants.

He has published over 100 papers in scientific journals and has been involved for many years in State-wide diabetic retinopathy screening and treatment services. He also coordinates and reviews photographs from diabetic screening in remote parts of Western Australia.

board of directors

STEPHEN PEARCE

Non-executive Director
(Appointed 17 April 2012)

Mr Pearce is the Chief Financial Officer of Fortescue Metals Group and has more than 20 years experience in senior management roles in the mining, oil and gas and utilities industries. He previously held the position of Managing Director and CEO of Southern Cross Electrical Engineering Limited and before that was CFO with Alinta Limited in Western Australia.

Mr Pearce has a Bachelor of Business from RMIT and Graduate Diploma in Company Secretarial Practice. He is a Chartered Accountant, a Chartered Secretary and Member of the Australian Institute of Company Directors.

JASON RICKETTS

B.JURIS (HONS), LLB, LLM (DIST), FAICD

Non-executive Director
(Resigned 18 December 2012)

Mr Ricketts joined the Board in 2010. He holds Bachelor of Laws and Master of Laws degrees from The University of Western Australia and is a Fellow of the Australian Institute of Company Directors.

An experienced commercial lawyer practicing in the area of infrastructure law, Mr Ricketts is the Managing Partner (Australia) for the global law firm Herbert Smith Freehills.

He is also on the Board of Leadership WA and is a member of the Law Society of Western Australia.

SIR JAMES CRUTHERS AO

OUR PATRON

Sir James Cruthers has been a long-standing patron of the Lions Eye Institute. He enjoyed 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 joined the Perth Daily News as a journalist. 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 Rupert Murdoch.

Sir James is a philanthropist who established TVW Telethon and the WA annual Christmas Pageant. He actively supports many charitable groups.

research

GENES INVOLVED IN CORNEAL CURVATURE, CORNEAL DIAMETER AND CENTRAL CORNEAL THICKNESS, RISK FACTORS FOR REFRACTIVE ERROR AND KERATOCONUS HAVE BEEN IDENTIFIED.

Telethon 2012.
L-R, Janine Sing, Kate Hanman, Evan Wong with Therapyfocus and a young visitor

L-R, Peter Klinken and David Mackey

clinical genetics and epidemiology

2012 was a major year for the Clinical Genetics and Epidemiology Unit led by Professor David Mackey. Funding commenced for three National Health and Medical Research Council projects that will enable this group to continue its work investigating the genetic and environmental causes of eye diseases. The unit also received ongoing funding support from the Channel 7 Telethon Trust.

PROJECTS

Translation of Genetic Eye Research

The National Health and Medical Research Council's Centre of Research Excellence project: The Translation of Genetic Eye Research is a five-year $2.5 million national research effort to take the new discoveries in genetics of eye disease and translate them into improved patient care.

This project involves research teams from Western Australia, South Australia, Victoria and Tasmania. As well as regular teleconference meetings, all Chief Investigators, Associate Investigators and the Scientific Advisory Group came to Perth in September to review the first year of activities and plan the next four years.

Raine Eye Health Study

The Raine Study is a longitudinal study that began in 1989, recruiting nearly 3000 women at around 18 weeks of pregnancy. It 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 2000 cohort participants had a predominant focus on eye health - the Raine Eye Health Study. This is one of the first studies of eye health and diseases in young adults, for which very little data exist as it is presumed that young adults have the best vision.

Western Australian Eye Protection Study

Outdoor sports involve exposure to sun, which has both beneficial and potentially harmful effects. For example, ultraviolet (UV) light helps us make Vitamin D, which is important for bone strength, but UV also increases the risk of skin cancer. Thus a balance is important.

Similarly some outdoor exposure seems to protect adolescents from developing short-sightedness (myopia) but excess UV exposure increases the risk of UV damage to the front of the eye, causing pterygium.

Wearing hats and sunglasses is practical for some sports and outdoor activities but it is less so for others - e.g. surfing. Goggles used in swimming, if worn too tightly, may increase the risk of the eye disease glaucoma that causes loss of side vision.

Western Australian Strabismus Inheritance Study

Strabismus (misalignment of the eyes) affects three to five per cent of the general population. It is often associated with amblyopia, otherwise known as a lazy eye (failure of normal visual development) and reduced or absent binocular (stereoscopic) vision. Thus early diagnosis and treatment enables optimal visual outcomes. The associated poor cosmetic appearance may also interfere with social and psychological development.

Twin, population and family studies suggest there is a genetic component to strabismus. Research allows better understanding of the mechanism by which strabismus occurs, identifying those at higher risk and the potential to develop new treatments. Good vision in childhood is essential to the proper development of vision into adulthood.

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 to explore why some people are able to

GOOD VISION IN CHILDHOOD IS ESSENTIAL TO THE PROPER DEVELOPMENT OF VISION INTO ADULTHOOD.

remain healthy and active throughout their senior years whilst others suffer ongoing illness and infirmity – the Busselton Healthy Ageing Study. There is an eye component within this study, for which the Lions Eye Institute through Professor David Mackey is providing financial and equipment support.

OUTCOMES

Raine Eye Health Study

All available DNA samples were genotyped and samples not previously genotyped were also analysed on a genome wide array. The data from generated work are being used for the investigation of genetically complex traits.

Analysis of data collected during the 20-year follow-up commenced during 2012 and this work will continue in 2013.

Genes involved in corneal curvature, corneal diameter and central corneal thickness, risk factors for refractive error and keratoconus have been identified.

Western Australian Eye Protection Study

The unit is contacting sporting and outdoor activity groups in Western Australia to invite members to undertake an eye examination. We wish to determine the current use of eye protection and the prevalence of early signs of eye damage.

Preliminary analysis suggests swimmers who wear goggles for extended periods may have a slightly increased risk of glaucoma.

Meta-analysis of the world literature confirms the association of reduced outdoor activity and myopia.

Western Australian Strabismus Inheritance Study

Since 2003, we have been collaborating with the Engle laboratory at the Children's Hospital, Boston, affiliated with the Harvard Medical School, as part of the Strabismus Inheritance Study in Tasmania led by Professor Mackey.

Our collaborative work has primarily focused on CFEOM, congenital ptosis and Duane's Syndrome. This work has continued in Western Australia, recruiting young patients and their families.

GRANTS / FUNDING

- Channel 7 Telethon Trust
- Australia-India Council
- National Health and Medical Research Council

KEY PUBLICATIONS

1. McKnight CM, Newnham JP, Stanley FJ et al. Birth of a cohort - the first 20 years of the Raine study. Med J Aust. 2012;197:608-10.
2. Mishra A, Yazar S, Hewitt AW et al. Genetic variants near PDGFRA are associated with corneal curvature in Australians. Invest Ophthalmol Vis Sci. 2012;53:7131-6
3. Sherwin JC, Reacher MH, Keogh RH et al. The association between time spent outdoors and myopia in children and adolescents: a systematic review and meta-analysis. Ophthalmology. 2012;119:2141-51
4. Mackey DA. Your time starts now — translation time lines for major ophthalmic discoveries. Med J Aust. 2012;196:672-674.
5. Sherwin JC, Hewitt AW, Coroneo MT et al. The association between time spent outdoors and myopia using a novel biomarker of outdoor light exposure. Invest. Ophthalmol. Vis. Sci. 2012;53:4363-70
6. Van Koolwijk LM, Ramdas WD, Ikram MK et al. Common genetic determinants of intraocular pressure and Primary Open-Angle Glaucoma. PLoS Genet. 2012;8:e1002611.
7. Webb TR, Matarin M, Gardner JC et al. X-Linked Megalocornea caused by mutations in CHRDL1 identifies an essential role for Ventroptin in anterior segment development. Am J Hum Genet. 2012;90:1–13.

STAFF

Dr Alex Hewitt PhD	*NHMRC Research Fellow*
Dr Maria Franchina PhD	*Research Associate*
Dr Justin Sherwin	*Research Associate*
Mr Paul Sanfilippo	*Research Associate*
Ms Kate Hanman	*Research Assistant*
Ms Marie Fogarty	*Research Assistant*
Mr Joel Tan	*Research Officer*
Mr Kashif Syed	*Data Management Officer*
Ms Alla Soloshenko	*Ophthalmologist Assistant*

STUDENTS

Dr Hannah Forward	*Masters by research*
Dr Charlotte McKnight	*Masters by research*
Dr Alex Tan	*Masters by research*
Ms Seyhan Yazar	*PhD*

Thirty-eight Year 4 medical students from The University of Western Australia completed an IMED R&D project.

Four Chinese students from Wenzhou Medical College and Shanghai Jiaotong University undertook a three-week research assignment as part of The University of Western Australia's Winter School studies.

Dr Alex Hewitt

GLAUCOMA HAS BEEN LABELED THE "SNEAK-THIEF OF SIGHT" BECAUSE MANY PEOPLE REMAIN UNDIAGNOSED UNTIL IRREVERSIBLE VISION LOSS OCCURS.

strong collaborative links

Almost any question in human biology can now be answered with the recent development of a range of tools.

2012 has been a year of building – our research group has focused on forging strong collaborative links between the clinic and the laboratory.

During the past two years we have made important genetic discoveries which have dramatically improved our understanding of how glaucoma develops.

Glaucoma has been labeled the "sneak-thief of sight" because many people remain undiagnosed until irreversible vision loss occurs.

We have recently identified common mutations in two genes (CDKN2BAS and TMCO1) as unequivocally causing this blinding disease.

Our discovery allows the rapid identification of people in our community who are at least three times more likely to develop glaucoma.

From this discovery we are currently developing models to uncover new therapies using induced pluripotent stem cells.

Recent breakthroughs in stem cell technology have led to the ability to generate stem cells from adult tissue. This offers the unique opportunity to interrogate pathological processes in tissue, such as the retina, which cannot be easily obtained pre-mortem.

We are investigating the pathological mechanisms of glaucoma by comparing the molecular profile of retinal ganglion cells generated from glaucoma patients with differing genetic risk profiles. The application of this technology in humans is novel and could lead to new therapies.

2012 saw the establishment of the Ophthalmic Biobank of Western Australia (OWAB). The overriding aim of this repository is to enable the ongoing recruitment, processing and storage of biological specimens from people with blinding eye conditions.

In time, this resource will ensure an improved understanding of the molecular mechanisms of a variety of diseases.

With co-located clinics and laboratories, the Lions Eye Institute is certainly well placed to contribute significantly.

RESEARCH IS IN PROGRESS TO DELINEATE THE IMMUNE PROCESSES THAT CONTRIBUTE TO THE GENERATION OF AUTOIMMUNE DISEASE IN THE EYE.

Professor Mariapia Degli-Esposti

Dr Iona Schuster analysing cells

immunology

The Immunology Division at the Lions Eye Institute encompasses five groups: experimental immunology, viral immunology, cell signaling and apoptosis, ocular immunology and ocular autoimmunity.

These groups work in collaboration to study eye diseases that have an immune basis. A number of eye diseases have an immune component, but the knowledge of immune responses in the eye remains limited.

Some of our research uses a model of a chronic viral infection that can cause significant systemic disease, as well as severe ocular complications, especially in individuals whose immune systems are compromised. We use this model to understand the mechanisms that regulate the complex immune responses to viral infections and to understand how viral infections affect the eye.

The ocular autoimmunity and ocular immunology groups are also investigating autoimmune diseases that affect the eye. Our aim is to improve our knowledge of the mechanisms that mediate ocular autoimmune diseases, which are still a leading cause of blindness, and to provide new insights into the causes and potential treatment of autoimmunity.

Overall we seek to understand the mechanisms that regulate immune responses, with the ultimate aim of developing therapies to prevent and treat these persistent and intractable conditions.

HIGHLIGHTS

The ocular autoimmunity group has successfully established a novel mouse model for spontaneous autoimmune uveitis – the only one in the world that closely mimics human disease. Research is in progress to delineate the immune processes that contribute to the generation of autoimmune disease in the eye.

It is expected the study will provide important insights into the cause and potential treatment for other autoimmune diseases, including diabetes, multiple sclerosis, and arthritis.

PROJECTS AND OUTCOMES

Ocular Immunology

In recent years this group has characterised the immune response to viral infection after direct infection of the eye in mice. Recent research has concentrated on the effects that systemic/peripheral viral infection has on the eye. In this scenario, the virus does not enter the eye, yet infection induces some profound changes within the tissues of the eye. One population of cells - retinal microglia - responds to infection by migrating from the photoreceptor layer to the subretinal space. This effect is dependent on a protein, gamma-interferon, which is produced by recognition of viral/microbial-specific motifs as part of the very early immune response to infection. Changes in the expression of immune function molecules on the surface of retinal microglia and other cell types are also noted. Thus, the tissues of the eye (including the neural retina) exhibit signs of an early immune response even without the virus actually entering the eye. This might impact on vision on a temporary or more ongoing basis. Thus, these studies provide information to prevent ocular complications following infection.

Ocular Autoimmunity

This group has been validating a mouse model of spontaneous autoimmune uveitis. This model employs genetically-modified mice that have an increased frequency of autoimmune T cells. This research has been comparing two mouse strains that differ in the severity of autoimmune

uveitis, where one suffers profound destruction of the photoreceptor layer of the retina, while mice with mild disease exhibit only patchy photoreceptor damage. It is anticipated that this comparison will provide insight on the processes that contribute to the development of autoimmunity in the eye.

Experimental Immunology

In collaboration with Professor Geoff Hill from the Queensland Institute for Medical Research, we are examining the impact of viral infection post transplantation. Cytomegalovirus represents the most predictable and problematic infection after bone marrow transplant and causes severe disease, including damage to the eye. Our aim is to ultimately design effective therapies to prevent complications from infection in transplant patients.

Viral Immunology

The focus of the viral immunology group's research is on providing insights into novel mechanisms of viral immune evasion. Research has shown that natural killer (NK) cells are key immune effectors in the control of cytomegalovirus infection. Viral replication is regulated by host genes that encode NK cell receptors. In the mouse, Ly49H recognizes the cytomegalovirus encoded m157 protein that is expressed on infected cells and triggers their elimination. However, the virus can escape NK cell immunosurveillance by the emergence of mutants that engage inhibitory NK cell receptors. Analysis of the nature and outcome of these interactions with viral proteins through inhibitory and activating NK cell receptors enhances our understanding of anti-viral immune responses. More broadly, investigating the regulation of NK cell function will aid in the development of drugs targeting this process with the ultimate outcome of improving anti-viral immune responses.

Cell Signaling and Apoptosis

Apoptosis is a type of immune response where a cell infected with a pathogen activates a suicide pathway and dies. Apoptotic death of an infected cell prevents the invading pathogen from being able to replicate. In order to bypass cell death and replicate effectively many viruses encode inhibitors of apoptosis, Dr Christopher Andoniou's team is investigating how viruses interfere with programmed cell death. This work is likely to help us design better treatments for degenerative eye diseases caused by inappropriate cell death.

GRANTS / FUNDING

- **NHMRC Senior Principal Research Fellowship**
  Immunoregulation and immunity to infection
- **NHMRC Program Grant**
  Immunological therapies for cancer, chronic infection and autoimmunity
- **NHMRC Project Grant**
  The balance of signal received by NK cells is modulated by viruses as a means of immune escape.

KEY PUBLICATIONS

1. Terme M, Ullrich E, Aymeric L, Meinhardt K, Coudert JD, Desbois M, Ghiringhelli F, Viaud S, Ryffel B, Yagita H, Chen L, Mecheri S, Kaplanski G, Prevost-Blondel A, Kato M, Schultze JL, Tartour E, Kroemer G, Degli-Esposti M, Chaput N, Zitvogel L. Cancer-induced immunosuppression: IL-18-elicited immunoablative NK cells. Cancer Res. 2012; 72:2757-2767
2. Ruutu M, Thomas G, Steck R, Degli-Esposti MA, Zinkernagel MS, Alexander K, Velasco J, Strutton G, Tran A, Benham H, Rehaume L, Wilson RJ, Kikly K, Davies J, Pettit AR, Brown MA, McGuckin MA, Thomas R. Beta-glucan triggers spondyloarthropathy and Crohn's-like ileitis in SKG mice. Arthritis Rheum. 2012; 64:2211-2222
3. Chinnery HR, McLenachan S, Binz N, Sun Y, Forrester JV, Degli-Esposti MA, Pearlman E, McMenamin PG. TLR9 ligand CpG-ODN applied to the injured mouse cornea elicits retinal inflammation. Am J Pathol. 2012; 180:209-220

STAFF

Professor Mariapia Degli-Esposti
Professor John Forrester
Asst Prof Christopher Andoniou
Asst Prof Matthew Wikstrom
Dr Jerome Coudert
Dr Marie Estcourt
Dr Monique Ong
Dr Iona Schuster
Dr Serani van Dommelen
Dr Valentina Voigt
Geraldine Brizard
Peter Fleming
Catherine Forbes
Slavica Pervan

Dr Soroosh Radfar

DR SOROOSH RADFAR IS WORKING ON A TYPE OF IMMUNE CELLS CALLED TREG'S, RESPONSIBLE FOR REGULATING IMMUNE RESPONSES AND MAINTAINING IMMUNOLOGICAL HOMEOSTASIS.

immunology and immunotherapy

Dana-Farber Cancer Institute. Harvard Medical School, Boston, Massachusetts, U.S.A.

Dr. Radfar is an expert in Cancer Immunology and Cancer Immunotherapy with more than 8 years experience at the USA-Mitchell Cancer Institute, Yale Cancer Center, Yale School of Medicine, Dana-Farber Cancer Institute and Harvard Medical School.

He is currently working on a type of immune cells called Treg's, responsible for regulating immune responses and maintaining immunological homeostasis.

It is well-known that Treg abnormalities can result in tumor formation/cancer or viral/bacterial infection such as HCMV infection. Human cytomegalovirus (HCMV) is a common pathogen typically encountered during childhood. Although primary infection is readily controlled by the immune system, immune responses are unable to eliminate the virus resulting in the establishment of a latent infection that persists throughout life. While this does not cause symptoms in healthy individuals, the virus becomes reactivated in immune-compromised patients (e.g. after chemo-therapy) posing significant risk of death or disablement from diseases such as encephalitis or retinitis.

In order to identify the potential role of Treg's in the regulation of immune response against CMV, Dr. Radfar sought the expertise of LEI's scientist Dr. Jerome Coudert, an expert in immune response to CMV infection. Dr. Radfar visited LEI twice and spent a total of four and half months at the Center for Experimental Immunology directed by Professor Degli-Esposti.

During Dr. Radfar's visits, and with unconditional help of Dr. Coudert, several scientific experiments were carried out and exciting results were obtained.

This collaborative project opened the door to potential further collaborations and exchanges with LEI. Dr. Radfar's visit to LEI and the entire research project were supported by a fellowship from "Harvard Club of Australia" (HCA).

The HCA fellowship intent is to promote the exchange between Harvard-based senior scientists and Australian universities and institutions.

Dr. Radfar has expressed his gratitude to Professor Degli-Esposti and Dr. Jerome Coudert as well as all LEI staff, especially members of Centre for Experimental Immunology for their unlimited help.

URBAN ABORIGINAL HEALTH SERVICES HAVE ENGAGED WITH THE UNIT TO PROVIDE RETINAL SCREENING AND OUTREACH LASER TREATMENT VISITS.

Associate Professor Angus Turner examining a patient

indigenous and remote eye health

The Indigenous and Remote Eye Health Unit (IREHU) is led by Associate Professor Angus Turner and aims to improve eye health in remote and isolated Western Australian communities.

Access to adequate and equitable eye health services continues to be a significant issue for patients living in rural and remote areas. A practical and evidence-based approach is adopted by the staff at the IREHU to address these barriers.

HIGHLIGHTS

The unit has employed a full time Diabetic Eye Screening nurse to assist with training and support of Aboriginal health workers undertaking eye screening activities throughout the Kimberley. This position is supported and hosted by the Kimberley Aboriginal Medical Services Council (KAMSC) based in Broome. The RANZCO Eye Foundation and the Eye Surgery Foundation in Perth have supported the program and a BMedSci student completed his honours project working on improving education and awareness of retinal screening among the Indigenous population. An animated video used in the project won the 'Best Film' at RANZCOs annual film festival.

The use of telehealth for ophthalmology has been a subject of ongoing research interest as well as practical utility. A BMedSci student completed his honours thesis investigating the implementation and applications of a broad real-life telehealth service providing video-consultations for remote patients. The useful findings of this study are being used to lobby government for pragmatic alterations to telehealth care delivery.

Dr Turner chairs the National Telemedicine Project conducted under the auspices of the Indigenous and Remote Eye Health Service (IRIS). This project is a broad representation of professions and states to ensure that improvements (and barriers) to the use of telemedicine for eye health are communicated and shared around the nation. Sandra Oates provides her expertise as an orthoptist with a business/marketing background to ignite state-wide efforts to improve the coordination and training of staff in telehealth services.

To this end, a comprehensive website for the use of patients and primary health providers provides a one-stop portal for all outreach eye services in the State. It promises to be helpful for the collaboration of optometry and ophthalmology services as well as scheduling appropriate telehealth services.

New outreach services have been successfully operating in many regions including the Goldfields and Pilbara. Urban Aboriginal Health Services have engaged with the unit to provide retinal screening and outreach laser treatment visits. These include Derbarl Yerrigan in East Perth and South Western Aboriginal Health Service in Bunbury.

GRANTS / FUNDING

- Lions Eye Institute
- The University of Western Australia
- McCusker Charitable Foundation
- The RANZCO Eye Foundation
- IRIS – Indigenous and Remote Eye Service – Australian Society of Ophthalmologists
- Eye Surgery Foundation

STAFF

Associate Professor Angus Turner	*Ophthalmologist*
Sandy Oates	*Orthoptist*
Sue Hogan	*Outreach Administrator*

STUDENTS

Karim Johnson	*B Med Sci*
Joos Meyer	*B Med Sci*

L-R, Professor Piroska Rakoczy, Dr Aaron Magno, Cora Pierce, Associate Professor May Lai and Professor Ian Constable

molecular ophthalmology

In January, 2012, the Human Gene Therapy Trial started on a very select group of patients. The trial is a culmination of 15 years of work by the Molecular Ophthalmology team to develop a new treatment for wet age-related macular degeneration.

OUR OBJECTIVES ARE TO:

- Understand the pathomechanism of wet-AMD
- Develop animal models for the disease
- Develop long term treatment strategies for wet-AMD - gene therapy
- Produce the appropriate viral constructs
- Test the viral constructs *in vitro* (cell cultures), *in vivo* (mouse model) and in pre-clinical settings (monkey model)
- Conduct Phase I and II human trials.

PROJECTS AND OUTCOMES

Recombinant adenoassociated virus mediated gene therapy trial

In 2012, chief clinical investigator Professor Ian Constable recruited 20 patients for the trial with the able assistance of trial coordinator Cora Pierce. The excellent work of Assoc Prof May Lai and Dr Aaron Magno ensured Molecular Ophthalmology's research practices were converted into an auditable laboratory service suitable for the analysis of thousands of samples with complicated molecular assays. The safety data of the first eight patients was reported at the meeting of the American Society for Cell and Gene Therapy in May 2012. To date, all patients are doing well and we are looking forward to further data analysis in 2013.

Complications of Lucentis Therapy

We have successfully developed an assay for the detection of Lucentis antibodies in patients undergoing Lucentis therapy and tested the first 40 patient samples.

Diabetic Retinopathy - Development and characterisation of animal models

In previous years, we successfully developed a mouse model for retinal neovascularisation that can be examined in normal (Kimba) and diabetic (Akimba) animals. These models were met with an enthusiastic world-wide response and further licenses have been granted to Monash University, Melbourne University, Cornell University in the USA, Kyushu University in Japan and KOWA Company Ltd.

In collaboration with Professor Paul McMenamin, we also continued our studies on the Akita mice and characterised several new features of the model. Unfortunately, we could not confirm initial reports by other groups about the suitability of this model for studying diabetic retinopathy.

Retinitis Pigmentosa

Although more than 130 genes have been associated with retinitis pigmentosa, the most prevalent causes of the disease are mutations occurring in the gene that codes for rhodopsin.

Following a previous study that demonstrated a correlation between rhodopsin stability and the severity of retinitis pigmentosa, we investigated whether predictions of severity can be improved by a regional analysis of this correlation.

We developed a new cell-based procedure to measure an important cell biological marker - the amount of rhodopsin on the cell surface - and showed a correlation between the stability of rhodopsin mutations and disease severity.

This type of high throughput measurement and computer based stability calculations could improve prognoses for poorly characterized mutations and provide a platform to measure the effectiveness of treatments in the future.

GRANTS/FUNDING

- NHMRC Project grant - Long-term human response following subretinal injection of recombinant adenoassocited virus-sFlt-1 vector
- NHMRC Project Grant - Do resident immune cells cause retinal damage in diabetes?
- Richard Pearce Bequest
- Avalanche Biotechnologies, USA

PUBLICATIONS

1. Binz N, Ali Rahman IS, Chinnery HR, McKeone R, Simpson KM, Speed TP, Lai CM, Rakoczy EP. Effect of VEGF upregulation on retinal gene expression in the Kimba mouse. Clin Experiment Ophthalmol. 2012 Jul 12. doi: 10.1111/j.1442-9071.2012.02845.x. [Epub ahead of print]
2. Vagaja NN, Chinnery HR, Binz N, Kezic JM, Rakoczy EP, McMenamin PG. Changes in murine hyalocytes are valuable early indicators of ocular disease. Invest Ophthalmol Vis Sci. 2012;53:1445-51.
3. Rakoczy EP. Sight for Eyes. International Innovation (in press)
4. Kezic JM, Chen M, Rakoczy EP, TMc menamin PG. The effects of age, Cx3cr1 deficiency and hyperglycaemia on retinal microglia in the Ins2Akita diabetic mouse. Invest Ophthalmol Vis Sci. (in press).
5. McLenachan,S., Chen,X., McMenamin,P.G. Rakoczy, E.P. The Absence of Clinical Correlates of Diabetic Retinopathy in the Ins2Akita Retina. Clin Experiment Ophthalmol (in press).
6. Mendel, T.A., B.S.; Clabough, E.B.D.; Kao, D.S.; Demidova-Rice, T.N.; Zotter, B.C.; Rakoczy, E.P.; Katz, A.J.; Herman, I.M.; Peirce, S.M.; Yates, P.A. Pericytes derived from adipose-derived stem cells protect against retinal vasculopathy. PLOS ONE (in press).

THE MOST PREVALENT CAUSES OF THE DISEASE ARE MUTATIONS OCCURRING IN THE GENE THAT CODES FOR RHODOPSIN.

Viewpoint of a glaucoma sufferer

STAFF

Professor P. Elizabeth Rakoczy

Assoc Professor May Lai

Dr Richard McKeone

Dr Aaron Magno

STUDENTS

Nina Vagaja

AIMS TO DERIVE PIGMENT EPITHELIUM PATCH GRAFT FROM THE PATIENT'S OWN STEM CELLS SO THEY ARE PERSONALISED TO THE INDIVIDUAL RECIPIENT OF THE TRANSPLANT.

Associate Professor Fred Chen discussing AMD

ocular tissue engineering laboratory

Associate Professor Fred Chen heads the new Ocular Tissue Engineering Laboratory (OTEL). The purpose of OTEL is to develop personalised cell-based therapy to treat macular and retinal degenerations as well as to create disease models in a petri dish using stem cells reprogrammed from adult cells.

Dr Chen returned to Perth in December 2010 after three years of PhD study in cell transplantation techniques for retinal degeneration at the University College of London and two years of surgical and medical fellowships in the treatments of vitreoretinal diseases at the Moorfields Eye Hospital in London.

During 2012, his research team refined the techniques of cellular reprogramming protocol for turning adult corneal stem cells into retinal pigmented cells. This complex reprogramming work could not have been established in Perth without the funding support from the Lions Eye Institute, The University of Western Australia, generous donations from Dr Chen's private patients and collaboration with the Lions Eye Bank in obtaining human corneal rim tissue.

In addition to the work on cellular reprogramming techniques, this group has also established a microperimetry laboratory in which validation and natural history studies in Stargardt's disease and dry macular degeneration are being undertaken.

Dr Chen has received funding from Retina Australia for this project and is collaborating with the Australian Inherited Retinal Disease Registry in recruiting patients for this study. He is also working with junior doctors in several clinical audits examining the outcomes of surgical treatment in retinal detachment and Lucentis treatment in macular degeneration.

PROJECTS

Cellular reprogramming of adult stem cells into retinal pigment epithelium

Retinal cell transplantation to preserve and restore vision of people with macular or retinal degeneration has been the focus of several large international research groups over the last few decades. The rationale for exploring this treatment approach is that visual loss in macular and retinal degeneration is thought to be the consequence of primary damage and loss of pigmented cells within the retina and secondary loss of photoreceptor cells which detects light. Therefore, replacement of pigmented cells within the retina, the retinal pigment epithelium, will in theory preserve central vision in people with macular degeneration.

Previous work on pigment epithelium transplantation using pigmented cells harvested from donated eyes or from within the same eye of the patient has demonstrated that vision can be preserved by this technique. However, surgical complexity and complications are significant; preventing the widespread use of this technique to treat the most common cause of blindness in the western world. The alternative to using pigmented cells harvested from an adult eye is to grow pigmented cells *de novo* from the unlimited source of embryonic stem cells.

Despite the recent report of safety in transplantation of pigment epithelium derived from human embryonic stem cells, there remains significant ethical issue surrounding the use of discarded embryos for medical therapy.

The Ocular Tissue Engineering Laboratory has been established with the aim of deriving pigment epithelium patch graft from the patient's own stem cells so that the cells are personalised to the individual recipient of the transplant.

Microperimetry comparison and cohort studies in macular degeneration

Traditional visual field assessment used in monitoring of glaucoma is not suitable for use in patients with macular disease due to uncertainty of fixation locus and stability, and poor reproducibility arising from eye movements during the test. This problem has been addressed by a new device called fundus-controlled microperimeter which enables central visual field assessment, whilst the retina of the eye is being tested is continuously monitored and tracked throughout the examination.

Microperimetry has been used by large international eye centres as part of routine eye care and clinical trials. Dr Chen has brought his experience in microperimetry in London back to Perth to set up the first microperimetry testing laboratory in Western Australia so that clinical trials and private patients at the Lions Eye Institute can benefit from this detailed assessment of the macular function.

The new microperimetry laboratory has two new microperimeters which complement each other in their ability to monitor disease progression and respond to laser and injection treatments for macular diseases. His group is currently conducting a study in establishing comparability between the two microperimeters and repeatability in both devices.

There is also another study underway using the microperimeter to monitor disease progression in patients with early stages of dry macular degeneration and Stargardt's disease.

OUTCOMES

Cellular reprogramming of adult stem cells into retinal pigment epithelium

We have been able to convert corneal limbal stem cells into pigmented epithelial cells that resemble the retinal pigment epithelium. We are now characterising the new pigmented cells to test their function. We are also sourcing a supporting matrix so that the pigmented epithelium can be transplanted as a patch graft under the retina. Our aim is to make a personalised retinal pigment epithelium patch graft to restore sight in patients with severe macular degeneration.

Microperimetry comparison and cohort studies in macular degeneration.

The comparison study aims to enroll 100 people with or without retinal diseases. We have so far enrolled over 50 healthy subjects and patients from the Lions Eye Institute in the microperimetry comparison study. We are still actively recruiting patients with abnormality in their central vision. With the help of the Australian Inherited Retinal Disease Registry, we have been able to recruit patients with Stargardt's disease into our microperimetry natural history. Many of Dr Chen's patients at Lions Eye Institute have also generously donated their time to participate in this study.

GRANTS

- The Lions Eye Institute, Seed Fund
  Chen, FK
- The University of Western Australia, Seed Fund
  Chen, FK
- Retinal Australia, Microperimetry Natural History Study
  Chen, FK

KEY PUBLICATIONS IN 2012

1. Yeoh J, Rahman W, Chen FK, da Cruz L. Use of spectral-domain optical coherence tomography to differentiate acquired retinoschisis from retinal detachment in difficult cases. Retina. 2012;32:1574-80.
2. Chen FK, Yeoh J, Rahman W, Patel PJ, Tufail A, Da Cruz L. Topographic variation and interocular symmetry of macular choroidal thickness using enhanced depth imaging optical coherence tomography. Invest Ophthalmol Vis Sci. 2012;53:975-85.
3. Chinnery HR, McLenachan S, Binz N, Sun Y, Forrester JV, Degli-Esposti MA, Pearlman E, McMenamin PG. TLR9 ligand CpG-ODN applied to the injured mouse cornea elicits retinal inflammation. Stem Cells Dev. 2012 Oct 10;21(15):2891-9
4. Chinnery HR, McLenachan S, Humphries T, Kezic JM, Chen X, Ruitenberg MJ, McMenamin PG. Accumulation of murine subretinal macrophages: effects of age, pigmentation and CX3CR1. Neurobiol Aging. 2012 Aug;33(8):1769-76
5. McLenachan S, Menchón C, Raya A, Consiglio A, Edel MJ. Cyclin A1 is essential for setting the pluripotent state and reducing tumorigenicity of induced pluripotent stem cells. Stem Cells Dev. 2012 Oct 10;21(15):2891-9.

STAFF

Dr Samuel McLenachan	*Senior Scientist*
Dr Dana Zhang	*Senior Scientist*
Dr Evan Wong	*Research Associate*

VISITING RESEARCH RESIDENTS

Dr David Hernstadt	*Royal Perth Hospital*
Dr Tun Hang Yeo	*Fremantle Hospital*

Paul Seats gives a tour of Day Surgery

VISITORS FOUND LEI'S COMMUNITY DAY "FASCINATING", "AMAZING", AND "I DIDN'T KNOW LEI DID SUCH INTERESTING WORK".

day proves a real eye-opener

The Western Australian community was invited to view the groundbreaking work of researchers and clinicians during an open day at the Lions Eye Institute (LEI) on Saturday, October 13.

The open day allowed the Institute to showcase its world-class research into eye disease.

Tours covered the Eye Bank, clinic, day surgery, photography, stem cell research, clinical trials, immunology, the Indigenous and Rural Eye Health Unit and UV and sun protection. In addition to the tour, visitors had the opportunity to assist Dr Priscilla Tan with the dissection and study of a pig's eye, or to "visit with a Prof" over a cup of coffee in the lobby.

From the many comments and compliments, visitors found the day "fascinating", "amazing", and "I didn't know LEI did such interesting work".

LEI Managing Director Professor David Mackey said educating the community about eye disease was vitally important as the rate of blindness and visual impairment was increasing dramatically.

"Within Australia, it is estimated that the rate of disability resulting from blindness and vision loss will almost double by 2020 due to our ageing population," he said.

Professor Steve Cringle discusses laser surgical equipment being developed

physiology and pharmacology

2012 saw the start of several new projects for the Physiology and Pharmacology group, all funded by new grants from the National Health and Medical Research Council. The areas of investigation include the use of new laser techniques for performing intraocular surgery, a novel diagnostic approach for predicting glaucoma progression, and studies of the underlying pathology in common sight threatening diseases such as glaucoma and diabetic retinopathy.

OUTCOMES

The team continues to develop new diagnostic and therapeutic techniques for clinical ophthalmology and perform basic science studies that contribute to knowledge related to key blinding diseases such as glaucoma and diabetic retinopathy. Our research output was sustained and 17 papers were published in international literature.

GRANTS

- National Health and Medical Research Council Project Grants
- National Health and Medical Research Council Development Grant
- Australian Research Council Centre of Excellence in Vision Science grant

KEY PUBLICATIONS

1. Tan P, Yu PK, Balaratnasingam C, Cringle SJ, Morgan WH, McAllister IL, Yu D-Y (2012). Quantitative confocal imaging of the retinal microvasculature in the human retina. Investigative Ophthalmology and Visual Science. 53 (9):5728-5736.
2. Chan G, Balaratnasingam C, Yu PK, Morgan WH, McAllister IL, Cringle SJ, Yu D-Y (2012). Quantitative morphometry of perifoveal capillary networks in the human retina. Investigative Ophthalmology and Visual Science. 53 (9):5502-5514.
3. Morgan WH, Lind CRP, Kain S, Fatehee N, Bala A, Yu D-Y (2012). Retinal vein pulsation is in phase with intracranial pressure and not intraocular pressure. Investigative Ophthalmology and Visual Science. 53(8):4676-4681.
4. Morgan WH, Yu D-Y (2012), Surgical management of glaucoma: a review. Clinical and Experimental Ophthalmology. 40:388-399.
5. Berdahl JP, Yu D-Y, Morgan WH (2012). The translaminar pressure gradient in sustained zero gravity, idiopathic intracranial hypertension, and glaucoma. Medical Hypotheses. 79(6):719-724.
6. McAllister IL, Gillies ME, Smithies LA, Rochtchina E, Harper CA, Daniell MD, Constable IJ, Mitchell P (2012). Factors promoting success and influencing complications in laser induced central vein bypass. Ophthalmology. 119(12):2579-2586.
7. Su E-N, Cringle SJ, McAllister IL, and Yu D-Y (2012). An experimental study of VEGF induced changes in vasoactivity in pig retinal arterioles and the influence of an anti-VEGF agent. BMC Ophthalmology doi:10.1186/1471-2415-12-10.
8. McAllister IL (2012). Central retinal vein occlusion: A review. Clinical and Experimental Ophthalmology. 40(1):48-58.
9. Yu D-Y , Kang M, Balaratnasingam C, Yu PK, Morgan WH, McAllister IL, Cringle SJ (2012). Author Response: Morphometric Characteristics of Central Retinal Artery and Vein in the Optic Nerve Head of Patients with Diabetes. Investigative Ophthalmology and Visual Science. 53(3): 1637-1638.
10. Cringle SJ, Yu D-Y (2012). Damping of intraocular pressure fluctuations. Clinical and Experimental Ophthalmology 40: 881–887.
11. Yu PK, Tan PEZ, Morgan WH, Cringle

SJ, McAllister IL, Yu D-Y (2012). Age related changes in venous endothelial phenotype at human retinal artery-vein crossing points. Investigative Ophthalmology and Visual Science. 53(3):1108-1116.

12. Guo W-Y, Yu Y-F, Yu PK, Yu X-B, Sun X, Cringle SJ, Su E-N, Yu D-Y (2012). Quantitative study of the topographic distribution of conjunctival lymphatic vessels in the monkey. Experimental Eye Research. 94(1):90-97.

STAFF

Professor Dao-Yi Yu

Professor Stephen Cringle

Professor Ian McAllister

Professor William Morgan

Associate Professor Er-Ning Su

Assistant Professor Paula Yu

Mr Dean Darcey

Mr Graeme Hewitt

STUDENTS

Dr Chandra Balaratnasingam

Dr Naeem Fatehee

Dr Jason Lim

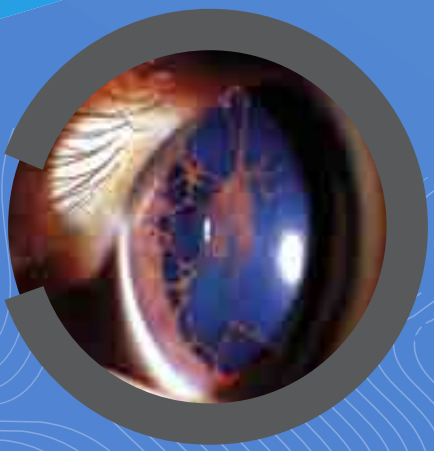
Dr Minhye Kang

Dr Priscilla Tan

Dean Darcey uses the blood gas machine

OUR RESEARCH OUTPUT WAS SUSTAINED AND 17 PAPERS WERE PUBLISHED IN INTERNATIONAL LITERATURE.

clinical services



A WORLD FIRST FOR THE WET OR NEOVASCULAR FORM OF AGE-RELATED MACULAR DEGENERATION HAS BEEN DEVELOPED.

clinical research

The Lions Eye Institute (LEI) has scientists working in close association with clinicians to bring laboratory generated ideas and techniques to the level where they can be of benefit to people suffering some of the most common blinding eye conditions in the world.

Clinicians at the LEI have a major commitment to research and teaching. Our patients benefit by receiving the most advanced treatments available anywhere in the world. In many cases, patients with specific eye disorders are given access to new treatments before they are available to the general public.

The Institute's ground-breaking research into retinal vascular occlusions continues to progress with a new project looking at addressing the blinding aspects of the occlusion as well as the obstruction itself. This work is being conducted by Professor Ian McAlllister.

The development of a micro-fistula to control intraocular pressure in intractable cases of glaucoma, developed by Professor Bill Morgan, is currently undergoing phase three clinical trials.

A gene therapy treatment for the wet or neovascular form of age-related macular degeneration has been developed by Professor Ian Constable and Professor P. Elizabeth Rakoczy. This is a world first and is currently undergoing clinical trial Phase I and II.

These studies represent many years of basic science research and trials before reaching these stages.

The LEI currently has 13 specialty-trained ophthalmologists which allows us to offer expertise in all branches of ophthalmology.

In 2012, over 50,000 patients visited the Institute with more than 4000 procedures being performed by LEI ophthalmologists. Over the same period, more than 6000 ocular injections were given for diseases including macular degeneration, diabetic retinopathy and retinal vascular disorders.

Clinical research includes participation in a wide range of multicentre clinical drug trials - mainly for retinal disorders including macular degeneration, diabetic retinopathy and retinal vascular disease. Other trials include treatments for ocular inflammatory disorders and glaucoma.

Professor McAllister, Professor Constable, Associate Professor Fred Chen and Dr Tim Isaacs continue their involvement with multicentre clinical trials with nine separate ongoing programs investigating new therapies for the treatment of macular degeneration, diabetic retinopathy and retinal vascular disorders. These conditions are responsible for 65 per cent of blindness in Western Australia. Dr Isaacs is conducting ongoing research into the genetic analysis of uveal melanoma and inflammatory markers.

Professors Geoff Crawford, Graham Barrett and Steve Wiffen have introduced the new technique of insertion of intrastromal cornea ring segments into WA. This technique is performed at the LEI and a clinical trial is currently underway examining the outcomes of this procedure for treating a number of corneal conditions.

Professors Wiffen and Crawford are also involved in a clinical trial regarding collagen cross-linking which is a new technique for stabilising progressive keratoconus. They are also developing new and innovative uses for the femtosecond laser in corneal surgery, especially in lamellar corneal techniques.

Associate Professor Wiffen is involved in reviews of new treatments for ocular squamous metaplasia using topical Mitomycin-C and Interferon.

Professor Barrett continues to be an innovative and highly sought after international speaker in the area of new developments in cataract surgery.

Professor Morgan and Dr Antonio Giubilato are actively involved in conducting trials and audits of difficult glaucoma cases.

Professor Morgan continues his research into retinal venous pulsation properties using a specially designed ophthalmodynamometre, developed at the LEI. This technique is the world's first measurement of glaucoma which, if proven in the current multicentre trial, will be predictive of future glaucoma vision loss. This will enable people at risk of developing progressive loss of vision from glaucoma to be monitored and treated at an earlier stage.

Dr Jean-Louis De Sousa and Associate Professor Adam Gajdatsy continue their development of new surgical procedures in the area of oculoplastic and orbital surgery and eyelid biometrics. Associate Professor Gajdatsy is also involved in biobank related research into lymphoid, inflammatory and rare orbital diseases. Together with Associate Professor Mei-Ling Tay-Kearney they are involved in the teaching program for medical students in Western Australia and Registrar Ophthalmologists.

Associate Professor Tay-Kearney is actively involved in multicenter research projects into new treatments for uveitis and has also been involved in developing new tools for remote area diabetic retinopathy screening.

Associate Professor Chen's Ocular Tissue Engineering Laboratory is developing a new individualised stem cell treatment for retinal or macular degeneration by deriving pigmented cells from corneal stem cells on the eye and transplanting them into the

retina. His group is also investigating the use of a new retinal tracking functional imaging device in monitoring disease progression in dry macular degeneration and retinal dystrophy. This imaging technique is critical for determining if retinal cells are successfully transplanted.

All clinicians at the Institute continue to be actively involved in research and this is one of the LEI's major strengths - enabling new developments and treatments for blinding eye conditions to not only be developed further but made available to patients attending our clinical facility.

Clinical services and clinical research at the LEI are only made possible by the dedication and professionalism of our staff and clinical coordinators in both the clinic and theatre areas.

CLINICAL RESEARCHERS

Collaborators

Professor Ian Constable

Professor Mark Blumenkranz - *Chairman Ophthalmology, Byers Eye Institute at Stanford University*

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

Professor Richard Samulski - *Professor of Molecular Biology, University of North Carolina*

Dr Jean-Louis De Sousa

Dr Dini Dharmawidiarini - *John Fawcett Foundation*

Professor Ian McAllister

Prof Mark Gillies - *Sydney Eye Hospital*

Prof Paul Mitchell - *Westmead Hospital*

Prof Tien Wong - *Singapore National Eye Center*

Associate Professor Mei-Ling Tay-Kearney

Dr Yogesan Kanagasingam - *Research Director CSIRO*

LEI visitors learn about Clinical Trials

view2 study

"The benefit to our patients is the guarantee that they will receive the most advanced treatment available anywhere in the world. In many cases, patients with specific eye disorders are given access to new treatments before they are available to the general public."

Clinical trials conducted at the Lions Eye Institute (LEI) are approved by a Human Research Ethics Committee and meet stringent national and international guidelines.

Trials include the testing of new drugs or devices, the collection of information from patients to improve understanding of a particular condition or a review of patient notes to establish treatment outcomes and highlight areas where improvement can be made.

The View2 Study was conducted at LEI from August 2008 to April 2011. The study was a randomised, double masked active controlled, phase three study of the efficacy, safety and tolerability of repeated doses of intravitreal VEGF Trap-Eye in subjects with neovascular age-related macular degeneration (AMD).

VEGF Trap-Eye is a protein that binds to and inactivates a growth factor called VEGF (vascular endothelial growth factor). VEGF stimulates blood vessel growth in AMD. Inhibiting these blood vessels reduces vision loss.

The main objective of the study was to assess and compare VEGF Trap-Eye to Lucentis (ranibizumab) in preventing moderate vision loss.

The View2 Study found that VEGF Trap-Eye is a safe and effective treatment for AMD and has a similar safety profile to ranibizumab. The recommended dose is 2mg every four weeks for the first 12 weeks, followed by 2mg every eight weeks.

Convenience of dosing is a major issue with patients receiving treatment for wet AMD. The bi-monthly regimen offers the potential to administer fewer injections, reducing the risk from monthly intravitreal injections whilst also relieving patients of the need for monthly visits to their ophthalmologist.

Nurse Kristine Kaspy helps a patient

clinical services

A year of growth and change for Clinical Services.

In 2012, the Lions Eye Institute successfully restructured Clinical Services to help manage the record number of patients accessing our facilities.

Clinic activity has grown by 26 per cent over the last three years and for the year ended 2012, 48,634 patients were seen.

A comprehensive review of the clinic provided a framework for the change and the majority of recommendations made by this review have been implemented.

Major changes included the formation of specialty teams within the clinic structure to provide focused support to both patients and medical staff. These teams include nursing, clerical, optometric and medical support staff.

The formation of teams required some minor floor plan changes, including the installation of extra vision lanes, expansion of reception areas and waiting rooms, creation of extra examination rooms and relocation of some equipment.

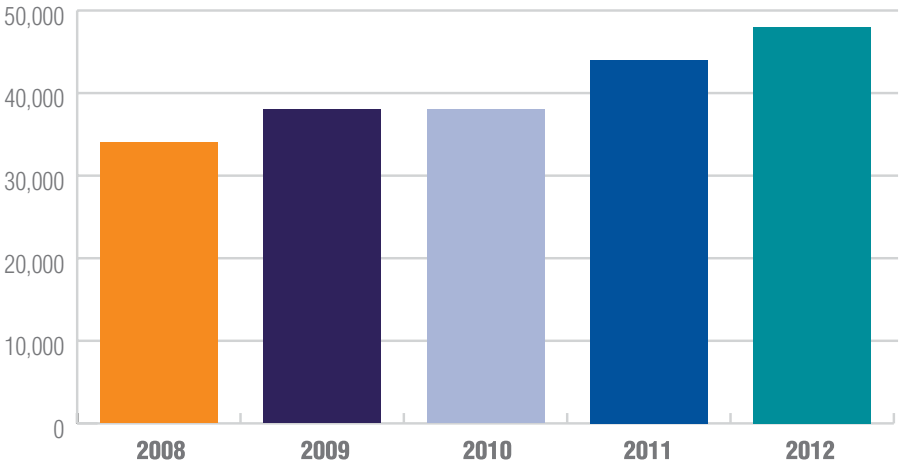
The installation of additional computers and phones allowed the seamless relocation of many staff members.

A key innovation was the introduction of two triage nurses who are contactable anywhere within the facility via high-powered cordless phones. These nurses are first point of contact for the large volume of phone calls that the clinic receives and provide a much more appropriate and timely response to patients.

The timing of these changes will allow us to test and modify many of our processes as we move towards extensive renovation and expansion of the clinical areas in 2013/14.

Another important structural change included the conversion of the Director of Nursing role to the Director of Clinical Operations. This change helps reflect the current scope and responsibility of the position which now incorporates the ITC Department.

Annual Patient Throughput Elsie Gadd Clinic 2008 – 2012



Investment in ITC infrastructure has provided the Institute with a faster and more reliable network that is able to meet the current and future needs of a business that relies heavily on access to network-based data and technology. A major upgrade of the main servers and installation of new user terminals has improved the flexibility and portability of work stations, giving staff more freedom to move around the Institute. Plans for a new telephone system and wireless network are at an advanced stage and this work should be completed in the first half of 2013.

The recruitment of a dedicated ITC Manager in late 2012 has had many positive outcomes. This position will play an important role in the migration to the new research facility in 2013.

The installation of new state-of-the-art equipment in the Laser Vision Centre was completed in mid-December and ensures our patients continue to have access to the highest quality facilities and processes. Just over 1000 procedures were carried out in the unit during 2012.

Our Day Surgery Unit completed over 2000 procedures this year with 14 clinicians utilising the facilities the unit has to offer.

Clinical Trials continue to play an important role and have now been allocated dedicated space within the clinic. Trial coordinators and participants have a fully equipped room that provides a private, confidential space.

The scanning project (digitalisation of medical records) continues and is producing high quality digital records that are readily accessible. The Scanning Department will be working closely with

OUR DAY SURGERY UNIT COMPLETED OVER 2000 PROCEDURES THIS YEAR WITH 14 CLINICIANS UTILISING THE FACILITIES THE UNIT HAS TO OFFER.

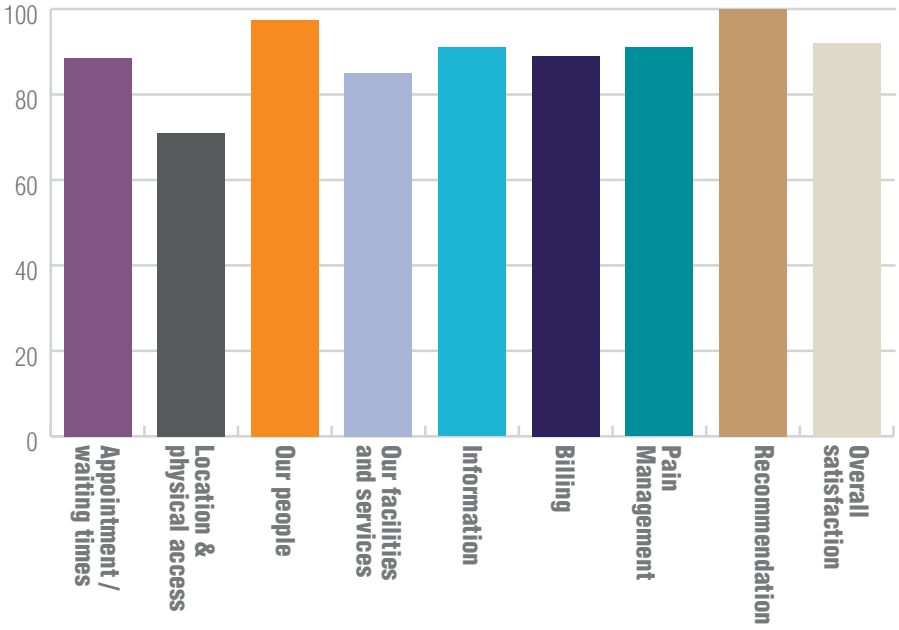
a number of clinicians in 2013 to help facilitate the transition to complete digital records.

The Clinical Services Division maintained its ISO9001 quality accreditation with a full survey completed in March 2012. Patients who receive treatment at our Day Surgery Unit, Laser Vision Centre and Patient Clinic do so in the knowledge that they receive expert and personal care.

The move to new National Quality Standards has seen the initiation of number of new quality programs. In April, 2012, the LEI hosted the training program for Australian Hand Hygiene. Day surgeries from across Perth attended the two-day workshop and the Institute is now a contributor to the National Hand Hygiene Initiative.

We continue to monitor all aspects of patient care with processes such as the Patient Satisfaction Surveys, Customer Feedback Forms, Clinical Incident Policy and activity verses staffing levels. The establishment of the Management Group Meeting, which meets every month, has created a forum where information can be shared across departments and common issues discussed.

Average Patient Satisfaction Score-Lions Eye Institute Day Surgery 2012



As demonstrated here, the Day Surgery unit achieved an average score of 90 per cent across all criteria of the patient satisfaction survey.

Clinical Services has achieved a great deal this year. Thanks are made to the highly professional and dedicated staff who have embraced, initiated and facilitated complex changes that have set the agenda for years to come.

Clinic staff promotes breast cancer awareness

WE CONTINUE TO MONITOR ALL ASPECTS OF PATIENT CARE.

clinicians

PROF GRAHAM BARRETT

Keratorefractive surgery, corneal and anterior segment disorders and surgery.

Trained in ophthalmology in Perth, Western Australia, Professor Barrett undertook specialty training in the USA. He is a consultant ophthalmic surgeon and Head of Department at Sir Charles Gairdner Hospital. Professor Barrett is founding and current president, Australasian Society of Cataract & Refractive Surgeons and president, 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 & Refractive Surgeons) and the Ridley Medal (Congress of German Ophthalmic Surgeons).

ASSOCIATE PROF FRED CHEN

Vitreoretinal surgery, macular degeneration and diabetic retinopathy.

Associate Professor Fred K Chen was born in Taiwan and studied medicine at The University of Western Australia.

After ophthalmology training at Royal Perth Hospital, 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. While 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.

Upon returning to Perth, Associate Professor Chen became a Consultant Vitreoretinal Surgeon at Royal Perth Hospital and Princess Margaret Hospital for Children. He also established an Ocular Tissue Engineering Laboratory and a Functional Ocular Imaging Laboratory at the Lions Eye Institute.

His research interests are stem cell therapy, cell reprogramming and clinical applications of retina-tracking microperimetry. He is also a member of the grant review committee and a Director for the Ophthalmic Research Institute of Australia.

PROF IAN CONSTABLE AO

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

Professor Constable trained in ophthalmology in New South Wales before moving to Harvard University and the Massachusetts Eye and Ear Infirmary in Boston USA where he spent five years as a Clinical and Research Fellow, then Lecturer and Acting Head of the Retinal Service. He became the Foundation Professor of Ophthalmology at the University of Western Australia in 1975 and built the clinical and research teams which now constitute the Lions Eye Institute. He has held many global leadership positions in ophthalmology including President of the Asia-Pacific Academy of Ophthalmology, current president of the Asia Pacific Vitreoretinal society, a Member of the International Council of Ophthalmology and a Member of the Academia Ophthalmologica Internationalis. He maintains a busy clinical practice at Sir Charles Gairdner, Princess Margaret and St John of God Hospitals and he is extensively involved in gene therapy research for retinal diseases. He was Managing Director of the Lions Eye Institute from 1983 to 2009.

PROF GEOFFREY CRAWFORD

Corneal, refractive and cataract surgery.

Professor Crawford completed his ophthalmic training in Western Australia and is a Fellow of the Royal Australian and New Zealand College of Ophthalmologists (RANZCO) 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 cornea and refractive surgery at Emory University in Atlanta, Georgia, USA.

He is the Director of Surgical Services and the Director of the Laser Vision Centre at the Lions Eye Institute (LEI) and a Consultant Ophthalmic surgeon at Royal Perth Hospital and Princess Margaret Hospital for Children.

Professor Crawford has held many positions within RANZCO, including Director of Continuing Professional Development, Chairman of the Program Committee and Chairman of Examiners. He is a co-inventor of the AlphaCor™ artificial cornea and AlphaSphere™ orbital implant and developed the techniques for insertion of these devices. He also introduced LASIK surgery into Western Australia.

Professor Crawford serves on the committees of the Australian and New Zealand Cornea Society and the Asia Cornea Society.

DR JEAN-LOUIS DE SOUSA

Oculoplastic, orbital and lacrimal surgery, cosmetic eyelid surgery and non-surgical periocular rejuvenation.

Dr De Sousa trained in ophthalmology in Perth before completing fellowships in ophthalmic plastic and reconstructive surgery in Oxford and East Grinstead in the United Kingdom.

He is a member of the Australian and New Zealand Society of Ophthalmic Plastic Surgeons.

A consultant ophthalmologist at Royal Perth Hospital, he also provides ophthalmic services to the Central Wheatbelt from Merredin.

Dr De Sousa is the WA representative for continuing professional development and a basic sciences examiner for the Royal Australian and New Zealand College of Ophthalmology.

ASSOCIATE PROF ADAM GAJDATSY

Oculoplastic, orbital, lacrimal and cosmetic eye surgery.

Associate Prof Gajdatsy trained in ophthalmology in Western Australia before undertaking fellowship training in oculoplastic, lacrimal and orbital surgery at the University Hospital of Wales, Cardiff, and Moorfields Eye Hospital, London.

He is consultant ophthalmic surgeon at Sir Charles Gairdner Hospital and an honorary consultant ophthalmologist at Princess Margaret Hospital.

Associate Prof Gajdatsy is a State Councillor, Western Australian Director of Training and curriculum review committee member of the Royal Australian and New Zealand College of Ophthalmologists (RANZCO), Secretary, fellow and executive member of the Australian and New Zealand Society of Ophthalmic Plastic Surgeons (ANZSOPS) and coordinator of ophthalmology teaching and adjunct clinical associate professor at The University of Western Australia.

Associate Prof Gajdatsy's research interests currently include novel methods of eyelid reconstruction and tear drainage following chemotherapy for breast cancer, genetics of uveal melanoma and genetics of thyroid ophthalmopathy.

clinicians

DR ANTONIO GIUBILATO

Glaucoma.

After training in ophthalmology in Perth, Western Australia, Dr Giubilato underwent specialty fellowship training in glaucoma at the Royal Victorian Eye and Ear Hospital. This included both clinical and surgical management of glaucoma as well as research into new therapies for the condition.

He is presently a consultant ophthalmologist in the Glaucoma Clinic at Royal Perth Hospital and also operates at Bentley Hospital for public patients.

Dr Giubilato is currently a Lions Save-Sight Foundation Board Member and the Western Australian representative on the Board of the Australian and New Zealand Glaucoma Interest Group.

DR TIM ISAACS

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

After training in ophthalmology in London, Dr Isaacs completed sub-specialty training in vitreoretinal surgery at Royal Perth and Sir Charles Gairdner hospitals.

He is a consultant ophthalmologist at Royal Perth and Princess Margaret hospitals, and practices at LEI's satellite clinic at Murdoch. He also operates on public patients at Armadale Hospital.

Dr Isaac's research interests include the evaluation of new therapies for diabetic retinopathy and macular degeneration. He is a member of the Ocular Oncology Special Interest Group of the Royal Australian and New Zealand College of Ophthalmology and is the local coordinator for a national study of new treatments for choroidal melanomas.

PROF DAVID MACKEY

Hereditary and genetic eye diseases.

Managing Director, Lions Eye Institute, and Professor of Ophthalmology/Director Centre for Ophthalmology & Visual Science, The University of WA.

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.

After resident years in Launceston and Hobart, he trained in ophthalmology at the Royal Victorian Eye and Ear Hospital, subsequently completing a fellowship in paediatric and genetic eye diseases at the Royal Children's Hospital where he completed his MD thesis.

After fellowships at the Johns Hopkins Centre for Hereditary Eye Diseases in Baltimore and Moorfields Eye Hospital and the Great Ormond Street Hospital for Sick Children in London, Professor Mackey returned to Australia to specialise in Genetic Eye Diseases.

He sits on the National Health and Medical Research Council's (NHMRC) Human Genetics Advisory Committee and is chief investigator for the NHMRC Centre of Research Excellence – Translation of Genetic Eye Research.

Professor Mackey is also president of the International Society for Genetic Eye Disease and Retinoblastoma. He sees patients at the Lions Eye Institute for second opinions on rare genetic eye diseases and more common genetic eye diseases involving new genetic research.

PROF IAN MCALLISTER

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

Professor McAllister trained in Western Australia with additional sub-specialty training in vitreoretinal disorders in the USA.

He is Director of Clinical Services at the Lions Eye Institute and a consultant ophthalmologist at Royal Perth and Sir Charles Gairdner hospitals.

Professor McAllister is actively involved in research for cures for vitreoretinal disorders - especially retinal vascular disorders - and has held 10 National Health and Medical Research Council grants in this area as well as numerous minor grants.

He has published over 100 papers in scientific journals and has been involved for many years in State-wide diabetic retinopathy screening and treatment services. He also coordinates and reviews photographs from diabetic screening in remote parts of Western Australia.

PROF WILLIAM MORGAN

Glaucoma and ophthalmic public health.

Initially trained in Perth, Western Australia, Professor Morgan undertook his fellowship at the Centre for Ophthalmology and Visual Science based at LEI. He is Head of Department of Ophthalmology and consultant ophthalmologist at Royal Perth Hospital, consultant ophthalmologist at Princess Margaret Hospital, a Professor at UWA and also Co-Director of 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.

ASSOCIATE PROF MEI-LING TAY-KEARNEY

Ocular infections, uveitis and inflammatory disorders of the eye.

Associate Professor Tay-Kearney completed her medical and ophthalmological training in Perth, Western Australia, before pursuing postgraduate study at Johns Hopkins Hospital in Baltimore, USA.

She is an Associate Professor at the Centre for Ophthalmology and Visual Science, UWA, and a member of The International Society for Ocular Inflammation, as well as the Australian Uveitis Study Group.

She holds the Chair of Qualifications and Education as well as an examiner for the Royal Australian and New Zealand College of Ophthalmology (RANZCO) Part 2 College examinations.

CLINICAL TRIALS CAN INCLUDE THE TESTING OF NEW DRUGS OR NEW DEVICES, TO IMPROVE UNDERSTANDING OF A CONDITION.

clinical trials

ASSOCIATE PROF STEVEN WIFFEN

Corneal and refractive surgery, anterior segment disorders and surgery, ocular surface disorders.

Associate Professor 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 Associate Professor at UWA.

He is Director of the Lions Eye Bank of Western Australia.

The Lions Eye Institute conducts a range of clinical trials which are approved by a Human Research Ethics Committee and meet stringent national and international guidelines.

Clinical trials can include the testing of new drugs or new devices, the collection of information from patients to improve understanding of a particular condition or a review of patient notes to establish treatment outcomes and highlight areas where improvements can be made.

VIVID STUDY (DME)

A randomised, double masked, active controlled, phase III study of the efficacy and safety of repeated doses of intravitreal VEGF Trap-Eye in subjects with diabetic macular oedema.

The VIVID study is testing the safety and efficacy of an investigational study medication for the treatment of diabetic macular oedema. The study will assess the potential benefit of VEGF trap-eye, an intravitreal treatment (an injection into the back of the eye), compared with standard of care laser treatment in improving best corrected visual acuity (BCVA) in subjects with diabetic macular oedema (DME) with central involvement.

Principal investigator Professor Ian McAllister

Sponsor Bayer Healthcare

Condition Diabetic Macular Oedema.

BEVORDEX

A multicentre randomised clinical trial of intravitreal bevacizumab (Avastin®) versus intravitreal dexamethasone (Ozurdex™) for persistent diabetic macular oedema. The primary aim of the study is to compare the visual acuity outcomes from both treatments to ascertain whether one treatment is more effective than the other

Principal investigator Professor Ian McAllister

Sponsor NHMRC Grant

Condition Diabetic Macular Oedema.

LUMINOUS

Study to observe the effectiveness and safety of LUCENTIS® through individualised patient treatment and associated outcomes. This observational study will research the long term effects of ranibizumab, including effects on visual acuity, treatment patterns, quality of life and adverse events.

Principal investigators Professor Ian McAllister, Professor Ian Constable, Dr Isaacs, Associate Professor Fred Chen

Sponsor Novartis

Condition Patients being treated with Ranibizumab.

ABBVIE UVEITIS STUDIES

Study Protocol M10-877

A Multicenter Study of the Efficacy and Safety of the Human Anti-TNF Monoclonal Antibody Adalimumab as Maintenance Therapy in Subjects Requiring High Dose Corticosteroids for Active Non-infectious Intermediate-, Posterior-, or Pan-uveitis. Incorporating Global Amendments 1, 2, 3, Country Specific Amendment 4 for France Only, and Global Amendments 4 and 5, Administrative Change 1 and Global Amendments 6 and 7.

Principal investigator Associate Professor Mei-Ling Tay-Kearney

Study Sponsor AbbVie

Condition Active- non-infectious intermediate or posterior or pan-uveitis

Study Protocol M10-880

A Multicenter Study of the Efficacy and Safety of the Human Anti-TNF Monoclonal Antibody Adalimumab as Maintenance Therapy in Subjects with Inactive Non-infectious Intermediate-, Posterior-, or Pan-uveitis. Incorporating Global Amendments 1, 2, 3, Country Specific Amendment 4 for France Only, Global Amendments 4, 5, 6 and 7 and Administrative Changes 1 and 2 and Global Amendment 8.

Principal investigator Associate Professor Mei-Ling Tay-Kearney

Study Sponsor AbbVie

Condition Inactive non-infectious intermediate or posterior or pan-uveitis.

Study Protocol M11-327

A Multicenter Open-Label Study of the Long-term Safety and Efficacy of the Human Anti-TNF Monoclonal Antibody Adalimumab in Subjects with Non-infectious Intermediate-, Posterior-, or Pan-uveitis. Incorporating Global Amendments 1, 2, 3, 4, 5 and 6 and Administrative Change 1 and Global Amendment 7.

Principal investigator Associate Professor Mei-Ling Tay-Kearney

Study Sponsor AbbVie

Condition Non-infectious intermediate or posterior or pan-uveitis. Patients must have completed or treatment failed in either the M10-887 or M10-880 study.

THE MACTEL STUDY

A Natural History Observation and Registry Study of Macular Telangiectasia Type 2. The Natural History Observation Study is a long-term study aimed at attaining a better understanding of the condition by examining the features and changes over five to 10 years.

Principal investigator Professor Ian Constable

Sponsor The MacTel Foundation

Condition Macular Telangiectasia Type 2.

FIGHT RETINAL BLINDNESS (FRB) STUDY

This is a national project that aims to establish a national prospective system to monitor, track and evaluate treatment outcomes for macular disease. Currently, the project is focusing on wet macular degeneration. The data from patient notes is recorded in a database that has been developed for the study. The database is able to track a patient's progress with regard to their treatment, and will potentially be developed as a valuable tool in clinical practice.

Principal Investigator Professor Ian McAllister

Sponsor NH&MRC grant

Condition Macular Disease.

L-CVBS STUDY

Combination Therapy of Lucentis (Ranibizumab) plus laser induced chorioretinal venous anastomosis for central retinal vein occlusion.

Principal Investigator Professor Ian McAllister

Sponsor Professor Ian McAllister (Investigator initiated study)

Condition Central Retinal Vein occlusion.

CRVO-CRYSTAL STUDY

A 24-month, phase IIIb, open-label, single arm, multicenter study assessing the efficacy and safety of an individualised, stabilisation criteria-driven PRN dosing regimen with 0.5 mg ranibizumab intravitreal injections applied as monotherapy in patients with visual impairment due to macular edema secondary to central retinal vein occlusion (CRVO).

Principal Investigator Professor Ian McAllister

Sponsor Novartis

Condition Central Retinal Vein occlusion

BRVO-BRIGHTER STUDY

A 24-month, phase IIIb, open-label, randomised, active-controlled, 3 arm, multicenter study assessing the efficacy and safety of an individualised, stabilisation criteria-driven PRN dosing regimen with 0.5 mg ranibizumab intravitreal injections applied as monotherapy or with adjunctive laser photocoagulation in comparison to laser photocoagulation in patients with visual impairment due to macular edema secondary to branch retinal vein occlusion (BRVO).

Principal Investigator Professor Ian McAllister

Sponsor Novartis

Condition Branch Retinal Vein occlusion.

L-BRVO STUDY

A 12-month, multi-centre investigator initiated study designed to assess the efficacy of 0.5mg Ranibizumab (Lucentis) intravitreal injections for the treatment of macular oedema secondary to a branch retinal vein occlusion (BRVO) compared with the standard of care laser treatment.

Principal Investigator Professor Ian McAllister

Sponsor Lions Eye Institute and Novartis Pharmaceuticals

Condition Branch Retinal Vein Occlusion.

GENE THERAPY STUDY

A phase I/II controlled, dose-escalating trial to establish the baseline safety and efficacy of a single subretinal injection of rAAV.sFlt-1 into eyes of patients with exudative age-related macular degeneration (AMD).

Principal Investigator Professor Ian Constable

Sponsor Co-collaborators Lions Eye Institute and Avalanche

Condition Exudative age-related macular degeneration.

STAFF

Caroline Adams	*Clinical Trials Manager*
Elizabeth Argentieri	*Study Coordinator*
Diana Bowman	*Administration Assistant*
Amelia Jason	*Research Assistant*
Cora Pierce	*Study Coordinator*
Sharon Radtke	*Clinical Trials Officer & Registered Nurse*
Lynne Smithies	*Clinical Trials Coordinator*
Janelle Staton	*Clinical Trials Coordinator*

DISCOVER THE FACTS ABOUT ORGAN AND TISSUE DONATION. MAKE AN INFORMED CHOICE AND DECIDE ABOUT BECOMING A DONOR. DISCUSS YOUR DECISION WITH THE PEOPLE CLOSE TO YOU.

Steven Wiffen

lions eye bank of WA

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.

Almost 4000 corneal transplants have been performed to date, 201 of those in 2012. 182 corneas were sourced locally and 17 from interstate. In addition to corneal transplants, scleral tissue was used in 136 other surgical procedures.

All donor tissue is utilised 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 over 25 years of Eye Banking in WA. Where some patients used to wait more than 2 years for a graft, transplants are now being performed within 4 months. 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.

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

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 is self-funded through cost recovery and is supported by the Lions Save-Sight Foundation.

Find out more at www.donatelife.gov.au call 1800 777 203 or complete a form at any Medicare branch.

Ambrose Depiazzi

lions save-sight foundation inc.

The 2012 year has been a steady one concentrating on our internal review of projects whilst still continuing to meet our ongoing commitments to staff funding and research projects at the Lions Eye Institute.

We continue to grapple with our Glaucoma Screening Project and our inability to determine its future. History has shown that we have moved on from the heydays of the late 1960s-early 70s when this project was really soaring. In those halcyon times we were screening in excess of 20,000 members of the public per annum. In this last year it has reduced to just over 100, a decline of just over 99 per cent! So what has changed?

Forty years ago there were very few opticians and ophthalmologists in Western Australia and opticians were not equipped to test eye pressure for glaucoma. Today, opticians not only working for large franchises but even sole practitioners undertake these pressure tests and most centres of any size have an optician resident in town. As a result our market for patients has declined dramatically.

Our other major project of collecting used reading glasses, sorting then preparing them for shipping to Lions Clubs and others to Third World countries continues. The biggest challenge for us is to find volunteers who can assist with sorting and packaging. Our supply of used glasses continues to grow and it is approaching the overwhelming stage. In an attempt to refine the process we are currently undertaking a review of the type of glasses we clear for export. This review is being managed by Professor David Mackey as part of the Raine Eye Health Study. We trust this will result in our selection of glasses for export being more appropriate for use by our eventual recipients.

With the impending expansion of the Institute following the completion of the adjacent WAIMR building, we are also becoming involved with the furnishing and equipping of this expanded facility. In October, we launched our “shopping list” project to the Lions Clubs in Western Australia. Whilst no official target was set, it is hoped we can raise some $70,000 to assist with equipment provision in the new area.

In August 2012, our Office Manager Gail Mason left the Foundation to return to Melbourne. Gail was with us for 11 years and gave us great service every day of her time with us. We wish her well in her new life in Victoria and sincerely thank her for her contribution.

We were most fortunate to obtain the services of Sheree Hunt to take over from Gail as our new Office Manager. Sheree had some years before, worked as part of the LEI team and is therefore familiar with our interests and is known to numerous LEI staff. Her transition into this role has been seamless and we are delighted to have Sheree with us.

In concluding, may I recognise the assistance of Professor David Mackey during this year? It has been great to have such a good rapport with David and other staff within LEI as we work to continue together to meet the challenge that Helen Keller issued to Lions in 1925 to become ‘Knights for the Blind’.

Ambrose Depiazzi

Chairman, Lions Save-Sight Foundation Inc.

DURING 2012, THE VOLUNTEER PROGRAM GREW IN NUMBERS AND FURTHER DEVELOPED ITS ACTIVITIES.

volunteers' contribution

We now have more than 40 "concierge" volunteers smoothing the way for clients and visitors to the LEI. Volunteers meet and greet clients at the door, show them to their clinics, fetch prescriptions, guide them after day surgery or injections, provide suggestions about nearby parking, ensure transport home has been arranged, fetch a welcome cup of tea or coffee and generally offer a friendly hand.

Volunteers also enjoyed working in a number of other projects, utilising their own range of skills, including:

- Helping at the LEI stand at Telethon, promoting the range of wonderful LEI research to families and children
- Guiding visitors during LEI Open Days held for the Lions International Convention and also at the general LEI Open Day held in October
- Assisting LEI research applications and submissions – proof-reading, presentation and formatting
- Administrative assistance to the Royal Australian College of Ophthalmology (RANZCO) officials at LEI
- Providing support at LEI events such as food and drink hosting
- Continuing the LEI library work
- The LEI Volunteers were again recognised by the Subiaco Business Association – SUBIZ Awards.

Volunteer Rona McGann received a certificate of merit in the Volunteer of the Year Award category, having been nominated for her invaluable assistance in her role during the previous 12 months.

Rona lead the library team that was responsible for cataloguing, reorganising and re-locating the LEI research library. This was a huge project requiring a lot of detail and on-the-job learning culminating in the reward of being part of the opening ceremony for the "new" Robert Linton Library and meeting family members and former "pioneers" of ophthalmology in WA.

Volunteers also helped in the electronic scanning of historical slides (Ida Mann Collection), recording historic papers for archiving and arranging the display of "museum" equipment pieces in the library.

The volunteers are a great comfort to the clients of LEI - and to their relatives and friends. It is the aim of the LEI Volunteers to build upon their skills and activities and ensure that the client visit to LEI is as comfortable and happy as possible.

acknowledgements

The Lions Eye Institute is grateful for the generosity of all our donors and supporters who contributed to our work in 2012. This vital support allows us to continue our investment into the prevention and treatment of sight threatening diseases.

BEQUESTS

Estate of Grace Davenport
Estate of Walter James Hughes
Estate of Douglas John McMillan
Estate of Barbara Margaret Parker
Estate of Kenneth Sargent
Estate of Sylvia Eileen Scotson
Estate of Jack True

BEQUESTS IN PERPETUITY

The Alan and Lilian Cameron Charitable Endowment
Harry and Margaret Kerman Trust Fund
Joyce Henderson Bequest Fund

SPECIAL GIFTS

AdventBalance
Alcon
Anonymous
Apache Energy
Ashurst
Mr Mark Billings
Mr William Bloking
Mr Bob Branchi
Mr Rudolph Brunovs
Mr Bruno Camarri
CKA Risk Solutions Pty Ltd
Content Living Pty Ltd
Mr John Cruickshank
Mr David Eiszele
Mr Jason Farrow
Freo Group Ltd
Jardine Lloyd Thompson (JLT)
Mr and Mrs Barrie and Jude Lepley
Lions Club of Claremont-Nedlands
Harvard Club of Australia
Lotterywest
Mandurah Murray Mayday Club
Mecciv Construction & Management Services
Mrs Elva Moore
Nido Petroleum Ltd
Orberwill Pty Ltd
Mr Eric Pearton
Mr Lindsay Peet
Mr Jason Ricketts
Mr and Mrs John and Lee Saleeba
Wesfarmers
Westralian Flora Exports
Miss Miria Worthington

TRUSTS AND FOUNDATIONS

Channel 7 Telethon Trust
The Constantine Family Foundation
Freehills Foundation
Lions Save-Sight Foundation
Raine Medical Research Foundation
RANZCO Eye Foundation
Eye Surgery Foundation
McCusker Charitable Foundation
Quality of Life Foundation
Stan Perron Charitable Foundation

MAJOR INSTITUTIONAL SUPPORT

ARC Centre of Excellence
Federal Government of Australia
National Health & Medical Research Council
Government of Western Australia
Department of Health
Department of Foreign Affairs and trade
Indigenous & Remote Eye Health Service
Ophthalmic Research Institute of Australia
Retina Australia
The University of Western Australia

Artist impression of WA's new $100 million state-of-the-art medical research facility at the QEII Medical centre

building the vision

While last year's launch of the LEI's capital fundraising campaign, Building the Vision, marked the beginning of the Institute's call to drive improved eye health and clinical care in Western Australia, 2012 saw the visionary campaign continue to grow.

The invaluable support of campaign patrons, His Excellency Malcolm McCusker AO QC and Mrs Tonya McCusker, and Mr Stan Perron AM and Mrs Jean Perron has nurtured this growth.

Construction of WA's new $100 million state-of-the-art medical research facility at the QEII Medical centre is scheduled for completion in 2013, with LEI occupying an entire floor in the new building. It will be an exciting place for researchers to work, share knowledge and bring direct benefit to the public with new teaching and lecture capabilities.

Having research space and cutting edge equipment in a purpose-built facility is a huge step forward. It will enable LEI to continue to attract the world class researchers and clinicians that are needed to keep them at the forefront of eye and medical research.

Generous support has been received from government, corporate and private sectors. The Institute appreciates this vital funding and gratefully acknowledges our partners in this venture.

L-R, Terri Young, Michael Hunter, David Mackey, Chris Hammond outside Busselton Health Study building

raine visiting professors

The Raine Foundation Visiting Professor scheme is designed to help stimulate international collaborations with UWA researchers.

In 2012 LEI had the privilege of hosting two Visiting Professors for three weeks, resulting in a major research publication and new momentum created in the area of myopia research.

Professor Chris Hammond is Frost Professor of Ophthalmology, Department of Ophthalmology and NIHR Senior Research Fellow, Department of Twin Research and Genetic Epidemiology, King's College London (St Thomas' Hospital). He combines his research work with clinical practice as Consultant Ophthalmologist and Lead Clinician at the West Kent Eye Centre, Princess Royal University Hospital, Orpington. He heads the TwinsUK project based at the Department of Twin Research and Genetic Epidemiology, King's College London.

Professor Terri Young is tenured Professor of Ophthalmology, Pediatrics and Medicine at Duke University, Durham, North Carolina. She also holds the position of Professor of Neuroscience, Duke-National University of Singapore Graduate Medical School. Terri specialises in the medical and surgical management of paediatric eye disorders and adult/childhood strabismus (eye misalignment) and has developed a program with clinical geneticists to provide comprehensive care and evaluation of patients with genetic disorders with accompanying eye issues.

During their time in Western Australia they had the opportunity to work collaboratively with many people. In addition to the lectures and student teaching at UWA, they held a grant and paper writing session in Margaret River and participated in the Scientific and Advisory Group meeting of all the Chief and Associate Investigators involved in Managing Director David Mackey's Translation of Genetic Eye Diseases Centres of Research Excellence grant.

The Scientific and Advisory Group had a productive day. They not only reviewed the first year of activities, they planned the next four years. Sixteen people collaborated in LEI's Lecture Theatre with a further two participating via Skype.

appointments/ awards/honours

Assistant Professor Christopher Andoniou

Appointments

- Assistant Professor, The University of Western Australia
- Member, Australasian Society for Immunology

Awards

Recipient, NHMRC Project Grant

Professor Graham Barrett

Appointments

- Head of Department, Consultant Ophthalmologist, Sir Charles Gairdner Hospital
- Professor, The University of Western Australia
- President, Asia Pacific Association of Cataract and Refractive Surgeons
- President, Australasian Society of Cataract and Refractive Surgeons
- Secretary, International Intraocular Implant Club
- Member, American Society of Cataract and Refractive Surgery
- Member, European Society of Cataract and Refractive Surgery
- Member, International Society of Refractive Keratoplasty
- Treasurer, International Intraocular Implant Club

Mr Chris Barry

Appointments

- Managing Editor, Journal of Ophthalmic Photography
- Fellow, Ophthalmic Photographers' Society
- Fellow, Australian Institute of Medical and Biological Illustration

Awards

American Society of Cataract and Refractive Surgery/Ophthalmic Photographers' Society ophthalmic photography photographic competition 2011: "Best of Show" 1st Fluorescein angiography (PDR)

American Academy of Ophthalmology/ Ophthalmic Photographers' Society ophthalmic photography photographic competition 2011: 1st Fundus photography normal angle, 1st Fundus photography high magnification, 1st Monochromatic photography, 1st Clinical setting photography

Associate Professor Fred Chen

Appointments

- Consultant Ophthalmologist, Royal Perth Hospital
- Consultant Ophthalmologist, Princess Margaret Hospital
- Associate Professor, The University of Western Australia

Professor Ian Constable

Appointments

- Professor of Ophthalmology, The University of Western Australia
- Consultant Ophthalmologist, Sir Charles Gairdner Hospital
- Consultant Ophthalmologist, Princess Margaret Hospital
- President, Asia Pacific Vitreoretinal Society
- Council Member & Regional Secretary, Asia Pacific Academy of Ophthalmology
- Member, Academia Ophthalmalogica Internationalis
- Member, State Health Research Advisory Committee
- Member, Scientific Advisory Board Western Australia Institute of Medical Research
- Board Member, Loewe Medical Foundation
- Member, Executive Committee and Scientific Advisory Committee, International Macular Telangiectasia project

Doctor Jerome Coudert

Appointments

- Research Fellow, Lions Eye Institute
- Research Officer, The University of Western Australia
- Member, Australasian Society for Immunology
- Member, Society for Natural Immunity

Awards

NH & MRC Project Grant

Harvard Club of Australia Foundation Fellowship

Professor Geoffrey Crawford

Appointments

- Professor of Ophthalmology, The University of Western Australia
- Consultant Ophthalmic Surgeon, Royal Perth Hospital
- Consultant Ophthalmic Surgeon, Princess Margaret Hospital
- Director of Surgical Services, Director, Laser Vision Centre, Lions Eye Institute Limited
- Board member, Lions Save-Sight Foundation
- Executive Committee Member, Australian Society of Cataract and Refractive Surgeons
- Executive Committee member, Royal Australian and New Zealand College of Ophthalmologists (WA Branch)
- Executive Committee Member, Australian and New Zealand Cornea Society

Awards

Visiting Professor, National University of Singapore and Singapore National Eye Centre

Professor Mariapia Degli-Esposti

Appointments

- Division Head, Experimental Immunology, Centre for Ophthalmology and Visual Science, The University of Western Australia
- Director of Research, Lions Eye Institute Limited
- Member, Research Committee, Raine Medical Research Foundation

- Member, Strategic Research Advisory Group, Faculty of Medicine, Dentistry & Health Sciences, The University of Western Australia
- Member, National Health & Medical Research Council Assigners Academy
- Member, International Scientific Committee for 13th Meeting of the Society for Natural Immunity
- Member, National Advisory Committee, Lorne Infection and Immunity Conference

Associate Professor Adam Gajdatsy

Appointments

- Associate Professor, Teaching Coordinator, Ophthalmology; Postgraduate Anatomy Lecturer, The University of Western Australia
- Executive Board Member, ANZSOPS
- Fellow, Australian and New Zealand Society of Ophthalmic Plastic Surgeons
- Honorary Consultant Ophthalmologist, Princess Margaret Hospital
- RANZCO training supervisor, Consultant Ophthalmic Surgeon, Sir Charles Gairdner Hospital
- Director of Training WA network; Fellow; State Councillor, Royal Australian and New Zealand College of Ophthalmologists
- International Member, American Academy of Ophthalmology
- Member, Royal College of Physicians of the UK

Dr Tim Isaacs

Appointments

- Fellow, Royal Australian and New Zealand College of Ophthalmologists
- Consultant Ophthalmologist, Royal Perth Hospital
- Fellow, The Royal College of Ophthalmologists (UK)

Professor Ian McAllister

Appointments

- Board member, Asia Pacific Vitreo-retinal Society
- Board Member; Director, Clinical Services; Consultant Ophthalmologist, Lions Eye Institute Limited
- Director, Australian Foundation for the Prevention of Blindness
- Professor of Ophthalmology, Centre of Ophthalmology and Visual Science, The University of Western Australia
- Fellow, Royal Australian & New Zealand College of Ophthalmologists
- Member, Royal Australian College of Surgeons
- Visiting Consultant Ophthalmologist, Cocos Keeling Islands & Christmas Island, Indian Ocean
- Consultant Ophthalmologist, Royal Perth Hospital
- Consultant Ophthalmologist, Sir Charles Gairdner Hospital
- Member, American Academy of Ophthalmology
- Member, Australian Medical Association
- Member, Cleveland Ophthalmological Society
- Member, Northern Greece Ophthalmological Society
- Member, Oceanic Retina Association
- Member, Retina Society

Awards

American Academy of Ophthalmology Award for Distinguished service to Ophthalmology

Winthrop Professor David Mackey

Appointments

- Chair of Ophthalmology, The University of Western Australia
- Director, Centre for Ophthalmology and Visual Science, The University of Western Australia
- Managing Director, Lions Eye Institute Limited
- Board Member, Lions Eye Institute Limited
- Member, National Health & Medical Research Council Human Genetics Advisory Committee
- State Director of Eye Services, Western Australian Department of Health
- Member of WA State Government Neurosciences & The Senses Health Network eye health advisory group
- President, International Society for Genetic Eye Disease and Retinoblastoma
- State Chair, Western Australian branch, Royal Australian and New Zealand College of Ophthalmologists
- Fellow, Royal Australian and New Zealand College of Ophthalmologists
- Examiner (Genetics), Royal Australian & New Zealand College of Ophthalmologists
- Member of Basic and Clinical Science Course (BCSC) Sect. 2 Subcommittee, Fundamentals and Principles of Ophthalmology, American Academy of Ophthalmology

Awards

RANZCO Excellence in Training Award, 2012

Professor William Morgan

Appointments

- Board Member, Australian New Zealand Glaucoma Interest Group
- Honorary Ophthalmic Consultant to the Board of Directors, Association for the Blind of Western Australia
- Fellow, Royal Australian and New Zealand College of Ophthalmologists
- Consultant Ophthalmologist, Lions Eye Institute Limited
- Head of Department of Ophthalmology, Consultant Ophthalmologist, Royal Perth Hospital
- Consultant Ophthalmologist, Princess Margaret Hospital
- Professor, The University of Western Australia
- Associate Professor, Curtin University
- Member Assessment Panel, Training Awards Committee
- NHMRC Fellowship review panel member

Winthrop Professor Piroska Rakoczy

Appointments

- Member, NHMRC Fellowship Committee
- Member, WA Animal Resources Centre Board

- GRP Panel Member, NH&MRC Neuroscience
- Member, Council for the International Society for Eye Research
- Member, Organising Committee, International Society for Ophthalmology and Cell Biology
- Member, Organising Committee, International Society for Eye Research
- Member, Asia-ARVO International Advisory Committee
- Editor, Journal of Gene Vaccines and Therapy
- Scientific Editor, Clinical and Experimental Ophthalmology
- Editor, Gene and Cell Based Treatment Strategies for the Eye (Springer)

Associate Professor Angus Turner

Appointments

- Consultant Ophthalmologist, Fremantle Hospital
- Associate Professor, The University of Western Australia

Dr Sarojini Vijayasekaran

Appointments

- Associate Professor (Adjunct), The University of Western Australia

Associate Professor Steven Wiffen

Appointments

- Director, Lions Eye Bank of Western Australia
- Consultant Ophthalmologist, Fremantle Hospital
- Associate Professor, The University of Western Australia

Assistant Professor Matthew Wikstrom

Appointments

- Assistant Professor, The University of Western Australia

Awards

PDG Brian King Post Doctoral Fellowship

DR ALEX HEWITT WAS ONE OF EIGHT INTERNATIONAL RECIPIENTS OF A 2012 ARI YOUNG INVESTIGATOR GRANT.

Alex Hewitt at the UWA Tall Poppy Awards

alcon research institute awards

Alcon Research Institute awards ARI's in recognition of excellence in ophthalmic research.

Dr Alex Hewitt was one of eight international recipients of a 2012 ARI Young Investigator Grant worth $50,000 that will allow him to further his research into glaucoma genetics.

It takes us to three, the number of Lions Eye Institute researchers who have been honoured with an ARI since 2010.

Professor John Forrester, who spends 6 months of each year at LEI investigating the causes of uveitis and other ocular immunological disorders, was one of seven awardees in 2011, while Managing Director Professor David Mackey was one of six recipients awarded in 2010.

Dr Charlotte McKnight with her John Parr Trophy

COMPLETE ARTICLES FOR THESE STORIES AND MORE CAN BE FOUND ON OUR WEBSITE WWW.LEI.ORG.AU

in the news

Descendants of the Bounty mutineers may unlock genetic clues for myopia: Norfolk Island descendants of the famous English Bounty mutineers have among the lowest rates of myopia in the world and could help unlock the genetic code for the disease, according to a series of research papers that have been published as part of the Norfolk Island Eye Study, set up in 2007 by Lions Eye Institute Managing Director Professor David Mackey with input from top Australian eye researchers.

Young LEI researchers score a trifecta at the 2012 RANZCO congress: A paper exploring the link between sun exposure, outdoor activity and myopia (short-sightedness) won a top award at the Royal Australian and New Zealand College of Ophthalmologists annual congress for young Lions Eye Institute (LEI) researcher Dr Charlotte McKnight.

Australian-first technology to drive new research into eye disease: The LEI becomes the only research body in the country to acquire latest generation microperimeters for the management of a number of serious eye disorders.

collaborators and visitors

CLINICAL GENETICS AND EMIDEMIOLOGY

Visitors

Dr Harry Campbell *University of Edinburgh*

Prof Chris Hammond *University of Western Australia Raine Visiting Professor, King's College London School of Medicine, London UK*

Assoc Prof Robyn Jamieson *Visiting Professor, University of Sydney*

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

Dr Terri Young *University of Western Australia Raine Visiting Professor, Duke University Medical Centre, Durham, North Carolina USA*

Collaborators

Dr Kathryn Burdon *Flinders University, Adelaide*

Professor Minas Coroneo *University of Sydney, Sydney*

Assoc Prof Jamie Craig Flinders University, Adelaide

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

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

Dr Jeremy (Jez) Guggenheim *University of Cardiff, Cardiff UK*

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

Dr Alison Hardcastle *UCL Institute of Ophthalmology, London UK*

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

Dr Alex Hewitt *Centre for Eye Research Australia, University of Melbourne, Royal Victorian Eye and Ear Hospital, Melbourne*

Dr Simon John *The Jackson laboratory, Bar Harbor, Maine USA*

Assoc Prof Geoff Lam *Princess Margaret Hospital, Perth*

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

Prof Nick Martin *Queensland Institute of Medical Research, Brisbane*

Prof Paul Mitchell *Centre for Vision Research, Department of Ophthalmology and Westmead Millennium Institute, University of Sydney, Sydney*

Prof Grant Montgomery *Queensland Institute of Medical Research, Brisbane*

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

Assoc Prof Craig Pennell *School of Women's and Infants' Health, University of Western Australia, Perth*

Prof Carmel Toomes *Leeds Institute of Molecular Medicine, Leeds University, Leeds UK*

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

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

Dr Cathy Williams *University of Bristol, Bristol UK*

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

Prof Tien Wong *Singapore Eye Research Institute, Singapore*

Dr Terri Young *Duke University Medical Centre, Durham, North Carolina USA*

IMMUNOLOGY

Visitors

Prof Edward Mocarski *Microbiology and Immunology, Stanford School of Medicine, Standford, USA*

Dr Soroosh Radfar *Dana-Farber Cancer Institute, Harvard Medical School, Boston, USA*

Collaborators

Prof Matt Brown *Diamantina Institute, University of Queensland, Brisbane*

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

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

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

Prof Wallace Langdon *School of Pathology and Laboratory Medicine, University of Western Australia, Perth*

Prof Paul McMenamin *Department of Anatomy & Developmental Biology, Monash University, Melbourne*

E/Prof John Papadimitriou *School of Pathology and Laboratory Medicine, University of Western Australia, Perth*

Prof Mark Smyth *Cancer Immunology Program, Peter MacCallum Cancer Centre, Melbourne*

Prof Joseph Trapani *Cancer Immunology Program, Peter MacCallum Cancer Centre, Melbourne*

Prof Ranjeny Thomas *Diamantina Institute, University of Queensland, Brisbane*

Prof George Yeoh *School of Chemistry and Biochemistry, University of Western Australia, Perth*

Prof Laurence Zitvogel *Institut Gustave Roussy, Villejuif, France*

MOLECULAR OPHTHALMOLOGY

Visitors

Dr Thomas Chalberg- *Avalanche Biotechnologies*

Collaborators

Prof 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*

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

Prof Paul McMenamin *Department of Anatomy & Developmental Biology, Monash University, Melbourne*

Prof Kristina Narfstrom *College of Veterinary Medicine, University of Missouri, Columbia USA*

Prof Jude Samulski *University of North Carolina USA*

Prof Luis Serrano *Centre for Genomic Research, Barcelona Spain*

PHYSIOLOGY AND PHARMACOLOGY

Collaborators

Prof Balawantray Chauhan *Dalhousie University, Nova Scotia Canada*

Prof Tom Gardner *Penn State University, Pennsylvania USA*

Prof Wenyi Guo *Fudan University, Shanghai China*

Prof Mark Humayun *Doheny Eye Institute, Los Angeles, California USA*

Prof Trevor Lamb *Australian National University, Canberra*

Prof Jonathan Stone *Sydney University, Sydney*

Prof Jan Provis *Australian National University, Canberra*

Prof Xinghua Sun *Fudan University, Shanghai China*

Dr Xiaobo Yu *Fudan University, Shanghai China*

Dr Gerhard Zinser *Heidelberg Engineering, Germany*

Aquesys *USA*

OCULAR TISSUE ENGINEERING

Visitors

Dr Lyndon Da Cruz *Moorfields Eye Hospital, London*

Ms Yona Goldshmit *Australian Regenerative Medicine Institute, Monash University, Melbourne*

Collaborators

Assoc Prof Aron Chakera *Department of Nephrology, Sir Charles Gairdner Hospital, Perth*

Prof Peter Coffey *UCL Institute of Ophthalmology, London, UK*

Dr Amanda-Jane Carr *UCL Institute of Ophthalmology, London, UK*

Dr Lyndon Da Cruz *Moorfields Eye Hospital, London*

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

Dr Adnan Tufail *Moorfields Eye Hospital, Medical Retina, London*

L - R, Dr Ray Whitford, Kim Linton, Anaza Linton

library launch

The official launch of the refurbished Dr Robert Linton Library was held on March 28, in conjunction with the monthly colloquia of the WA Branch of the Royal Australian and New Zealand College of Ophthalmologists.

Guests included Anaza and Kim Linton, retired ophthalmologists Dr Ray Whitford and Dr Peter Graham, and several LEI volunteers who spent many months cataloguing and relocating the books and journals.

Professor Ian Constable opened the evening with a history of the Institute and Dr Whitford spoke about Dr Robert Linton, a personal friend and colleague.

Dr Graham described the “instruments” he devised to overcome lack of power and portability - some of which he is donating to the library - and Professor McAllister gave a history of the larger old ophthalmoscopes.

The Linton family funded the library refurbishment and continue to financially support the move towards electronic access to journals and teaching tools. As a result of the refurbishment, ophthalmology registrars can now sit online exams at the LEI instead of travelling to the eastern states.

conferences and invited lectures

JANUARY

Winthrop Professor David Mackey Update on glaucoma genetics. *Invited Speaker, Ski Japan Eyecare Conference, Niseko, 10 January.*

Winthrop Professor David Mackey Peer reviewing the literature. *Invited Speaker, Ski Japan Eyecare Conference, Niseko, 11 January.*

Winthrop Professor David Mackey Genome Wide Association Studies in Ophthalmology. *Invited Speaker, Ski Japan Eyecare Conference, Niseko, 11 January.*

Professor William Morgan Yu DY, Fatehee N, Cringle S. Imaging Optic Nerve Connective Tissue. *Invited Speaker, 20th International Visual Field & Imaging Symposium, Melbourne, 22 - 25 January.*

FEBRUARY

Winthrop Professor David Mackey Chair, Ophthalmic Genetics Session, World Ophthalmology Congress. *Abu Dhabi, 17 February.*

Winthrop Professor David Mackey Genome Wide Association Studies in ophthalmology. *Invited Speaker, World Ophthalmology Congress, Abu Dhabi, 17 February.*

Professor William Morgan New Directions for Glaucoma Research. *Australian New Zealand Glaucoma Interest Group, Sydney.*

Professor William Morgan NHMRC Glaucoma Guidelines: Developing Guidelines. *Australian New Zealand Glaucoma Interest Group, Sydney.*

Professor Geoffrey Crawford Participation. Royal Australian & New Zealand College of Ophthalmologists (WA Branch). *Annual Scientific Meeting, Bunker Bay Feb 24-26.*

MARCH

Winthrop Professor David Mackey Success of Genome Wide Association Studies in Ophthalmology. Oral Presentation. *16th Human Genome Meeting 2012, Sydney, 13 March.*

Professor Geoffrey Crawford Participation. Australian & New Zealand Corneal Society Annual Scientific meeting. *Auckland, New Zealand March 15-16.*

Professor Mariapia Degli-Esposti NK Cell Immune Mechanisms in a Natural Host-Pathogen System. *Invited Plenary Lecture. Keystone Viral Immunity meeting, Keystone USA 21-26 March.*

Associate Professor Mei-Ling Tay-Kearney Mabs for Eyes. *Invited Speaker, BIT's 4th Annual International Congress of Antibodies, Beijing, China 26-28 March.*

APRIL

Dr Samuel McLenachan Participant, 16th NSW Stem Cell Workshop: Stem Cell and Treatment of Eye Disease. *University of Western Sydney, 16 April.*

Professor Mariapia Degli-Esposti Participant. NK 2012: 13th International Meeting of the Society for Natural Immunity. *Pacific Grove USA 20-24 April.*

Catherine A. Forbes, Alexandra J. Corbett, Anthony A. Scalzo, Dr Jerome D. Coudert Consequences of natural sequence variations of murine cytomegalovirus m157 for Ly49 receptor specificity, NK cell activation and control of viral replication. Poster Presentation. NK 2012: 13th International Meeting of the Society for Natural Immunity. *Pacific Grove USA 20-24 April.*

Professor William Morgan CSF and Ocular Venous Pressure Measurement in Various Ocular Diseases. *Asia Pacific Academy of Ophthalmology, Busan, South Korea.*

Professor William Morgan Chair symposium – Current imaging techniques related to ocular blood flow, metabolism and function. *Asia Pacific Academy of Ophthalmology, Busan, South Korea.*

Professor William Morgan Glaucoma fellowship training: Approaches, challenges and innovations. *Asia Pacific Academy of Ophthalmology, Busan, South Korea.*

Professor William Morgan Central Venous Pulsation: New Findings and their Clinical Importance. *Asia Pacific Academy of Ophthalmology Congress, Busan, South Korea.*

Professor Ian McAllister Laser chorioretinal anastomosis for CRVO: trial results and their role in future management. *Invited Speaker, Asia Pacific Academy of Ophthalmology Congress, Busan, Korea.*

Professor Ian McAllister VEGF trap-eye in central retinal vein occlusion: 1-year results of the phase 3 GALILEO study. *Invited Speaker, Asia Pacific Academy of Ophthalmology Congress Busan, Korea.*

MAY

Professor Geoffrey Crawford New techniques in the management of keratoconus. *Invited presentation, Optomax 2012, Western Australian Optometry annual conference, Perth, 5-6 May.*

Professor Ian McAllister History of the Ophthalmoscope. *Invited Speaker. Optomax 2012, Western Australian Optometry annual conference, Perth, 5-6 May.*

Professor Ian McAllister Combination treatments for CRVO. *Invited Speaker. Optomax 2012, Western Australian Optometry annual conference, Perth, 5-6 May.*

Dr Charlotte McKnight, Yazar S, Sherwin J, Forward H, Tan A, Young T, Hammond C, Pennell C, Coroneo C, Mackey D. An objective biomarker of ocular sun exposure is inversely correlated with myopia in young adults: The Raine Eye Health Study. *Abstract presentation, Association for Research in Vision and Ophthalmology, Fort Lauderdale US, 6-10 May.*

Dr Hannah Forward, Khan J, McKnight C, Yazar S, Tan AXJ, Newnham J, Pennell C, Mountain J, Hammond C, Young T, Mackey D. Determinants of High

Level Visual Acuity – The Raine Eye Health Study. *Poster presentation, Association for Research in Vision and Ophthalmology, Fort Lauderdale US, 6-10 May.*

Dr Alexander Tan, Forward H, McKnight C, Yazar S, Pennell C, Mountain J, Young T, Hewitt A, Mackey D, Chen F. Choroidal thickness associated with spherical equivalent in healthy young adults: The Raine Eye Health Study. *Oral Presentation, Association for Research in Vision and Ophthalmology, Fort Lauderdale US, 6-10 May.*

Winthrop Professor David Mackey Genome Wide Association Studies in ophthalmology. *Invited Speaker, Duke University, Durham USA, 11 May.*

Dr Jerome Coudert Revisiting the role of MCMV-encoded m157 protein in anti-viral NK cell response. *Presentation to Murdoch University, Institute for Immunology and Infectious Diseases.*

JULY

Winthrop Professor David Mackey Triaging eye emergencies: the role of the nurse in the management of intra-operative complications. *Invited Speaker, Australian Ophthalmic Nurse's Association WA Branch annual meeting, Perth, 28 July.*

Dr Alexander Tan, Forward H, McKnight C, Yazar S, Pennell C, Mountain J, Young T, Hewitt A, Mackey D, Chen F. Choroidal thickness associated with spherical equivalent in healthy young adults: The Raine Eye Health Study. *Oral Presentation, Melbourne Ophthalmic Alumni Meeting, Australia, 28 July.*

AUGUST

Professor Mariapia Degli-Esposti Invited IgV-Mitenyi Winter Seminar Speaker. *ASI-Immunology of Victoria (IgV), Melbourne 1 August.*

Winthrop Professor David Mackey Lecture #1: Genome Wide Association Studies Success in Ophthalmology: an update. Lecture #2: The Raine Eye Health Study: looking at young adult eyes. *Invited Speaker, CERA/Alcon Visiting Professor Program 2012, Melbourne, 6 August.*

Winthrop Professor David Mackey Genetic Epidemiology, Looking at Eye Disease in Tasmania. *Invited talk, CAM 305 Lecture Series, Year 3 Medical Students, University of Tasmania, Hobart, 8 August.*

Professor Geoffrey Crawford Participation, Australasian Society of Cataract & Refractive Surgeons Annual Scientific meeting. *Queenstown, New Zealand, 9-12 August.*

Winthrop Professor David Mackey Outdoor activity and Myopia. *Guest Speaker, Pfizer ophthalmology educational meeting, Perth, 16 August.*

Winthrop Professor David Mackey The role of the Raine Study in improving eye health in Australians. *Invited Speaker, The Raine Study annual scientific meeting, Perth, 17 August.*

Winthrop Professor David Mackey Genome Wide Association Studies Success in Ophthalmology: an update. *Invited speaker, Lung Institute of Western Australia Medical Research Seminar series, Perth 27 August.*

Dr Alex Hewitt Participant. GeneMappers. *Port Douglas Australia.*

Ms Seyhan Yazar*, Mishra A*, Ang W, Kearns LS, Mountain JA, Pennell CE, Montgomery GW, Young TL, Hammond CJ, Macgregor S, Mackey DA, Hewitt AW. Genome Wide Association scan for corneal astigmatism. *Poster presentation, GeneMappers, Port Douglas Australia.*

SEPTEMBER

Winthrop Professor David Mackey How can SD-OCT improve Genome Wide Association Studies? *Invited Speaker, Glaucoma Research Society 2012 meeting, Wurzburg Germany, 8 September.*

Winthrop Professor David Mackey Neuropathies in childhood: news and views. *Invited Speaker, Advances in Ocular Genetics session, World Congress of Paediatric Ophthalmology and Strabismus, Milan Italy, 9 September.*

Professor Geoffrey Crawford Participation, European Society of Cataract & Refractive Surgeons Annual Scientific meeting. *Milan, Italy, 8-12 Sept.*

OCTOBER

Professor Ian Constable Gene therapy for Wet Macular Degeneration. *Invited Speaker, American Retina Society, Washington, 7 October.*

Winthrop Professor David Mackey Genetics, Outdoor Activity and Myopia. *Invited speaker, Wenzhou Medical College, China, 24 October.*

Professor Mariapia Degli-Esposti Invited Attendee, National Health & Medical Research Council Research Translation Faculty Symposium. *Melbourne 24 October.*

NOVEMBER

Dr Alexander Tan, Forward H, McKnight C, Yazar S, Pennell C, Mountain J, Young T, Hewitt A, Mackey D, Chen F. Choroidal thickness associated with spherical equivalent in healthy young adults: The Raine Eye Health Study. *Poster Presentation, RANZCO 44th Annual Scientific Meeting, Melbourne, 23 -28 November.*

Dr Charlotte McKnight, Yazar S, Sherwin J, Forward H, Tan A, Pennell C, Coroneo M, Mackey DA. Sun exposure, outdoor activity and myopia: findings from the Raine Eye Health Study. *Abstract presentation, RANZCO 44th Annual Scientific Meeting, Melbourne, 23 -28 November. Dr McKnight won the John Parr Trophy for best paper presentation from junior doctor.*

Dr Alex Hewitt An update on the genetics of Anterior Uveitis. *Invited Conference Presentation, RANZCO 44th Annual Scientific Meeting, Melbourne, 23 -28 November.*

Ms Seyhan Yazar Monochromatic aberrations, vision and refractive error in healthy young adults. *Oral presentation, RANZCO 44th Annual Scientific Conference,*

Melbourne, 23 - 28 November.

Professor William Morgan. The importance of the translaminar pressure gradient: exploring the dark side of the moon. *Plenary Glaucoma Lecture, Australian Ophthalmic and Vision Sciences meeting, Melbourne.*

DECEMBER

Professor Mariapia Degli-Esposti. Participant. ASI 2012: 42nd Annual Scientific Meeting of the Australasian Society of Immunology. *Melbourne, 2-6 December.*

Dr Christopher Andoniou. Efficient *in vivo* replication of MCMV requires the production of distinct inhibitors for the pro-apoptotic Bax and Bak proteins. *Invited Symposium Speaker. ASI 2012: 42nd Annual Scientific Meeting of the Australasian Society of Immunology, Melbourne, 5 December.*

Winthrop Professor David Mackey. Moderator, Session V - Genetics and Epigenetics. *Austria-ARVO Optic Nerve Degeneration & Ageing Conference, Obergurgl Austria, 6 December.*

Winthrop Professor David Mackey. What genetics have told us about optic nerve degeneration. Invited speaker, Session VII — From Bench to Bedside: Translational Approach and Future Directions. *Austria-ARVO Optic Nerve Degeneration & Ageing Conference, Obergurgl Austria, 7 December.*

Professor Ian Constable. Progress in the development of gene therapy for retinal Disease. *Keynote speaker, the ASM Lim lecture. 10th international conference of Ophthalmology, Hong Kong, 10 December.*

Professor Ian Constable. Gene therapy for Wet AMD: a human clinical trial. *Presidential Opening Address, Asia Pacific Vitreoretinal Society, Hong Kong, 12 December.*

Professor Ian McAllister. Laser vein bypass and its role in the future management of retinal vein occlusion. *Invited speaker, 10th international conference of Ophthalmology /Asia Pacific Vitreoretinal Society, Hong Kong.*

Jean-Louis De Sousa with Dr Dini Dharmawidiarini

Dr Dini Dharmawidiarini

the gift of sight

Bali's poorest and most disadvantaged citizens are receiving the gift of sight thanks to a unique partnership between Bali Eye and the Lions Eye Institute (LEI) in Western Australia.

A Bali-based ophthalmologist, Dr Dini Dharmawidiarini (Dr Dini), visited Perth in March 2012 where she received further training from top eye doctors at LEI.

Bali Eye – or the John Fawcett Foundation (a Rotary project) – was set up 21 years ago with the assistance of LEI founding managing director Professor Ian Constable and is supported by a wide number of medical specialists, including LEI ophthalmologists.

LEI ophthalmologists Jean-Louis De Sousa and Adam Gajdatsy provided additional training to Dr Dini, who has applied these new skills to the treatment of disadvantaged Balinese.

LEI Managing Director Professor David Mackey said he was delighted that LEI could assist Bali Eye in ensuring its locally-based doctors were receiving new skills.

"Western Australians and the Balinese people have a unique and special relationship," he said.

"We have enjoyed the warmth and hospitality of the Balinese for decades and I think many Western Australians are always looking to give something back to the Bali community."

Bali Eye projects include sight restoration and blindness prevention, children's corrective surgery, education assistance, assistance to desperately ill children and young people, and prosthetic eyes.

To find out more, visit balieye.org

publications

CLINICAL GENETICS AND EPIDEMIOLOGY

1. **McKnight CM**, Newnham JP, Stanley FJ, Mountain JA, Landau LI, Beilin LJ, Puddey IB, Pennell CE, **Mackey DA**. Birth of a cohort - the first 20 years of the Raine study. Med J Aust. 2012;197:608-10.
2. De Roach JN, McLaren TL, Paterson RL, O'Brien EC, Hoffmann L, **Mackey DA**, **Hewitt AW**, Lamey IM. Establishment and evolution of the Australian Inherited Retinal Disease Register and DNA Bank. Clin Experiment Ophthalmol. 2012 Oct 19. doi: 10.1111/ceo.12020. [Epub ahead of print].
3. Wiggs JL, **Hewitt AW**, Fan BJ, Wang DY, Figueiredo Sena DR, O'Brien C, Realini A, Craig JE, Dimasi DP, **Mackey DA**, Haines JL, Pasquale LR. The p53 Codon 72 PRO/PRO Genotype May Be Associated with Initial Central Visual Field Defects in Caucasians with Primary Open Angle Glaucoma. PLoS One. 2012;7(9):e45613. doi: 10.1371/journal.pone.0045613. Epub 2012 Sep 26.
4. Mishra A, Yazar S, **Hewitt AW**, Mountain JA, Ang W, Pennell CE, Martin NG, Montgomery GW, Hammond CJ, Young TL, Macgregor S, **Mackey DA**. Genetic variants near PDGFRA are associated with corneal curvature in Australians Invest. Ophthalmol. Vis. Sci. 2012;53:7131-6.
5. Hewitt AW, Yazar S, Franchina M. Explosion of ophthalmic collaborative research networks in Australia. Clin Experiment Ophthalmol. 2012 Sep 7. doi: 10.1111/j.1442-9071.2012.02876.x. [Epub ahead of print].
6. Sanfilippo PG, Hammond CJ, Staffieri SE, Kearns LS, Melissa Liew SH, Barbour JM, **Hewitt AW**, Ge D, Snieder H, Mackinnon JR, Brown SA, Lorenz B, Spector TD, Martin NG, Wilmer JB, **Mackey DA**. Heritability of Strabismus: Genetic influence is specific to eso-deviation and independent of refractive error. Twin Res Hum Genet. 2012;15:624-30.
7. **Franchina M**, Toniolo J, **Mackey DA**, **Hewitt AW**. Google-based search of common blinding diseases: a reflection of public concerns. Letter. Br J Ophthalmol. 2012;96:1444-5.
8. Dimasi DP, Burdon KP, **Hewitt AW**, Fitzgerald J, Wang JJ, Healey PR, Mitchell P, **Mackey DA**, Craig JE. Genetic investigation into the endophenotypic status of central corneal thickness and optic disc parameters in relation to open-angle glaucoma. Am J Ophthalmol. 2012;154:833-842.e2.
9. Sherwin JC, Reacher MH, Keogh RH, Khawaja AP, **Mackey DA**, Foster PJ. The association between time spent outdoors and myopia in children and adolescents: a systematic review and meta-analysis. Ophthalmology. 2012;119:2141-51.
10. Sherwin JC, **Hewitt AW**, **McKnight CM**, Griffiths LR, Coroneo MT, **Mackey DA**. Authors' response: Approach to evaluating the reliability and validity of conjunctival ultraviolet autofluorescence measurement. Letter. Br J Ophthalmol 2012;96:1271.
11. Sharma S, Burdon KP, Chidlow G, Klebe S, Crawford A, Dimasi DP, Dave A, Martin S, Javadiyan S, Wood JPM, Casson R, Danoy P, Griggs K, **Hewitt AW**, Landers J, Mitchell P, **Mackey DA**, Craig JE. Association of genetic variants in the TMCO1 gene with clinical parameters related to glaucoma and characterisation of the protein in the eye. Invest Ophthalmol Vis Sci. 2012;53:4917-25.
12. **Mackey DA**. Your time starts now — translation time lines for major ophthalmic discoveries. Med J Aust. 2012;196:672-674.
13. Verhoeven VJ, Hysi PG, Saw SM, Vitart V, Mirshahi A, Guggenheim JA, Cotch MF, Yamashiro K, Baird PN, **Mackey DA**, Wojciechowski R, Ikram MK, **Hewitt AW**, Duggal P, Janmahasatian S, Khor CC, Fan Q, Zhou X, Young TL, Tai ES, Goh LK, Li YJ, Aung T, Vithana E, Teo YY, Tay W, Sim X, Rudan I, Hayward C, Wright AF, Polasek O, Campbell H, Wilson JF, Fleck BW, Nakata I, Yoshimura N, Yamada R, Matsuda F, Ohno-Matsui K, Nag A, McMahon G, Pourcain BS, Lu Y, Rahi JS, Cumberland PM, Bhattacharya S, Simpson CL, Atwood LD, Li X, Raffel LJ, Murgia F, Portas L, Despriet DD, van Koolwijk LM, Wolfram C, Lackner KJ, Tönjes A, Mägi R, Lehtimäki T, Kähönen M, Esko T, Metspalu A, Rantanen T, Pärssinen O, Klein BE, Meitinger T, Spector TD, Oostra BA, Smith AV, de Jong PT, Hofman A, Amin N, Karssen LC, Rivadeneira F, Vingerling JR, Eiríksdóttir G, Gudnason V, Döring A, Bettecken T, Uitterlinden AG, Williams C, Zeller T, Castagné R, Oexle K, van Duijn CM, Iyengar SK, Mitchell P, Wang JJ, Höhn R, Pfeiffer N, Bailey-Wilson JE, Stambolian D, Wong TY, Hammond CJ, Klaver CC. Large scale international replication and meta-analysis study confirms association of the 15q14 locus with myopia. The CREAM consortium. Hum Genet. 2012;131:1467-80.
14. Sherwin JC, **Hewitt AW**, Coroneo MT, Kearns LS, Griffiths LR, **Mackey DA**. The association between time spent outdoors and myopia using a novel biomarker of outdoor light

exposure Invest. Ophthalmol. Vis. Sci. 2012;53:4363-70.

15. Ma Y, Kawasaki R, Dobson LP, Ruddle JB, Kearns LS, Wong TY, **Mackey DA**. Quantitative Analysis of Retinal Vessel Attenuation in Eyes with Retinitis Pigmentosa. Invest Ophthalmol Vis Sci. 2012;53:4306-14.
16. Edwards TL, Burt BO, Black GC, Perveen R, Kearns LS, Staffieri SE, Toomes C, Buttery R, **Mackey DA**. Familial retinal detachment associated with COL2A1 exon 2 and FZD4 mutations. Clin Experiment Ophthalmol. 2012;40:476-483.
17. Van Koolwijk LM, Ramdas WD, Ikram MK, Jansonius NM, Pasutto F, Hysi PG, Macgregor S, Janssen SF, **Hewitt AW**, Viswanathan AC, Ten Brink JB, Hosseini SM, Amin N, Despriet DD, Willemse-Assink JJ, Kramer R, Rivadeneira F, Struchalin M, Aulchenko YS, Weisschuh N, Zenkel M, Mardin CY, Gramer E, Welge-Lüssen U, Montgomery GW, Carbonaro F, Young TL; The DCCT/EDIC Research Group, Bellenguez C, McGuffin P, Foster PJ, Topouzis F, Mitchell P, Wang JJ, Wong TY, Czudowska MA, Hofman A, Uitterlinden AG, Wolfs RC, de Jong PT, Oostra BA, Paterson AD; Wellcome Trust Case Control Consortium 2, **Mackey DA**, Bergen AA, Reis A, Hammond CJ, Vingerling JR, Lemij HG, Klaver CC, van Duijn CM. Common Genetic Determinants of Intraocular Pressure and Primary Open-Angle Glaucoma. PLoS Genet. 2012;8:e1002611.
18. **Mackey DA**. Training the next generation of specialists: an eye on meeting future workforce needs. Medicus. 2012 April: 37.
19. Abbott D, Li YJ, Guggenheim JA, Metlapally R, Malecaze F, Calvas

Matt Brown and John Forrester

ian constable lecture

Internationally-renowned geneticist Professor Matt Brown spoke on Genetics and the Future of Medicine for this year's Ian Constable Lecture at The University of Western Australia.

The prestigious lecture is presented each year by the Lions Eye Institute (LEI) and is named after Professor Ian Constable, who founded the Institute and is recognised as one of the world's leading ophthalmic surgeons.

Professor Brown, who is Professor of Immunogenetics and Director of the Diamantina Institute at the University of Queensland, trained in medicine and rheumatology in Sydney before moving to the University of Oxford in 1994. There he built a large research group focusing on genetics of bone and joint diseases.

Professor Brown was also one of the founding investigators of the Welcome Trust Case-Control Consortium, which developed a new method for identifying genes in common human diseases – an advance that has had a profound influence on genetics.

In addition to delivering his lecture, Professor Brown's brief stay in Perth included an interview with Gillian O'Shaughnessy on ABC 720 and time spent with LEI Managing Director Professor David Mackey, Professor Ian Constable, Professor John Forrester, NHMRC Fellow Dr Alex Hewitt and Professor Luba Kalaydjieva from the Western Australian Institute for Medical Research.

The lecture was also broadcast nationally on the ABC's Big Ideas program.

Professor Mackey said Professor Brown had established a range of research programs in the genetics of common diseases including rheumatoid arthritis, obesity, cancer and multiple sclerosis.

"While genetics is a relatively recent discipline of medical practice and research, amazing progress has been made in mapping the structure of the human genome and how it operates to control the body," he said.

"The study of genetics is now moving on from its capacity to identify the causes of disease and predict disease risk to the question of disease prevention and how diseases arise."

Professor Brown's fully booked lecture included topics on a range of fascinating ethical issues that fully engaged the audience.

P, Rosenberg T, Paget S, Zayats T, **Mackey DA**, Feng S, Young TL. An international collaborative family-based whole genome quantitative trait linkage scan for myopic refractive error. Mol Vis. 2012;18:720-9.

20. Burdon KP, Crawford A, Casson RJ, **Hewitt AW**, Landers J, Danoy P, **Mackey DA**, Mitchell P, Healey PR, Craig JE. Glaucoma risk alleles at CDKN2B-AS1 are associated with lower intraocular pressure, normal-tension glaucoma, and advanced glaucoma. Ophthalmology. 2012;119:1539-45.
21. Sherwin JC, **McKnight CM**, **Hewitt AW**, Griffiths LR, Coroneo MT, **Mackey DA**. Reliability and validity of conjunctival ultraviolet autofluorescence measurement. Br J Ophthalmol. 2012;96:801-5.
22. Ng W, Pasutto F, Bardakjian T, Wilson M, Watson G, Schneider A, **Mackey DA**, Grigg J, Zenker M, Jamieson R. A puzzle over several decades: eye anomalies with FRAS1 and STRA6 mutations in the same family. Clin Genet. 2012 Jan 27. [Epub ahead of print].
23. Webb TR, Matarin M, Gardner JC, Kelberman D, Hassan H, Ang W, Michaelides M, Ruddle JB, Pennell CE, **Yazar S**, Khor CC, Aung T, Yogarajah M, Robson AG, Holder GE, Cheetham ME, Traboulsi E, Moore AT, Sowden JC, Sisodiya SM, **Mackey DA**, Tuft SJ, Hardcastle AJ. X-Linked Megalocornea caused by mutations in CHRDL1 identifies an essential role for Ventroptin in anterior segment development. Am J Hum Genet. 2012;90:1–13.

PHYSIOLOGY AND PHARMACOLOGY

24. **Yu DY, Kang MH**, **Balaratnasingam C**, **Yu PK**, **Morgan WH**, **McAllister IL**, **Cringle SJ**. Author response: morphometric characteristics of central retinal artery and vein in the optic nerve head of patients with diabetes. Invest Ophthalmol Vis Sci. 2012 Mar 21;53(3):1637-8. Letter.
25. **Morgan WH**, Lind CR, **Kain S**, **Fatehee N**, Bala A, **Yu DY**. Author response: retinal vein pulsation is in phase with intracranial pressure and not intraocular pressure. Invest Ophthalmol Vis Sci. 2012 Oct 3;53:6880. Letter.
26. Berdahl JP, **Yu D-Y**, **Morgan WH**. The translaminar pressure gradient in sustained zero gravity, idiopathic intracranial hypertension, and glaucoma. Medl Hypotheses. 2012;79:719-724
27. **Tan P**, **Yu PK**, **Balaratnasingam C**, **Cringle SJ**, **Morgan WH**, **McAllister IL**, **Yu DY**. Quantitative confocal imaging of the retinal microvasculature in the human retina. Invest Ophthalmol Vis Sci. 2012;53:5728-5736.
28. Chan G, **Balaratnasingam C**, **Yu PK**, **Morgan WH**, **McAllister IL**, **Cringle SJ**, **Yu DY**. Quantitative morphometry of perifoveal capillary networks in the human retina. Invest Ophthalmol Vis Sci. 2012;53:5502-5514.
29. **Morgan WH**, **Yu DY**. Surgical management of glaucoma: a review. Clin Experiment Ophthalmol. 2012;40:388-99. Review.
30. **Morgan WH**, Lind CRP, **Kain S**, **Fatehee N**, Bala A, **Yu DY**. Retinal vein pulsation is in phase with intracranial pressure and not intraocular pressure. Invest Ophthalmol Vis Sci. 2012;55:4676-4681.
31. **Su EN**, **Cringle SJ**, **McAllister IL**, and **Yu DY**. An experimental study of VEGF induced changes in vasoactivity in pig retinal arterioles and the influence of an anti-VEGF agent. BMC Ophthalmology. 2012. doi:10.1186/1471-2415-12-10.
32. **McKnight CM**, Richards JC, Daniels D, **Morgan WH**. Brimonidine (Alphagan) associated anterior uveitis. Brit J Ophthalmol. 2012. doi 10.1136/bjophthalmol-2011-300872. Letter.
33. **Cringle SJ**, **Yu D-Y.** Damping of intraocular pressure fluctuations. Clin Experiment Ophthalmol. 2012;40:881-887.
34. **Yu PK**, **Tan PEZ**, **Morgan WH**, **Cringle SJ**, **McAllister IL**, **Yu DY**. Age related changes in venous endothelial phenotype at human retinal artery-vein crossing points. Invest Ophthalmol Vis Sci. 2012;53:1108-1116.

IMMUNOLOGY

35. Ruutu M, Thomas G, Steck R, **Degli-Esposti MA**, **Zinkernagel MS**, Alexander K, Velasco J, Strutton G, Tran A, Benham H, Rehaume L, Wilson RJ, Kikly K, Davies J, Pettit AR, Brown MA, McGuckin MA, Thomas R. -glucan triggers spondylarthritis and Crohn's disease-like ileitis in SKG mice. Arthritis Rheum. 2012 Jul;64(7):2211-22. doi: 10.1002/art.34423.
36. Taylor SJ, Dagger SA, Thien CB, **Wikstrom ME**, Langdon WY. Flt3 inhibitor AC220 is a potent therapy in a mouse model of myeloproliferative disease driven by enhanced wild-type Flt3 signaling. Blood. 2012 Sep 18. [Epub ahead of print].
37. Terme M, Ullrich E, Aymeric L, Meinhardt K, **Coudert JD**, Desbois M, Ghiringhelli F, Viaud S, Ryffel B, Yagita H, Chen L, Mécheri S, Kaplanski G, Prévost-Blondel A, Kato M, Schultze JL, Tartour E, Kroemer G, **Degli-Esposti M**, Chaput N, Zitvogel L. Cancer-induced immunosuppression:

IL-18-elicited immunoablative NK cells. Cancer Res. 2012;72:2757-67.

38. **Lai CM**, **Estcourt MJ**, **Himbeck RP,** Lee SY, Yew-San Yeo I, Luu C, Loh BK, Lee MW, Barathi A, Villano J, Ang CL, van der Most RG, **Constable IJ**, Dismuke D, Samulski RJ, **Degli-Esposti MA**, **Rakoczy EP**. Preclinical safety evaluation of subretinal AAV2. sFlt-1 in non-human primates. Gene Ther. 2012;19:999-1099.

39. **Zinkernagel MS**, **Petitjean C**, **Wikstrom ME**, **Degli-Esposti MA**. Kinetics of ocular and systemic antigen-specific T-call responses elicited during murine cytomegalovirus retinitis. Immunol Cell Biol. 2012 Mar;90(3):330-6.

MOLECULAR OPHTHALMOLOGY

40. **Binz N**, **Ali Rahman IS**, **Chinnery HR**, **McKeone R**, Simpson KM, Speed TP, **Lai CM**, **Rakoczy PE**. Effect of VEGF upregulation on retinal gene expression in the Kimba mouse. Clin Experiment Ophthalmol. 2012 Jul 12. doi: 10.1111/j.1442-9071.**2012**.02845.x. [Epub ahead of print].

41. **Vagaja NN**, **Chinnery HR**, **Binz N**, Kezic JM, **Rakoczy EP**, **McMenamin PG**. Changes in murine hyalocytes are valuable early indicators of ocular disease. Invest Ophthalmol Vis Sci. 2012;53:1445-51.

OCULAR TISSUE ENGINEERING

42. Yeoh J, Rahman W, **Chen FK**, da Cruz L. Use of spectral-domain optical coherence tomography to differentiate acquired retinoschisis from retinal detachment in difficult cases. Retina. 2012;32:1574-80.

43. **Chen FK**, Yeoh J, Rahman W, Patel PJ, Tufail A, Da Cruz L. Topographic variation and interocular symmetry of macular choroidal thickness using enhanced depth imaging optical coherence tomography. Invest Ophthalmol Vis Sci. 2012; 53:975-85.

44. Rahman W, **Chen FK**, Yeoh J, da Cruz L. Enhanced depth imaging of the choroid in patients with neovascular age-related macular degeneration treated with anti-VEGF therapy versus untreated patients. Graefes Arch Clin Exp Ophthalmol. 2012 Nov 17. [Epub ahead of print].

CLINICIAN SCIENTISTS

45. Ting DS, **Tay-Kearney ML**, Vignarajan J, Kanagasingam Y. Diabetic retinopathy screening: can the viewing monitor influence the reading and grading outcomes. Eye (Lond). 2012;26:1511-1516 [Epub ahead of print].

46. **McAllister IL**, Gillies ME, **Smithies LA**, Rochtchina E, Harper CA, Daniell MD, **Constable IJ**, Mitchell P. Factors Promoting Success and Influencing Complications in Laser-Induced Central Vein Bypass. Ophthalmology. 2012;119:2579–2586

47. Vermeulen TL, **Isaacs TW**, Spagnolo D, Amanuel B Rosai-Dorfman disease presenting as choroidal melanoma: a case report and review of the literature. Graefes Arch Clin Exp Ophthalmol. 2012 Oct 24. [Epub ahead of print].

48. Xiao D, Vignarajan J, **Lock J**, Frost S, **Tay-Kearney M-L**, Kanagasingam Y. Retinal image registration and comparison for clinical decision support. Australasian Medical Journal. 2012;5:507-512.

49. Xiao D, Frost S, Vignarajan J, **Lock J**, **Tay-Kearney M-L**, Kanagasingam Y. Retinal image enhancement and registration for the evaluation of longitudinal changes. In Proc. of SPIE, Medical Imaging 2012, Computer-Aided Diagnosis, Vol. 8315, 831520, February 2012.

50. Xiao D, Vignarajan J, **Lock J**, **Tay-Kearney M-L**, Kanagasingam Y. Retinal image registration and comparison for clinical decision support, Proceedings of The First Australian Workshop on Artificial Intelligence in Health (AIH 2011), in conjunction with the 24th Australian Joint Conference on Artificial Intelligence (AI 2011), 71-72, Perth, December, 2011.

51. Ting D, Kanagasingam Y, **Constable IJ**, **Tay-Kearney M-L**. Video imaging technology: a novel method for diabetic retinopathy screening. 2012, Part 1, Chapter 4, pages 37-43 in Digital Teleretinal Screening - Teleophthalmology in Practice. Eds: Kanagasingam, Cuadros, Goldschmidt. doi 10.1007/978-3-642-25810-7_4, © Springer-Verlag.

52. Sallo FB, Peto T, Egan C, Wolf-Schnurrbusch UE, Clemons TE, Gillies MC, Pauleikhoff D, Rubin GS, Chew EY, Bird AC; MacTel Study Group (inc **Constable I**). The IS/OS junction layer in the natural history of type 2 idiopathic macular telangiectasia. Invest Ophthalmol Vis Sci. 2012;53:7889-95.

53. Sallo FB, Peto T, Egan C, Wolf-Schnurrbusch UE, Clemons TE, Gillies MC, Pauleikhoff D, Rubin GS, Chew EY, Bird AC; MacTel Study Group (inc **Constable I**). "En face" OCT imaging of the IS/OS junction line in type 2 idiopathic macular telangiectasia. Invest Ophthalmol Vis Sci. 2012;53:6145-52.

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 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 Non-invasive retinal vein pulsation pressure measurement: A new assessment of glaucoma treatment	Morgan, W Yu, D-Y
NHMRC Project Grant Long-term human response following subretinal injection of recombinant adenoassocited virus-sFlt-1 vector	Rakoczy, P
NHMRC Project Grant The balance of signals received by NK cells is modulated by viruses as a mean of immune escape	Coudert, J
NHMRC Project Grant Defining the requirement for the inhibition of Bak to the pathogenesis of cytomegalovirus infection	Andoniou, C
NHMRC Project Grant Do resident immune cells cause retinal damage in diabetes?	McMenamin, P Rakoczy, P Degli-Esposti, M Scalzo, T
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 Development Grant Developing a protype laser system for intraocular surgery	Yu, D-Y McAllister, I Cringle, S
NHMRC Scholarship Grant	Kang, M
NHMRC Scholarship Grant	Forward, H
ARC Centre of Excellence Centre of Excellence in Vision Science	Yu, D-Y Cringle, S
Ophthalmic Research Institute of Australia Intravitreal Tenecteplase (meetalyse) (TNK) as an acute treatment for blockages in retinal veins (RVOs).	McAllister, I Vijayasekaran, S Degli-Esposti, M Yu, P
Ophthalmic Research Institute of Australia Raine Eye Health Study - Ocular Biometry and Ultraviolet Exposure	Tan, A Forward, H McKnight, C
Retina Australia Microperimetry natural history study of Stargardt's macular dystrophy	Chen, F
Indigenous and Remote Eye Health Service Telemedicine Project Officer	Turner, A
INTERNATIONAL COMPETITIVE GRANTS	
Alcon Research Young Investigator Grant	Hewitt, A

GOVERNMENT GRANTS	
Government of Western Australia	
Department of Health	
Round 15 MHRIF	
Department of Foreign Affairs and Trade Development of a Centre for Genetic Eye Research and Twins Eye Study in Vellore India	Mackey, D

OTHER GRANTS	
Channel 7 Telethon Trust GWAS Analysis for Raine Eye Health Study	Mackey, D
Channel 7 Telethon Trust The effects of Lifestyle on Myopia	Mackey, D
Harvard Club of Australia Australia-Harvard Fellowship	Coudert, J Radfar, S
McCusker Charitable Foundation Remote Eye Health	Turner, A
Eye Surgery Foundation Project Tele-ophthalmology for the northwest region of WA	Turner, A
Raine Medical Research Foundation Visiting Professor Lecture Series	Mackey, D
University of Western Australia AA Saw Scholarship	Mcknight, C
University of Western Australia AA Saw Scholarship	Tan, A
University of Western Australia AA Saw 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 Alvina King Living Allowance	Tan, P
University of Western Australia Centre for Ophthalmology and Visual Science Infrastructure Funding	
Lions Save-Sight Foundation Research Support	
TOTAL GRANTS 2012	**$4,557,410**

Managing Director David Mackey welcomes Lions visitors

crusade against darkness

In 1925, when Helen Keller urged Lions Clubs to join her in a “crusade against darkness”, she planted a seed that has yielded a rich harvest all over the world. During the Perth based 60th National Lions Convention, a group of Lions toured the Lions Eye Institute, seeing firsthand the work done ‘to achieve excellence in scientific research and clinical practice to prevent blindness’.

‘TO ACHIEVE EXCELLENCE IN SCIENTIFIC RESEARCH AND CLINICAL PRACTICE TO PREVENT BLINDNESS.’

financials

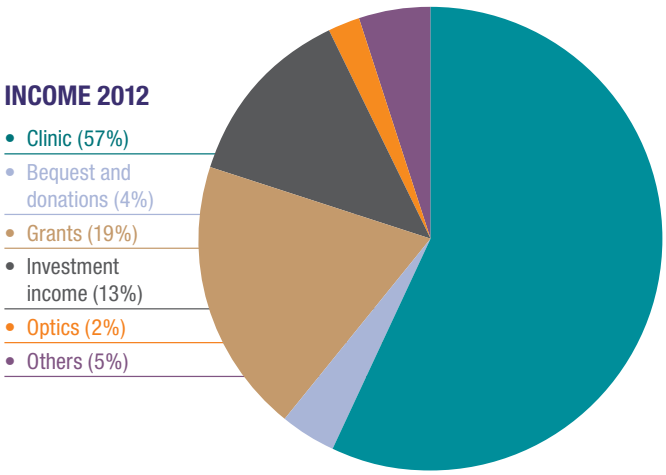
The Company is a charitable and health promotion institution. The principal activities during the year were medical research and promotion of eye care through education and training of medical and allied health professionals, and fundraising to support research activities.

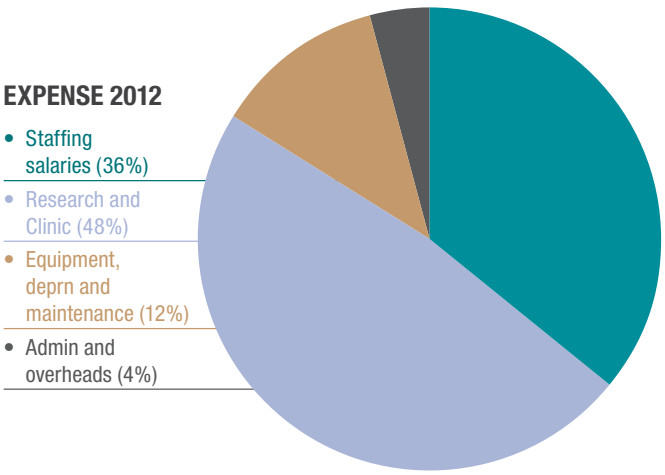
To enable measurement of our activity and performance we have included the following financial information from the Audited Special Purpose Financial Statements for the year ending 31 December 2012 and details of Research Grant Funds.

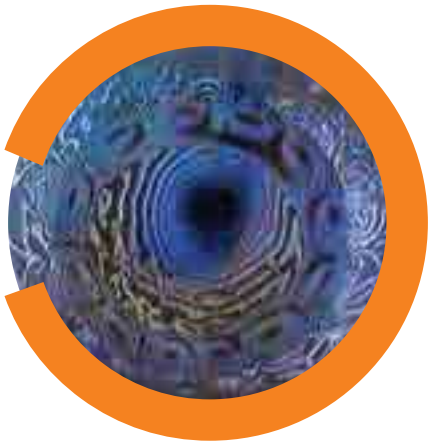
Investment Committee

The Investment Committee reports to the Board of Directors and is responsible for overseeing the Institute's endowment fund. The committee is Chaired by Rudolph Brunovs and includes David Mackey, Sharon Hicks, Richard Adler and Chee-Peng Yao as members.

STATISTICAL SUMMARY	2012 $	2011 $	2010 $	2009 $	2008 $
Total income	20,395,495	19,444,853	14,357,478	15,978,757	13,784,655
Total expenditure	(17,201,118)	(15,700,861)	(13,655,814)	(12,011,172)	(14,860,707)
Net assets	29,109,847	24,739,217	20,995,225	20,293,561	16,325,976
Property, plant and equipment (net)	8,052,039	7,141,125	7,595,237	6,995,570	7,049,392
AVERAGE NO. OF FTE STAFF	**93**	**85**	**82**	**82**	**67**







INCOME STATEMENT		
FOR THE YEAR ENDED 31 DECEMBER	**2012 $**	**2011 $**
Total income including research grants	20,395,495	19,444,853
Total expenditure including research expenses	(17,201,118)	(14,481,889)
Operating profit before significant items	3,194,377	4,962,964
Significant item (Fair value)	1,176,253	(1,218,972)
Operating (loss)/profit after significant items	4,370,630	3,743,992
Accumulated profit at the beginning of the year	**3,743,992**	**0**
Accumulated profit at the end of the year	**8,114,622**	**3,743,992**
Significant item comprised of fair value adjustment of investments to market value total	1,176,253	(1,218,972)
TOTAL	**1,176,253**	**(1,218,972)**
GENERAL AVAILABLE CASH AND BEQUEST FUNDS		
Research grant funds not yet spent	8,354,581	6,108,353
Endowment fund	12,186,055	11,313,846
Joyce Henderson Bequest - Restricted cash	3,180,578	3,007,969
Capital Fundraising Campaign - Restricted cash	1,413,802	752,005
General cash reserves	4,718,107	2,744,259
CASH AT BANK AND BEQUEST FUNDS	**29,853,123**	**23,926,432**

BALANCE SHEET			
AS AT 31 DECEMBER		**2012 $**	**2011 $**
TOTAL FUNDS		**29,109,847**	**24,739,217**
Represented by	Cash assets	18,136,163	12,612,586
	Other assets	1,761,406	1,886,843
	Other financial assets	11,716,960	11,337,388
	Property, plant and equipment	8,052,039	7,141,125
TOTAL ASSETS		**39,666,568**	**32,977,942**
Payables		1,341,330	1,415,872
Research grant funds not yet spent		8,354,581	6,108,353
Provision for employee entitlements		860,810	714,500
TOTAL LIABILITIES		**10,556,721**	**8,238,725**
NET ASSETS		**29,109,847**	**24,739,217**

General Available Cash and Bequest Funds

LEI's cash and bequest funds include some amounts specifically set aside for ongoing research projects, enabling the Institute to continually expand into new areas of research and to support the further development of existing projects that are showing promising results.

The Joyce Henderson Bequest Fund was established in December 2011 to fund in perpetuity the Joyce Henderson Paediatric Ophthalmology Fellowship and to conduct clinical work at the Princess Margaret Hospital as well as research through LEI into causes, prevention and treatment of eye injuries in children.

Executive Committee

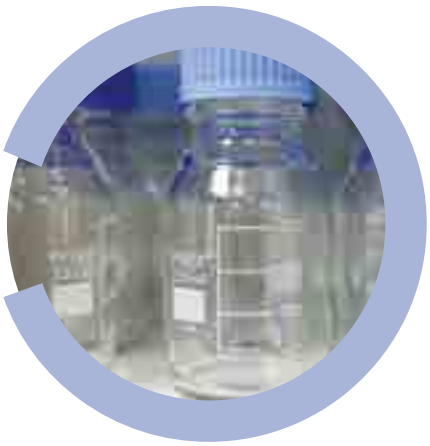
Our Executive Committee consisting of senior management personnel meet regularly to discuss key budgetary, operational and strategic activities.

financials

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 2012.

		2012 $	2011 $
INCOME			
Donations and subscriptions		850	1,050
Imputation credit		33,370	28,785
Interest and investment income		58,876	61,775
Dividends and trust distributions		52,828	49,737
Fair value adjustment of investment to market value		301,771	0
TOTAL INCOME		**447,695**	**141,347**
LESS EXPENDITURE			
Audit fees		2,835	2,475
Bank fees		90	70
Donation - financial		0	81,406
General stationery		0	0
Insurance		2,485	2,485
Fair value adjustment of Investment to market value		0	102,460
TOTAL EXPENDITURE		**5,410**	**188,896**
NET (LOSS)/PROFIT FOR THE YEAR		**442,285**	**(47,549)**
Accumulated funds at the beginning of year		2,482,564	2,530,113
ACCUMULATED FUNDS AT END OF THE YEAR		**2,924,849**	**2,482,564**
Represented by	CURRENT ASSETS		
	Cash at bank	1,139,598	1,049,744
	Other assets	10,749	11,999
		1,150,347	1,061,743
	NON-CURRENT ASSETS		
	Investments	1,777,252	1,423,321
TOTAL ASSETS		**2,927,599**	**2,485,064**
	CURRENT LIABILITIES		
	Other creditors	2,750	2,500
NET ASSETS		**2,924,849**	**2,482,564**



"THE INSTITUTE CONTINUES TO RECEIVE MUCH NEEDED SUPPORT FROM THE LIONS SAVE SIGHT FOUNDATION AND THE AUSTRALIAN FOUNDATION FOR THE PREVENTION OF BLINDNESS TRUST. BOTH ORGANISATIONS HAVE SHOWN AN ONGOING COMMITMENT TO HELPING THE INSTITUTE IN MANY WAYS..."

ABOUT US

In 1975 the Lions Save-Sight Foundation (LSSF) established the Lions Chair in Ophthalmology at the University of Western Australia. Professor Ian Constable AO was appointed to this position and subsequently established the Lions Eye Institute (LEI) in 1983.

The LEI employs scientists, clinicians and support staff to conduct first class scientific research into blindness and incorporates one of Australia's largest ophthalmic practices. The Institute also houses the Lions Eye Bank and the Lions Save Sight Foundation (LSSF).

The LEI's longevity and internationally recognised reputation is testament to the excellence of its research and clinical capabilities. Research groups at the LEI are involved in both national and international collaborative programs.

The Institute actively participates in numerous clinical trials which enable scientists, ophthalmologists and pharmaceutical companies to develop new treatments for eye diseases.

GOVERNANCE

In meeting its obligations to the community the Institute adheres to high standards of corporate governance as a limited liability company with not-for-profit and Tax Exempt Gift Recipient status.

AUDIT GOVERNANCE

The Institute engages Grant Thornton Audit Pty Ltd as an external audit team to independently review its financial reports and uphold the integrity of the reporting process.

Electronic version of this report is available on our website **www.lei.org.au**

Lions Eye Institute

Lions Eye Institute ABN 48 106 521 439
2 Verdun Street, Nedlands WA 6009
t +61 8 9381 0777 | **f** +61 8 9381 0700
e enquiry@lei.org.au | **www.lei.org.au**