

40 years of scientific breakthroughs

At the Lions Eye Institute, we invest in world-class research and its translation into clinical practice in metropolitan, rural and remote Western Australia, resulting in better vision for all.

The Lions Eye Institute, established in 1983 by Professor Ian Constable AO, is a leading eye research institute in the Asia-Pacific region. It is situated in Perth, Western Australia on the QEII health campus. Together with its world-class research laboratories, the Lions Eye Institute attracts the brightest minds with its unique business model of clinicians and ophthalmic researchers working side by side to improve vision for all.



Our foundations for success



Award-winning researchers and clinicians who are globally recognised for their experience and commitment to preventing and curing blindness and eye disease.



Significant commitment to eye research and eye health care in the community. This includes regional, remote and Aboriginal and Torres Strait Islander communities in Australia, and in developing countries.



Globally significant collaborations that underpin leading edge research programs.



World-class research laboratories funded by the Government and by individual philanthropists and corporate partners.

We are recognised by leading global companies

- **Google Health** made a philanthropic donation to support age-related macular degeneration research, recognising the Lions Eye Institute as a leader in innovative eye research.
- **World Health Organisation's** first global report on vision in 2019 featured Lions Outback Vision as a case study, "*Engaging rural and remote communities through telehealth*".
- The Lions Eye Institute is working with **NASA** and the Australian Space Agency to find a treatment for space associated vision loss in preparation for the first mission to Mars.

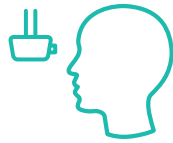


Greatest inventions and innovative achievements



Developed **Adenoviral vector 101** gene therapy with Adverum Biotechnologies for the treatment of wet age-related macular degeneration. Listed on NYSE and currently in trials.

Prototype development for non-invasive **Intra Cranial Pressure** measurement, which will provide a benefit to hospital accident and emergency departments, and to astronauts in space.

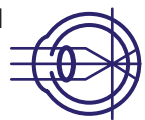


Developed the **first artificial cornea**, the AlphaCor, and successfully implanted it into patients in the US, Australia and India.



Invented the **XEN® Glaucoma Gel Stent** which has been used successfully in more than **100,000** patients globally.

Excimer laser surgical system to correct refractive errors of the eye such as myopia with successful international sales of machines up to 2010.

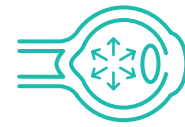


Houses the facility for a national **DNA bank** – Australia's only biobank that stores DNA from patients and their family members with a genetic eye disease. Home to one of the largest glaucoma biobanks in the world, with over 5,000 DNA samples and clinical material from familial and sporadic cases of glaucoma, supporting research into the genetics of glaucoma.

Developed **immune therapy** to manage treatment of cytomegalovirus (CMV) in transplant patients. This breakthrough provides a new strategy to control CMV reactivation and has the potential to reduce rates of sickness and death among organ and bone marrow transplant recipients.



50 clinical trials and studies are managed per year. Clinical trials enable new developments and treatments for blinding eye conditions to be made available to patients attending the Lions Eye Institute's clinics.



Invented the **Virna Glaucoma Drainage Device** a low cost device now being manufactured and used in Indonesia with over 1,000 implemented. This device is the only one approved by the Indonesian Ministry of Health and is sold at cost price (AUD\$100, one tenth the common commercial charge) for affordable, effective treatment of glaucoma.



Developed the **central retinal vein occlusion bypass laser surgery** procedure. A treatment improving vision for sufferers of nonischemic central retinal vein occlusion (CRVO).

Invented the **Barrett Universal II Formula**, considered to be one of the most accurate intraocular lens power calculation formulas. It is globally recognised and used to improve the refractive accuracy outcomes of cataract surgery.

$$\Sigma = \sqrt{x}$$



Our emerging inventions

Advanced medical imaging and artificial intelligence will bridge geographical challenges. We will create transferrable models of screening, referral and treatment of disease for diabetic patients living in rural and remote Western Australia.

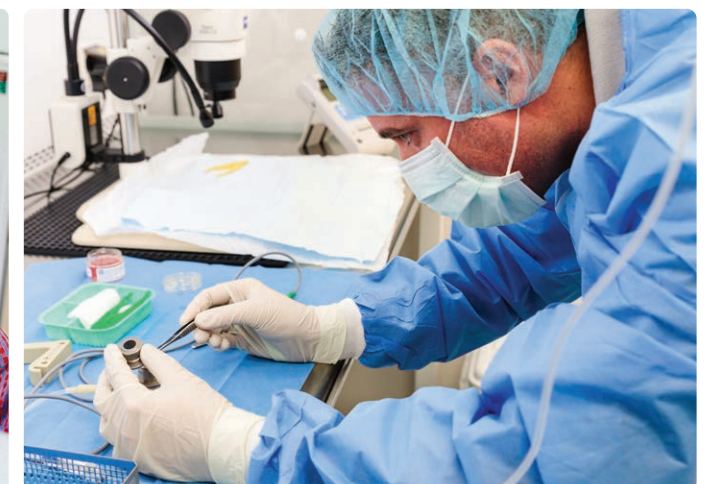
Tonometer to provide accurate intraocular (eye) pressure measurements for glaucoma.

Non-invasive intra cranial pressure (ICP) device aims to replace existing process which requires puncturing a hole in the cranium or the spinal cord to measure the pressure of the spinal fluid.

A cure for retinitis pigmentosa 11 (RP-11) using novel gene therapy which is currently under development in Perth, Western Australia by Vision Pharma, a joint venture between PYC Therapeutics and the Lions Eye Institute. The work is based on a drug patented by the Institute.

A world-first imaging device being developed will enable doctors to image lymphatic vessels. The OCT – lymphangiography technology will be able to visualise the tiny transparent vessels which collect and drain fluid and debris from soft tissue and are vital for the success of most glaucoma surgeries.

Laser surgical system to treat branch retinal vein occlusion and glaucoma.



Meet our world-class researchers behind these innovations and inventions



**Professor
Ian Constable AO**

Founder of the Lions Eye Institute and leader in ophthalmic care in Western Australia. Led the clinical trials to discover gene therapy to treat wet age-related macular degeneration and the artificial cornea.



**Professor
William Morgan**

Co-invented the original XEN® Glaucoma Gel Stent and Virna glaucoma drainage device, ICP prototype and space agency work.



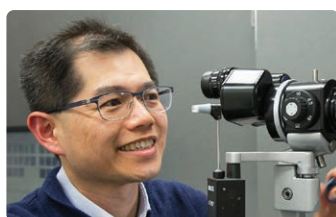
**Professor
Dao-Yi Yu AM**

Co-invented the XEN® Glaucoma Gel Stent that revolutionised the treatment of glaucoma, CRVO bypass, ICP prototype and Tonometer.



**Professor
David Mackey AO**

Received the largest National Health and Medical Research Council (NHMRC) government grant for eye research in Australia.



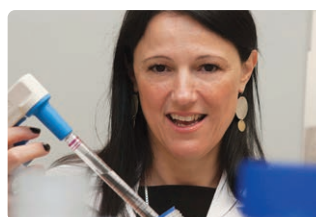
**Associate Professor
Fred Chen**

Leading development of cures for genetic eye disease, in particular retinitis pigmentosa, and significant clinical trials.



**Professor
Ian McAllister**

Pioneered the CRVO bypass laser surgery procedure.



**Professor
Mariapia Degli-Esposti**

Received the Eureka Prize in Scientific Research 2019 for discoveries in the field of immune therapy.



**Professor
Elizabeth Rakoczy**

Led pioneering research to discover gene therapy for wet age-related macular degeneration.



**Associate Professor
Hessom Razavi**

Developed the virtual reality eyeball navigation system to enhance teaching in eye care for medical students. This virtual eyeball also helps demystify eye disease for patients.



**Professor
Graham Barrett**

Leading cataract surgeon and intraocular lens design, calculation and assessment pioneer.



**Associate Professor Angus Turner,
McCusker Director Lions Outback Vision**

Attained the 2019 Western Australian of the Year (Professions category) and 2014 Rural Health Extraordinary Award to Outreach Services. He is expert in Indigenous eye health delivery using a variety of medical access models.