



SAVE SIGHT
INSTITUTE
UNIVERSITY OF SYDNEY

Annual Report 2003



Sight for Life

1. The Save Sight Institute Vision and Mission



The Save Sight Institute is located on the historic site of Sydney's first hospital and shares this home with the Sydney Eye Hospital

**Sight
for Living,
Sight for Life!**

Established on 6 May 1985, the Save Sight Institute is a not-for-profit organisation working with government and community to save sight. Its work and its vision provide a unique fusion of scientific endeavour, clinical excellence and community spirit!



Our Vision:

Sight for Life
for the whole community.

The Mission:

New Knowledge Creation
to save sight.

Research Focus:

**Eye Disease &
Vision Science**

ensuring that the unsolved blindness of today becomes curable and preventable tomorrow.

**Communication
Technologies**

exploiting digital media to train the next generation of eye doctors; increasing community awareness and extending eye health services to remote and rural communities.

**Community Service &
Eye Care**

developing eye health services, diagnostic tools and screening programs for prevention of eye disease.

2. Table of Contents



New Knowledge
Creation to
Save Sight

1	Save Sight Institute – Vision and Mission	p2
2	Table of Contents	p3
3	President's Report	p4
4	Director's Report	p5
5	Save Sight Institute Staff	p7
6	Spectrum of Eye Disease – SSI Research & Response	p10
7	Teaching Activities	p15
8	Community Activities in Australia	p20
9	Community Activities in World Ophthalmic Health	p24
10	Clinical & Laboratory Research	p26
11	Funded Research Projects	p27
12	Publications in 2003	p29
13	Abridged Financial Statements	p31
14	Major Donations	p33
15	Share the Vision – Invest in the future	p35

3. President's Report



The Save Sight
Institute...
an internationally
recognised eye and
vision research
Institute

This report details another year of progress for the Save Sight Institute. Following the annual meeting held on 25th August 2003 I was honoured to be re-elected by the Council as your President for the year ahead. We welcomed two new ex officio members to Council: Professor Don Nutbeam, Pro Vice-Chancellor, and the Dean, Professor Andrew Coats. They succeed Professor John Young and Professor Stephen Leeder following their retirement. We also bade farewell to Mr Stephen Stux, a staunch supporter who retired after six years on Council. We thank him for his service.

The Institute is indebted to the support provided by NSW & ACT Lions to us and to our sister organisation, the Lions Eye Bank. The close link we share is maintained with three members of the Lions elected to the SSI Council each year at their annual conference. Mr Alan Judd, who has served as Deputy President of the Institute since its inception in 1986 decided to stand down and did not seek re-election by the Lions. Our sincere thanks to him not only for his long and dedicated service but also for the part he and Lions played in funding the start up of the Institute. Mr Greg Dunn, Ms Michele Bentley and Mr John Layhe were elected by Lions to Council and Council elected Mr Greg Dunn as Deputy President. We welcome Mr John Layhe as a new member of Council.

You will see from the annual accounts that the finances of the Institute continued to improve during 2003 with both income and reserves increasing. Most of this income is from research grants for specific purposes complemented by the State Government Infrastructure grant, which funds the facilities, and staff supporting the research scientists. While only about 10% of our income comes from donations, it is very important in that it provides for some discretionary spending on things we could not otherwise do. We also acknowledge other valuable support, including the Claffey Trust, the Sydney Eye Hospital Foundation and the Medical Foundation of Sydney University.

We especially thank all those who donated \$250 to become Members of the Save Sight Institute for a year, those who donated \$500 to become Silver Members and those who donated \$1,000 to become Gold Members. We thank all those who became Members and made this vital contribution to the success of the Institute. We have listed their names in this report.

New equipment installed during the year enhanced our capabilities both in the research laboratories and for the doctors working in the clinic. We are indebted to the University for the fibre-optic cable connection to the University network. The video conferencing unit installed in our boardroom provides the opportunity to connect with other research institutions anywhere in the world. It has already proved valuable in strengthening communication with the Dubbo rural Clinical School. It promises to be valuable in delivering our Postgraduate Masters of Ophthalmic Science program next year. Most Universities now have this capability so that scientists working in other countries, including developing countries, can discuss their research with our scientists here.

The progress made this year continues to add to the stature of the Save Sight Institute as an internationally recognised eye and vision research Institute. You can gain some idea of the scientific progress being made from reading the details of the papers published during the year by our scientists. May I thank the Director of the Institute, Professor Frank Billson, the Director of Experimental Ophthalmology, Professor John McAvoy, members of Council, the research scientists, the clinicians and the staff for their dedication and support and for sharing our vision of Sight for Life.

Ken Coles AM
President

4. Director's Report



The Save Sight Institute has continued to succeed in winning national research grants

I wish to begin by paying tribute to the Board of the Save Sight Institute (SSI) and our President, Mr Ken Coles AM, for their support and to the senior administration of the University of Sydney for their assistance to the SSI. The SSI is a Foundation of the University of Sydney reporting to Senate. All those who are members of the SSI and who work with it, including our patients, donors, our research workers, teachers and administrative staff are members of a much larger team of collaborating colleagues. I also wish to say thank you to all our donors both individually and collectively, for their contributions will ensure our future.

A highlight of the year was the contribution of our Patron, Her Excellency Professor Marie Bashir, who gave the Maitland Oration in the University of Sydney Great Hall. It was a night shared with the Hospitallers of Sydney Hospital and we were also honoured with a performance by Simon Tedeschi and St Andrews Orchestra.

The Institute has continued to succeed in winning competitive national research grants. In the third year, these grants exceeded the barrier of one million dollars required by the State Government to ensure our future competitive allocation of infrastructure research funding. The Institute has a further triennium of infrastructure funding as a result of this. The Blue Mountains Epidemiological Study, a study of age-related eye disease in those over 55, which the Institute initially played a seminal role in establishing, has now moved to the Millennium Institute at Westmead.

Plans for the XVI International Congress of Eye Research (ICER) to be held in Sydney in September 2004 are in progress, with the SSI as the address for congress organisation and Professor John McAvoy as the convenor.

Professor John McAvoy, Director of Experimental Ophthalmology, has continued his research with Dr Frank Lovicu and others in his team on transgenic animals and the development of cataract. Professor Roger Truscott of the Australian Cataract Research Foundation is now an Honorary Associate Professor in the Institute, holding research grants with the SSI. Both John McAvoy and Roger Truscott hold National Institutes of Health (NIH), Washington, USA research funding. Cataract research is important. If this research could delay the onset of cataract by 10 years this would halve the need for surgery to restore sight. We congratulate Mark Gillies on his retina research and his recent promotion to Associate Professor.

Dr Kathy McClellan's research has a particular focus on infectious herpetic disease of the cornea. Dr Con Petsoglou joined the staff of the SSI as Lecturer in 2003 and has joined Kathy McClellan's research group.

2003 saw continued contributions to the understanding of retinal vascular development in the human retina, from Associate Professor Jan Provis and her group and from Dr Michele Madigan. Study of Age-related Macular Degeneration has continued with Associate Professor Mark Gillies, Dr Michele Madigan and Dr Philip Penfold. Professor Frank Billson and Dr Michele Madigan shared a joint research grant on ocular cancer with Professor Barry Allen and Dr Yong Li from the Cancer Care Centre, St. George Hospital. This collaboration holds great promise of a novel therapy to precisely target malignant melanomas of the eye using radioactive isotopes tagged to antibodies exploiting the immunology of melanoma cancers. Dr Max Conway has been on a von Humboldt Fellowship related to tumour research in Germany with Professor Gottfried Naumann and is now in San Francisco with Dr Joan O'Brien as a Neil Hamilton Fairley NHMRC Fellow. Dr Max Conway will return late in 2004 and will return to the Institute at this time.

4. Director's Report *(continued)*

Currently there are 21 students in full time research programs: 13 doing PhD's and 8 doing Masters in Science. In addition, the Institute has prepared for a Masters in Ophthalmic Science degree by coursework and treatise and more than 20 students are anticipated for enrolments in 2004.

The SSI expresses its appreciation to Associate Professor Jan Provis and Dr Philip Penfold both of whom have made distinguished contributions to research at the SSI and who have relocated to ANU, Canberra. Jan and Philip continue their association with the Institute and have been nominated for Honorary Academic titles.

Education

In 2003 Dr Con Petsoglou, working with Professor Frank Billson and the Institute, has been developing academic programs for a Masters by coursework and Postgraduate Diplomas in Ophthalmic Science. These programs will be open to those wishing to do ophthalmic research or to prepare for a career in Clinical Ophthalmology. The course will be delivered via the internet and is an exciting project, with collaboration between the University of Sydney and the University of Otago, the SSI playing a major role with its partner the Department of Ophthalmology in the Dunedin School of Medicine.

The SSI's contribution to the training of the next generation of Ophthalmologists saw the 20th Annual Symposium of the Sydney Eye Hospital Registrars organised by the SSI. These meetings were first instituted in 1984. In 2003 the Symposium was devoted to Retinal Disorders and Retinal Surgery in children and the older person. The Claffy Lecturers were Dr Bill Aylward, formerly Lecturer with the SSI, and now the Medical Director of Moorfields Hospital London and Professor Tony Moore, a Paediatric Ophthalmologist and Genetist from Moorfields Eye Hospital who has participated in the Symposium on two previous occasions. The Symposium was held on the campus of Sydney Eye Hospital/Sydney Hospital and attracted over 100 scientists and doctors and more than 90% of those training Ophthalmologists in Australia and New Zealand

The SSI welcomed the appointment of the new Dean, Professor Andrew Coats, who, with a distinguished career in the United Kingdom, has already shown himself to be an important and exciting new influence in the Faculty of Medicine. Professor Don Nutbeam takes up the position of Pro Vice-Chancellor in the College of Health Sciences. Professor Don Nutbeam comes with an impressive record as former Head of the Department of Health with the British Government and prior to that Head of the School of Public Health in the University of Sydney. The Institute looks forward to working with this new administration, which also includes Mr Robert Kotic, Chief Finance Officer, at the University.

Frank Billson AO



5. Save Sight Institute Staff

Board of Directors

Appointed Members

Mr Ken Coles AM
President

Professor Frank Billson AO
Director

Mr Greg Dunn
Deputy President (appointed Aug)

Mr Alan Judd (PDG Lion)
Deputy President (retired Aug)

Mrs Michele Bentley
Mr John Davies
Professor Ramzi Fayed
Mr George Harris
Mr Peter Ketley
Mr John Layne (appointed Aug)
Professor John McAvoy
Mr Ben Meek
Mr Stephen Stux (retired Aug)
Mrs Caroline Wilkinson



Some of the SSI staff in front of South Block Sydney Hospital Campus

Ex Officio Members

Hon Judge Kim Santow OAM
Chancellor

Emeritus Professor Ann Sefton
Deputy Chancellor

Professor Gavin Brown FAA
Vice Chancellor

Professor John Young AO
Pro Vice Chancellor - College of Health Sciences (retired Apr)

Professor Don Nutbeam
Pro Vice Chancellor - College of Health Sciences (appointed Jul)

Professor Andrew Coats
Dean Faculty of Medicine

Academic Staff

Professor Frank Billson AO
FRACO, FRACS, FACS

Professor John McAvoy BSc, PhD
Associate Professor Mark Gillies
PhD, FRACO, FRACS

Dr Max Conway PhD, FRACO, FRACS (NHMRC Neil Hamilton Fairley Fellowship)

Dr John Grigg FRACO, FRACS
Senior Lecturer

Dr Frank Lovicu BSc, PhD
Lecturer

Dr Kathy McClellan PhD, FRACO
Senior Lecturer

Dr Michele Madigan BOptom, PhD
Research Fellow

Dr Philip Penfold MPH, PhD
Senior Research Fellow

Dr Con Petsoglou MMed (Clin Epid), FRANZCO
Clinical Lecturer

Associate Professor Jan Provis
BSc, PhD

Clinicians with Academic Appointments to University of Sydney, Discipline of Ophthalmology

Dr Andrew Chang FRACO
Clinical Lecturer

Dr Stuart Graham MS, FRACO
Clinical Lecturer

Dr Gagan Khannah FRACO, FRACS
Clinical Lecturer

Dr Michael Lawless FRACO, FRCOphth,
Clinical Senior Lecturer

Dr Gerard Sutton FRACO, FRACS
Clinical Lecturer

Administrative & Clinical Staff

Ms Haipha Ali BAppVis (Orthoptics)
Orthoptist

Mr Hassan Al Khatib BSc
Financial Controller

Dr Iain Dunlop FRANZCO, FRACS
Staff Ophthalmologist

Mrs Lisa Feldman RN, Dip Health Sci (Pathology Techniques)
Electrophysiology Technician

Mr Bill Hoddinott
Clinic Attendant

Mr Ryan Kirgan
IT Support

Dr Wei Luo MD, MPH
Clinical Trial Coordinator

Mrs Trish Lorgor
Clinical Secretary

Ms Barbara MacDougall
Clinic Co-ordinator

Mrs Gisela Payne
Personal Assistant to the Director

Mrs Ann Sturderus
Clinical Secretary

Ms Linda Young BA
Personal Assistant to the Director (until Aug)
Projects Officer

Mr Gary Zebington BA, Grad Dip Design Computing

5. Save Sight Institute Staff *(continued)*



Administration staff from left to right: Gisela Payne, Barbara MacDougall and Linda Young

Finance Committee

Mr Ken Coles AM
Professor Frank Billson AO
Mr John Davies (Chairman)
Professor Ramzi Fayed
Professor John McAvoy
Mr Ben Meek

Foresight Australia

Major General Paul Cullen
AC, CBE, DSO, ED, FCA
Patron

Foresight Australia Board Members

Professor Frank Billson AO
Chairman
Mr John Davies
Dr Maureen Gleeson BHA, MHA, PhD
Mr George Harris BA, LL.M.
Mrs Carol Ireland (retired Dec)
Mr Moses Kiori (retired Dec)
Mrs Anne Leach (appointed Dec)
Dr Kathy McClellan PhD, FRACO
Dr Geoffrey Painter FRACO, FRACS (appointed Dec)
Mr Mohammad Sultan
(Foresight/Leila, PNG)
Dr Nitin Verma MD (Oph), FRACO

Administration

Mr Hassan Al Khatab
Honorary Secretary
Mr John Davies
Honorary Treasurer
Mr Paul Pryce
Honorary Auditor
Ms Linda Young
Projects Officer

Medical Advisors/Volunteers

Professor Frank Billson AO
FRACO, FRACS, FACS
Dr Max Conway PhD, FRACO, FRACS
Dr Roger Dhetlefs FRACO
Dr Kathy McClellan PhD, FRACO
Dr Neal Mulligan FRACO
Dr Geoffrey Painter FRACO
Dr Gerard Sutton MS (Oph), FRACO, FRACS
Dr Nitin Verma MD (Oph), FRACO

FORESIGHT VOLUNTEERS



Mary Kane



Doris Flood and John Wilmott

5. Save Sight Institute Staff *(continued)*



*Lions NSW Eyebank Staff
(l to r) Helen Kerry, Dr
Meidong Zhu, Brendan O'Shea
and Pierre Georges*

Foresight Volunteers

(Recycled Glasses Program)

Mr Paul Davis
Mr Arthur Durham
Mrs Doris Flood
Miss Mary Kane
Mrs Anne Leach
Mr Don McDonald
Mr Livio Siviz
Mr John Wilmott



*Associate Professor
Mark Gillies*

Lions NSW Eye Bank Staff

Professor Frank Billson AO
FRACO, FRACS, FACS
Director

Dr Con Petsoglou MMed (Clin
Epid), FRANZCO
Deputy Director and Production
Manager

Dr Kathy McClellan PhD, FRACO
Medical Advisor

Mr Raj Devasahayam BAppSc
Senior Scientist

Mrs Lynne Douglas RN (until
April)
Transplant Coordinator

Mr Pierre Georges BSc (Hons)
Transplant Coordinator

Ms Helen Kerry BSc
Transplant Coordinator

Mr Brendan O'Shea
Transplant Coordinator

Dr Meidong Zhu MMed, PhD
Research Fellow

Registrars & Visiting Fellows

Dr Sapna Sharan Dave Diplomate
National Board (Ophthalmology),
MNAMS
Clinical Fellow

Dr Adrian Hunt
Professorial Junior

Dr Maciek Kuzniarz
Professorial Junior

Dr John Males
Professorial Senior

Dr Steven Rodwell
Professorial Junior

Dr Florian Sutter FMH Specialist
in Ophthalmology
Clinical Fellow

Dr Sureka Thiagalingham
Professorial Junior

Dr Udaya Weerakoon DO, MD
(Ophthalmology) Sri Lanka (until
March 2003)
Clinical Fellow

Dr Wang Yi MOphth
Clinical Fellow

Research

Professor Frank Billson AO
FRACO, FRACS, FACS
Director

Professor John McAvoy BSc, PhD
Director Laboratory Research

Associate Professor Mark Gillies
PhD, FRACO

Associate Professor Roger Truscott
BSc, PhD
(also University of Wollongong)

Ms Sharyn Ang BSc (Hons)
Research Assistant

Ms Nisreen Aqbani
Research Assistant (until Oct)

Dr Max Conway PhD, FRACO,
FRACS
(NHMRC Hamilton Fairley
Fellowship)

Dr John Grigg FRACO, FRACS
Dr Alexander Klistorner BMed,
PhD

Dr Frank Lovicu BSc, PhD

Dr Wei Luo B Med, MPH
Clinical Research Assistant

Dr Michele Madigan B Optom,
PhD

Ms Maria Males RN, BN, BA, G.
Dip Acute Care Nurs
Clinical Research Officer

Dr Kathy McClellan PhD, FRACO,
FRACS

Mr Riccardo Natoli BSc (Hons)
Research Assistant

Dr Philip Penfold MPh, PhD

Associate Professor Jan Provis
BSc, PhD

Professor Jonathan Stone DSc, FAA

Dr Richard Stump BSc, PhD
Laboratory Manager

Dr Lavinia Talliana PhD
Postdoctoral Fellow

Mrs Diana van Driel BSc (Hons)
Senior Research Assistant

Dr Li Wen MSc
Research Assistant

Dr Martin Windsor PhD
Senior Research Fellow

Dr Meidong Zhu MMed, PhD
Research Fellow

6. Spectrum of Eye Disease SSI Research and Response



Screening babies in the intensive care nursery of the Newborn and Premature Babies Unit at Royal Prince Alfred Hospital

Blindness can occur at any time of life - in children it can mean a lifetime without sight

Blindness can occur at any time of life – but mostly affects those at the vulnerable ends of life’s spectrum – children and the elderly. In children it can mean a lifetime without sight and on this basis is the second most common cause of world blindness.

Eye Diseases affect the:

Visual Development in children:

Cataract, Glaucoma, Retinopathy of Prematurity and Strabismus pose secondary problems of visual loss due to interference with development.

Transparent structures of the eye:

Cornea scarring causing Corneal Blindness.

Lens causing Cataract.

Reception of visual images in the eye:

Retina Macular Disease due to degeneration, Diabetic eye disease and Retinitis Pigmentosa.

Optic nerve damage from Glaucoma, and tumours or degeneration of the Visual pathway disrupt passage of visual information to the brain.

Childhood Blindness

Blindness in children is the second major cause of world blindness. What is unique about childhood blindness is that if the child does not experience normal visual experience in each eye simultaneously during the early years of life, vision will be permanently impaired from a condition known as Amblyopia. This demands that Cataract and Glaucoma in childhood be treated without delay even in the first weeks of life.

In Australia, childhood blindness is mainly due to developmental problems. In developing countries, blindness in children is largely due to nutritional and infectious causes.

SSI staff pioneered improvements in microsurgical techniques that have resulted in the prevention of blindness and restoration of sight in children. Intra-ocular Lens Implantation (IOL) following cataract surgery in children as young as one to two years of age is now routine. SSI studies in molecular and clinical genetics are also shedding significant light on Congenital Cataract and Glaucoma

The management of Retinopathy of Prematurity (ROP), Congenital Cataract and Glaucoma has improved so much in recent years that good vision for life is now the rule rather than the exception, provided disease is recognised early. Collaborating with the intensive care nursery of the Newborn and Premature Babies Unit at Royal Prince Alfred Hospital, SSI’s joint research and care initiatives have resulted in a marked improvement in the vision of premature babies. In the last two years there have been no cases of blindness from Retinopathy of Prematurity in that hospital.

Through its international arm Foresight, the SSI plays a leading role in programs to prevent childhood blindness in the Asia-Pacific region. The SSI shares WHO Vision 2020, which includes prevention of avoidable blindness in children as a major objective.

6. Spectrum of Eye Disease SSI Research and Response *(continued)*

Cataract

The lens sits behind the cornea and because of its curvature and refractive properties, focuses light onto the retina. When the lens becomes cloudy this is known as cataract.

Cataract is the major cause of blindness in the world. At present the only treatment available is surgery. In Australia 120,000 cataract operations are performed yearly at a cost of \$378 million. However, the fact that about 23 million people worldwide are blind from cataract reflects a lack of health services in many countries. Whilst organisations such as the Foresight Australia work tirelessly to establish appropriate services and resources to alleviate the burden of cataract blindness, this will only serve to slow its rate of increase. New drugs/molecular therapies are desperately needed to prevent or slow the progression of cataract and also to improve the outcome of current surgery. The Institute's research aims to reduce the burden of cataract blindness. Delaying the onset by 10 years would halve the amount of surgery required, with obvious savings to the community.

Recent integration of University of Wollongong cataract researchers into the SSI makes this Institute one of the strongest centres for innovative cataract research in the world. Collaborative efforts at SSI into understanding the molecular basis of cataract are now focused on two main fronts: (i) how growth factors induce aberrant cell behaviour characteristic of subcapsular cataracts; (ii) how a diffusion barrier limits key molecular exchanges in the lens that leads to changes characteristic of nuclear cataract. This consolidation of research efforts has opened up opportunities for new strategies for treating cataract and complications that result from modern cataract surgery.

Cornea and External Eye Disease

The cornea is the window for sight, the transparent central part of the eye that not only allows light to enter, but also contributes significantly to clear focus. Blindness caused by corneal disease is more common in developing countries and the numbers of people affected unfortunately mean that corneal blindness remains an important problem. This is particularly so in countries where malnutrition and poverty are prevalent and affected children who have untreated corneal ulcers will suffer many years of blindness.

From our Australian community we continue to treat patients with corneal infection. Younger people who wear contact lenses remain at risk of corneal abscess. This situation is created by failure to adequately clean the contact lens storage case. Although it seems illogical to always clean the contact lenses daily but never clean the case, it is an all too common occurrence.

Research at the SSI this year has confirmed that the bacteria that frequently cause corneal infection remain susceptible to the commonly available antibiotics. This means that vision can be preserved in patients with corneal infection, particularly if they seek help early.

The Lions New South Wales Eye Bank at the SSI continues to significantly alleviate blindness due to surgically remediable corneal disease. The main indications for corneal transplantation are painful corneal failure in the elderly and keratoconus in young people. So far corneal transplantation for herpetic corneal disease has met with limited long-term success. Research in the SSI is now focused on determining the distribution of herpes simplex virus in healthy humans and applying this knowledge in the management of corneal transplants in an effort to improve graft survival.

The storage of corneal donor material is necessary to allow testing of donor serum to exclude transmissible disease. At present donor material can only be stored for less than a week at 4°C. Research in the SSI will enable the introduction of organ culture corneal storage that will extend the possible storage time and increase the supply of useable donor corneas. This technology will be a significant advance in the Institute's quest to cure corneal blindness in our community.



6. Spectrum of Eye Disease SSI Research and Response *(continued)*

Glaucoma

Glaucoma affects the sight of nearly a quarter of a million Australians and is the second most common cause of blindness in developed countries after macular degeneration. A disease of the optic nerve, glaucoma reduces a person's field of vision finally resulting in severe tunnel vision. Glaucoma may occur at any age. It poses particular problems in children, in infancy and early childhood when the visual system is most vulnerable. However approximately 2% of the population over the age of 40 are affected and family history represents a six times greater risk.

Known as 'the sneak thief of sight' for its lack of early symptoms, a diagnosis of glaucoma must be suspected from the clinical appearance of the optic nerve and the characteristic manner in which the field of vision is gradually lost. Early diagnosis and treatment is critical in prevention of field loss. Testing requires presenting the patient with visual targets (stimuli) and recording of response. The response in subjective tests requires the patient to physically indicate they see the target (subjective perimetry). The challenge for the Institute was to record an objective response, to record the tiny electrical signals generated in the brain when the patient views a complex multifocal stimulus on a computer screen (objective perimetry). Success for the SSI came in 2001 with the SSI invention of the objective perimeter, now known commercially as the AccuMap.

The story has a certain romance as it includes the value that newcomers to Australia can add in our search for new knowledge. In 2001, Dr Alexander Klistorner, a Russian Ophthalmologist came to Australia and pursued his love of research gaining his PhD in the Electrophysiology of Vision. His clinical background made him particularly interested in solving the problem of the objective diagnosis of glaucoma when he joined the Institute. He was later joined by Dr Stuart Graham. Finally, a large team of collaborating scientists made this invention possible.

The AccuMap Stimulator incorporated Intellectual Property and new knowledge developed by a group of Russian scientists not employed by the Institute whilst the AccuMap Recorder involved Intellectual Property and new knowledge developed in the Institute and held by the University of Sydney.

ObjectiVision Pty Ltd was set up as a private company, with the Board of Directors including the scientists who developed the Stimulator and the scientists who developed the recording technology. Business expertise, a business plan, and initial funds came from the expertise of individual Board members of the SSI. The Intellectual Property of the Stimulator represented the equity of its inventors in the new company. The Intellectual Property of the Recorder was leased from the University. The University was allocated 40% of the shares. ObjectiVision then sought venture capital from a public company and appointed Medcorp. The University shares ensured a University presence on the Board now taken by Clare Baxter. In 2002 the AccuMap V1.3 objective perimeter was launched as a new test for glaucoma, where the objective map of the electrical responses in the brain replaces the patient's subjective responses. The AccuMap won two Australian design awards in 2002.

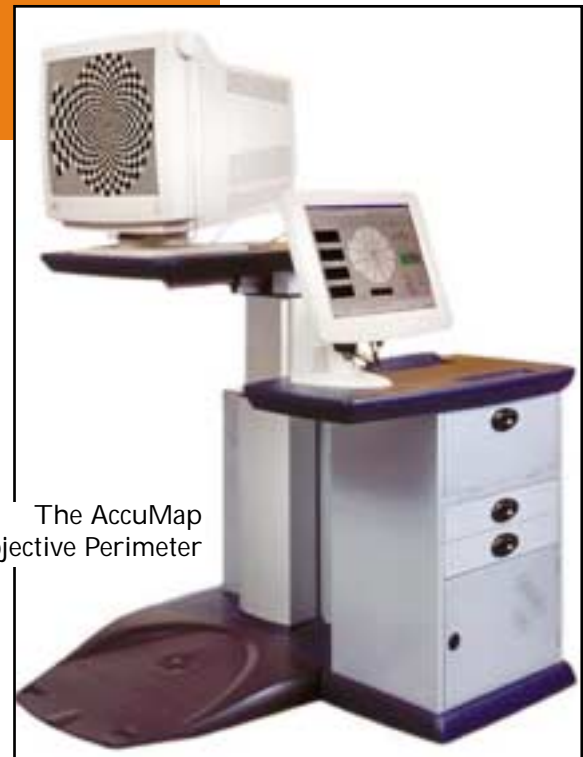
6. Spectrum of Eye Disease SSI Research and Response *(continued)*

The AccuMap has been further developed with major advances in software development using the OPERA V2.0 platform and has high patient acceptance. The system received FDA (Federal Drug Administration) approval in late 2003 and was later that year launched in the USA at the American Academy of Ophthalmology. Heidelberg Engineering has been contracted to be US distributors.

At present Dr Alexander Klistorner and Dr Stuart Graham at the SSI are co-ordinators for a multicenter Early Glaucoma Detection trial of the AccuMap involving five US sites. The results of this study are predicted to confirm the demonstrated effectiveness of the technology as compared to conventional methods of detecting glaucoma. Dr John Grigg and Professor Frank Billson are principal investigators.

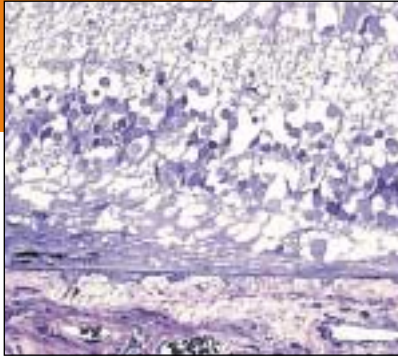
Dr Alessandra Martins holds a University Research Scholarship and has also received an ORIA grant to investigate blue-yellow stimuli in detection of glaucoma. Dr Clare Fraser will be investigating the results of AccuMap using OPERA V2.0 I investigation in Optic Neuritis. Dr Chandra Balachandra has already established its value in examining children, with Professor Billson confirming its role in monitoring children with optic gliomas.

This technology will expand beyond the diagnosis of glaucoma and have increasing application to investigation of the visual field in the interface between Neurology and Ophthalmology.



The AccuMap
Objective Perimeter

6. Spectrum of Eye Disease SSI Research and Response *(continued)*



Human retina with age related macular degeneration

By 2020 there will be a doubling of blindness from AMD

Age-Related Macular Degeneration (AMD)

AMD is responsible for 90% of registered blindness in Australians over 55. It destroys the reading centre of the eye called the macula. The macula is responsible for seeing detail and recognising faces. Macular Degeneration is age-related. It is anticipated that by 2020, there will be a doubling of blindness from this cause.

The Institute continues its “bench to bedside” research into AMD. The SSI Retinal Therapeutics Research Unit is currently investigating the use of injections of steroids into the eye (intravitreal triamcinolone or “IVTA”) for the treatment of a range of blinding retinal diseases. This treatment has been the subject of laboratory and clinical studies within the SSI for nearly 10 years. The first large randomised clinical trial conducted at SSI did not show that IVTA reduced loss of vision in eyes with wet AMD, although it did slow the growth of the abnormal blood vessels. In 2003, we released the early (3 month) results of our randomized clinical trial of IVTA for diabetic retinopathy, which showed a very significant improvement in vision, and reduction of retinal swelling in treated eyes (see below). We anticipate that the long-term results of this study, which we will use to make our final recommendations, will be available in 2005.

Diabetic Retinopathy

Diabetes-related blindness occurs at any age and particularly in working life. Every person with diabetes has a twenty-five fold increased risk of losing vision. Many Australians have undiagnosed diabetes and altogether it is estimated that up to 900,000 Australians have diabetes. Aborigines have a much higher incidence of diabetes than other Australian communities. Early diagnosis, careful medical treatment and timely intervention with laser, in most cases promise sight for life.

Diabetic Retinopathy is due to the disease of small blood vessels in the retina. The SSI Retinal Therapeutics Research Unit is studying the mechanism by which diabetes affects these small vessels, and how increased leak that causes retinal swelling may be prevented. This research has led to the start of a major clinical trial (see AMD section above), in this case of a long acting steroid for retinal swelling, which is the commonest form of loss of vision in diabetes. In other research the SSI Clinical and Digital Media Research group is focusing on improving screening tools and services to ensure early diagnosis and management of the disease in the community.

The SSI is pleased to report that our Tele-ophthalmology initiative in the Northern Territory significantly increased the numbers of remote Aboriginal Communities successfully screened for diabetic retinopathies.

Retinal Dystrophy and Retinitis Pigmentosa (RP)

Retinal Dystrophy refers to degenerative diseases of the retina. Retinitis Pigmentosa (RP) is one well-known form of retinal dystrophy. It is a hereditary disease, which affects the retina’s photoreceptors – destroying their ability to detect colour and light. It is commonly associated with “night blindness”.

Currently there is no known cure for RP or other common dystrophies. SSI molecular and gene array studies aim to unravel the challenging multi-gene links associated with RP. Laboratory research is focused on ways in which the onset of dystrophies can be delayed, or the disease retarded.

7. Teaching Activities



Welcoming barbeque held in the Sydney Eye Hospital courtyard for delegates attending the Registrar Symposium

A recognised centre of excellence in the teaching and training of the next generation of doctors and ophthalmologists

Ophthalmic Sciences

SSI is a recognised centre of excellence in teaching and training the next generation of doctors and ophthalmologists. The provision of training in clinical skills and research for medical students in Australia and from overseas is an important component of their medical education. In 2003 there were 21 young scientists engaged in full time research by thesis - 13 PhD and 8 Masters. The SSI has contributed directly to the clinical training of more than 80% of the ophthalmologists in New South Wales through participation in the Sydney Eye Hospital Registrar Training Program chaired by Professor Frank Billson.

Sydney Eye Hospital Registrar Symposium & SSI Conference

Since 2002 this conference has been held at Sydney Eye Hospital. The meeting, held in January, brings together 90% of those in vocational training in Australia and New Zealand. Paramedical personnel are also welcome.

Retina 2003 was the theme for the 17th SSI Registrars Conference. It focussed on medical and surgical problems of the retina in children and adults. The two distinguished Claffy Lecturers were Professor Tony Moore and Dr Bill Hayward from Moorfields Eye Hospital, London. Professor Frank Billson, Dr John Grigg, Dr Justin Playfair and Dr Alex Hunyor Jnr and staff of SSI contributed as well as ophthalmic registrars from Australia and New Zealand who are currently undergoing training. The organising committee, included Professor Frank Billson, Dr I-van Ho, Dr Steven Rodwell, Ms Barbara MacDougall and Mrs Gisela Payne, collaborated well to make this conference, attended by over 100 delegates, a success. The SSI gratefully acknowledges the ongoing support for these educational activities from companies including Alcon and Designs for Vision.

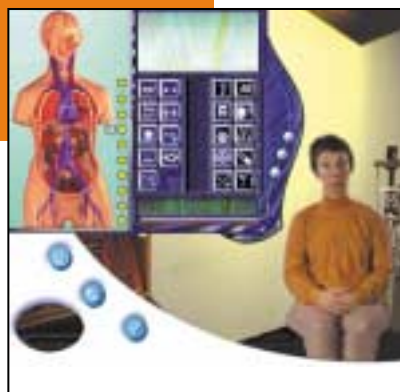
The Ophthalmic Basic Science Course, held each year since 1985, introduces trainee registrars to the anatomy, physiology and optics curriculum that is the pre-requisite for the Fellowship Examination of the Royal Australian and New Zealand College of Ophthalmologists. In 2003 collaboration commenced between the University of Sydney and the

University of Otago in New Zealand to provide a distance-taught Diploma/Masters Course in Ophthalmic Science, with instruction provided via the internet. This course is intended for postgraduate students who wish to further their knowledge of the ophthalmic basic sciences.

The Institute is active in providing vocational training opportunities for post-graduate ophthalmologists from overseas through its international exchange program. Past Visiting Fellows have come from USA, Europe, Sri Lanka and the Solomon Islands. Dr Bill Hayward, formerly Junior Lecturer in SSI, did his MD with us and is now Medical Director of Moorefield Eye Hospital. Creig Hoyt, the first Fellow and later Senior Lecturer now heads Ophthalmology at the University of California San Francisco and Dr Ravi Thomas has just been appointed to the position of Director of the LV Prasad Eye Institute in Hyderabad. Dr Saliva Pathirana is Head of the Colombo Eye Hospital. Dr Bijan Farpour has returned to Geneva and Dr Florian Sutter returned to Zurich.

In March Dr Udaya Weerakoon returned to Sri Lanka after completing a 12-month clinical fellowship at the SSI. Dr Sapna Dave from India, who joined the SSI in 2002, continued her training program with emphasis on expanding her knowledge and skills in paediatric ophthalmology. Dr Wang Yi, a vitreoretinal specialist from China, joined the SSI in July and undertook a 5-month training program with the Retina Unit within the SSI and the Sydney Eye Hospital.

7. Teaching Activities *(continued)*



A patient within the virtual Ophthalmology Clinic

The strength of the Virtual Ophthalmology Clinic allows students to develop their diagnostic skills

Virtual Ophthalmology Clinic

The SSI has developed a revolutionary computer-based teaching program that enables interactions with patients in a virtual clinical setting. Each patient's history is recorded. To preserve patient's privacy the stories are learnt and presented by actors. The histories in the archive are programmed to reflect symptoms associated with common eye diseases or complaints. The program allows students to question the virtual patients who are randomly accessed from a digital video archive. The students can learn the importance of the order in which they ask diagnostic questions and gather information gaining confidence in this skill before interviewing patients. The strength of the program is that it allows the candidate to develop skills in interviewing and forming a diagnosis before practising on real patients.

The program includes humour and tiered levels of interaction with the virtual patients who, if questioned badly, can even "lose patience" with the student doctor. Student response and his/her provisional diagnosis is emailed to the supervisor within the education program. The student is then allowed to continue the examination and higher levels of investigation.

This powerful interactive program has been designed and trialled at the SSI. Its success as a teaching and self-development tool highlights the direction of future digital and distance learning initiatives. It also provides a strong platform for modelling other educational tools that support problem solving and diagnostic skills in a variety of disciplines.

In 2003 the interface was partly redesigned for improved navigability and its networking capabilities were fine-tuned to enhance the program's utility across a wider range of environments. It was also envisaged it be included in the course content for the Graduate Diploma and Masters Degree in Ophthalmic Science, a distance and onsite learning collaboration between the Universities of Sydney and Otago, which will begin in 2004.

7. Teaching Activities *(continued)*

Conferences, Seminars and Presentations

Members of the SSI and University of Sydney Discipline of Ophthalmology organised, convened and gave presentations at ophthalmic and vision science conferences, both in Australia and overseas including:

Interational

February

IAPB-SEAR Workshop on Paediatric Eye Care, Chittagong (Billson)

6th Rotterdam Glaucoma Symposium, Rotterdam, Netherlands (Graham)

May

Association for Research in Vision and Ophthalmology, Ft. Lauderdale, Florida, USA (Billson, de Jongh, Gillies, Graham, Iyengar, Lovicu, McAvoy, Penfold, Provis, Stump)

October

European Vision and Eye Research Meeting, Alicante, Spain (McAvoy, Madigan)

November

American Academy of Ophthalmology, Anaheim, USA (Billson, Gillies)
(Billson honoured with the Humanitarian International Prevention of Blindness Award by Eye Care America and the American Academy of Ophthalmology)

Asia Pacific Association of Ophthalmology, Bangkok, Thailand (Billson)



Professor Frank Billson honoured with the Humanitarian International Prevention of Blindness Award at the meeting of the American Academy of Ophthalmology in Los Angeles
(l to r) H. Dunbar Hoskins, Jr, JMD, Executive Vice President and CEO of the American Academy of Ophthalmology, Professor Frank Billson and Michael R. Redmond, MD President of the American Academy of Ophthalmology

7. Teaching Activities *(continued)*

National

January

Retina 2003 Sydney Eye Hospital Registrars Conference, Sydney, NSW (Billson, McDonald, Payne, Petsoglou)

March

20th Cornea and Eye Bank Meeting, Adelaide, SA (Billson, Petsoglou, Zhu)

Vision CRC Myopia Meeting, Sanctuary Cove, Qld (McAvoy)

Australian Glaucoma Club, Gold Coast, Qld (Grigg)

May

Royal Australian and New Zealand College of Ophthalmologists NSW Branch Meeting, Sydney, NSW (Gillies, Graham, Petsoglou)

June

Australian Ophthalmic Nurses' Conference, Bondi Beach, Sydney, NSW (McClellan)

St John Ambulance National Conference, Hobart, Tas (Billson)

July

Vice-Chancellor's Lecture, University of Sydney
"Eye as the Mirror of Society" (Billson)

Three Targets Meeting, Melbourne, Vic (Petsoglou)

Vision CRC Presbyopia Meeting, Sydney, NSW (McAvoy)

August

Royal Australian and New Zealand College of Ophthalmologists
Queensland Branch Meeting, Southport, Qld (Gillies)

October

COMBIO Meeting, Melbourne, Vic (Lovicu)

Hospitallers Maitland Oration, Sydney, NSW (Billson)

November

Royal Australian and New Zealand College of Ophthalmologists, Auckland, New Zealand (Billson, Gillies, McClellan, Petsoglou)

Australian Ophthalmic and Visual Sciences Meeting, Melbourne, Vic (Billson, Gillies, Madigan, McClellan, Reinten, Windsor, Zhu)

NSW Cell and Developmental Biology Group Meeting, Sydney, NSW (McAvoy)

7. Teaching Activities *(continued)*

Postgraduate Students in 2003

Alexandra, Allende - PhD (Medicine) - Regulation of choroidal blood vessel growth during development and ageing of macula

Supervisors: Assoc Prof J Provis, Prof P McCluskey

Ang, Sharyn L - MSc Med (Research) - Growth factors in the maintenance of lens epithelial cells

Supervisors: Prof JW McAvoy, Dr F Lovicu

Balachandran, Chandrashekar - MM (Research) - Multifocal perimetry in glaucoma

Supervisors: Prof FA Billson, Dr SL Graham, Dr A Klistorner

Cherepanoff, Svetlana - PhD (Medicine) - Retinal immune microenvironmental changes in age related macular degeneration

Supervisors: Assoc Prof MC Gillies, Dr P Penfold

Chong, Colin CW - PhD (Medicine) - Transforming growth factor-beta in the resolution of ocular wound healing

Supervisors: Prof JW McAvoy, Dr F Lovicu, Dr P Healey

Chua, William CT - MM (Research) - Clinical and fluorescein angiographic outcomes of intravitreal triamcinolone therapy in exudative age-related macular degeneration

Supervisors: Assoc Prof MC Gillies, Dr P Penfold

Georges, Pierre - MSc Med (Research) - Differentiation and function of Muller cells in the developing human retina

Supervisors: Assoc Prof J Provis, Dr M Madigan

Graham, Stuart L - PhD (Medicine) - Development of a technique for objective perimetry in the assessment and early detection of glaucoma

Supervisors: Prof FA Billson, Prof P Mitchell

Ho, I-Van - PhD (Research) - Cost effective analysis of tele-ophthalmology in remote communities of the Northern Territory

Supervisors: Prof FA Billson, Dr N Verma

Lai, Kenneth - MSc Med (Research) - Effect of UV on Ocular Melanoma

Supervisors: Dr M Madigan, Dr N Di Girolamo

Ly, Cameron - MSc Med (Research) - Antibiotic susceptibility of ocular surface bacteria in keratitis

Supervisor: Dr K McClellan

Martins, Alessandra A - MM (Research) - Investigation of spectral (Blue-Yellow) colour objective perimetry in normal states and the early detection of visual field defects in diseased states

Supervisors: Prof FA Billson, Dr S Klistorner

Natoli, Riccardo C - MM (Research) - Microarray analysis of gene expression in the developing retina

Supervisors: Assoc Prof J Provis, Prof J Stone

O'Connor, Michael - PhD (Medicine) - Reconstruction of the mammalian lens

Supervisors: Prof JW McAvoy, Dr FJ Lovicu

Quin, Godfrey J - PhD (Medicine) - The effect of laser treatment on retinal vascular leak in diabetic retinopathy

Supervisor: Assoc Prof MC Gillies

Sandercoe, Trent M - PhD (Medicine) - Vascular development in primate retina

Supervisors: Assoc Prof J Provis, Dr P Penfold

Tretiach, Marina L - PhD (Medicine) - Effect of peripheral cells on retinal capillary endothelial cell permeability

Supervisors: Assoc Prof MC Gillies, Dr P Penfold

Van Pham, Trong - PhD (Medicine) - Eye disorder surveying in HIV+ and AIDS patients in Vietnam

Supervisors: Dr P Penfold, Prof P McCluskey

Wederell, Elizabeth - PhD (Medicine) - Role of integrins in lens development and cataract

Supervisors: Prof JW McAvoy, Dr RU de Jongh

Wong, James G - PhD (Medicine) - Age-related macular degeneration

Supervisors: Dr P Penfold, Prof FA Billson

Wyndham, Jennifer R - PhD (Medicine) - Role of matrix metalloproteinases in regulation of vascular permeability

Supervisors: Assoc Prof MC Gillies, Prof JW McAvoy

Degrees awarded in 2003

Cornish, EG - PhD (Medicine) - Development of the primate fovea centralis

Supervisors: Assoc Prof J Provis, Dr M Madigan

Ong, Keith S - MM (Ophthalmology) - Low Tension Glaucoma: Evidence for an association with cerebral ischaemia

Supervisors: Prof FA Billson, Dr Adrian Farinelli

8. Community Activities in Australia



*Her Excellency
Professor Marie Bashir AC
Governor of New South Wales*

Maitland Orator for 2003

Community and the Save Sight Institute

We congratulate Dr Kathy McClellan on receipt of the Federation Centenary Medal given personally by the Prime Minister and also Professor Billson who was honoured with the humanitarian medal of the American Academy of Ophthalmology and Eye Care America. Both awards recognise years of service and interaction with the community

The SSI interface with the community was strengthened by two important occasions in the Great Hall at the University of Sydney.

Maitland Oration

The SSI and the Sydney Hospital Hospitaliers were honoured by their patron, Her Excellency Professor Marie Bashir AC as the Maitland Orator for 2003. Her Excellency chose as her title "The Role of Governor – Opportunities and Limitations". Many regarded it as one of the finest expositions of the role of Governor. The oration commemorated Sir Herbert Maitland, a distinguished surgeon at Sydney Hospital and one of the first appointees to the Sydney Hospital Clinical School of Medicine. The first half of the evening included a musical program provided by the St. Andrew's Augmented Cathedral Orchestra with an outstanding piano solo by Mr Simon Tedeschi who played the Piano Concerto No 19 in F Major K459 Mozart and an exciting encore by Percy Grainger.

Vice Chancellor's Lecture

Professor Frank Billson, Director of the SSI was invited by the Vice-Chancellor to give a lecture on the "Eye as the Mirror of Society" contrasting blindness in developed countries with that in developing countries and indicating how much could be achieved if people had the will and the commitment, even if large sums of money are not available.

8. Community Activities in Australia *(continued)*



Lions NSW Eye Bank contribution to the community is critical to the restoration of sight from corneal blindness

Lions NSW Eye Bank

The SSI continued its cooperation with the Lions NSW Eye Bank, administrative assistance being donated by the SSI Staff. The Eye Bank contribution to the community is critical to the restoration of sight from corneal blindness. It is a joint project of Lions Clubs of NSW working with SSI and the Department of Health in NSW through South Eastern Sydney Area Health Service. The Eye Bank and the SSI are engaged in research to develop new ways of increasing the availability of corneas for sight saving corneal transplantation. In 2003, 397 sight saving corneal surgeries were performed as a result of eye donations from the community of those who had agreed to donate their eyes. The intention to be a donor should always be shared with family members.

Many people in NSW and the ACT have had their eyesight restored through the Eye Bank's coordination of the commitment of the staff of Public and Private Hospitals throughout NSW and members of the community. The Lions NSW Eye Bank makes every attempt to fulfil the wishes of the deceased, which may have been indicated on a driver's licence or the National Organ Donor Register. The Lions NSW Eye Bank is part of the Association of Eye Banks Australia and New Zealand (EBANZ) that seeks to promote eye donation and facilitate corneal transplantation nationally.

The Corneal Transplant Coordinators are providing education of medical/nursing and lay persons to facilitate eye donation when a family consents. They have gained community trust and seek to make eye donation accessible to all people and decision of family members as easy as possible under difficult circumstances. The positive outcome of donation is seen by many to assist in the grieving and healing process and is always handled in a very sensitive and caring manner. Some families agree to research if the eyes are not suitable for surgery. The research has already increased our understanding and development of therapy that has improved treatment of blindness and macular degeneration in older Australians.

People of all ages, young children to the elderly, are currently waiting in NSW for a corneal transplant. 40% of those on the waiting list are under the age of 40. Corneal blindness is the third most common cause of world blindness largely due to infection and malnutrition. There is no upper age limit to being a donor so that many of the elderly within our community can assist in restoring sight of others.

In conclusion, as Director of the Lions NSW Eye Bank, I acknowledge the tremendous contribution the Eye Bank staff are making to the community of NSW and join with them in thanking all those people in the community who make eye donations and corneal transplantation possible. These people make that contribution without fuss or without seeking recognition. Finally the SSI thanks the Lions Save Sight Foundation and Lions Clubs of NSW. Without them hundreds of people would not benefit from the modern day miracle of restoration of sight from corneal transplantation.

Frank Billson AO

8. Community Activities in Australia *(continued)*



*Clinic Staff (l to r)
Barbara MacDougall
and Haipha Ali*

Save Sight Clinical Services

The clinical work is an important link between the Institute's teaching and research activities. The SSI and Sydney Eye Hospital share in the training of the next generation of ophthalmologists. Training occurs in the Sydney metropolitan teaching hospitals, including Sydney Eye Hospital with country rotations that extend to Lismore, Wagga Wagga, Northern Territory and Tasmania.

Clinical Research

The SSI clinical services located on the ground floor of our Macquarie Street premises include the latest advances in diagnosis, treatment and care of eye disease in children and adults. Complementing the work of the Sydney Eye Hospital the clinical area is vital for clinical research and 2003 continued the focus on research in Age-related Macular Degeneration (AMD) with clinical trials of photodynamic therapy for AMD under the direction of Associate Professor Mark Gillies.

In addition, there were trials for glaucoma therapy and visual field assessment, using an instrument invented and developed within the SSI, the AccuMap (see pages 12 & 13). The use of this equipment for the diagnosis of glaucoma in adults and children is impressive.

Research in cancer therapy has shown the promise of Diode laser as an important adjunct therapy. A new initiative has been the development of a novel method of treating melanoma exploiting immunology and attaching radioactive (alpha) particles to antibodies that target the tumour. The work is in collaboration with Professor Barry Allen, Cancer Care Centre, and St George Hospital. It is hoped this approach will accurately target and kill tumour cells.

The Institute provides special clinical services and research in the diagnosis treatment and management of childhood eye disease and in ocular cancer, both in children and adults, as well as for unusual cases of eye disease in the community. A special area of expertise and interest in the Institute is in the management and treatment of cataract, glaucoma and corneal diseases in children.



*Outreach:
Reaching the unreached and
preventing unnecessary blindness*

Clinical Service to Remote Areas of Australia: Communication Technology and Tele-ophthalmology

The SSI and Sydney Eye Hospital were during 2003, included in the fibre optic (fast exchange of information) connection between University and health institutions in New South Wales metropolitan and rural areas. Medical Faculties have been supported by the Federal Government and medical students are already receiving training in rural clinical schools in Dubbo, Broken Hill and Wagga Wagga. The fibre optic connectivity is critical in bringing teaching and service to the rural areas.

8. Community Activities in Australia *(continued)*



Blindness is more severe in remote areas of Australia

The SSI works closely with St John Ambulance Australia a not for profit charitable organisation, a leader in first aid serving Australians who attend state and national occasions and sporting events.

Less known is St John Ambulance's work through two important branches; the Community Care Branch reaching school children with reading problems and older Australians and the Ophthalmic Branch which provides support for the Jerusalem Eye Hospital overseas, and extends its service for eye health care particularly in rural communities in Australia. St John Ambulance's initiatives in Northern Territory and Macquarie Area Health Service involve the SSI in collaborations with Flinders Medical Centre.

Outreach Program:

In 2003, the Outreach Program continued in the Katherine area, a community which has 90% indigenous Australians, complemented with a glasses program providing holistic eye health care. In the Top End of the Northern Territory, Dr Rob McKay replaced Dr Nitin Verma. Rob provides laser treatment services, visiting rural communities associated with Darwin, Katherine and Goh. In Alice Springs, Dr Tim Henderson provides a similar Outreach Program from Alice Springs.

It is hoped the program will extend to Dubbo and involve the University of Sydney medical students in the Dubbo Clinical School. This program will eventually provide therapy for Diabetic Retinopathy, particularly for indigenous Australians in Dubbo and West Dubbo.

In Dubbo, the Aboriginal Medical Service, St John Ambulance of Australia (New South Wales Branch) and SSI contribute to a joint program with tele-ophthalmology equipment provided by St John as agreed to in 2003, and staff and laser therapy treatment provided by the SSI.

These Outreach Programs excite the interest of young people in training, with the excitement and travel often involving small aircraft journeys. Treatment services are made available to far flung communities and there is enthusiasm about further integrating these services with screening involving the services of indigenous eye health workers. Such screening is done using digital cameras and archiving facilities. Dot Butler is a leader among Aboriginal health workers in this area and plays a vital role at the Top End in screening for diabetic retinopathies. Indigenous Australian health workers contribute to preliminary assessments with digital photography of the retina, including detection of early signs of retinal damage or leaking vessels (macular retina disease). This data can provide a continuously updated and extensive database on all the diabetics in rural Aboriginal communities at the Top End and can be integrated with the Territory Health Service Community Diabetic Register.

9. Community Activities in World Ophthalmic Health

FORESIGHT



A U S T R A L I A

Foresight Australia

Foresight looks back on an eventful year in 2003 marked by significant achievements and an event which though sad, represents an astonishing milestone in the history of Foresight and has resulted in a lasting legacy described in the conclusion of this report.

Foresight is an Australian organisation, internationally focused and committed to the elimination of avoidable blindness worldwide. Situated in the SSI, Foresight is supported by the SSI and its members. Thus through Foresight, members of the Institute are committed to international projects. The Foresight agency in 2003 celebrates 25 years of service in the Asia Pacific Region. We can look back with a sense of achievement on an organisation that began its service as part of the original executive of the International Agency for Prevention of Blindness (IAPB) that played a lead role in establishing the Prevention of Blindness Program in the World Health Organisation. Foresight has major programs in the Asia Pacific Region.



Dr Nitin Verma and Professor Frank Billson Directors from Foresight, and Dr. Para Segaram from World Health Prevention Blindness Program Discussing work in Asia-Pacific Program

Professor Frank Billson, Chairman was privileged to be part of the initial establishment of Foresight Australia with Major General Paul Cullen. Foresight arose in response to a plea from Dr Rabiul Husain in Chittagong, Bangladesh for Australian assistance. The Royal Australian College of Ophthalmologists at that time was involved in a \$1.8 million Australian Government funded program to assess and develop the rural eye health program for 250,000 indigenous Australians.

The Bangladesh program was initially shared funding from the Australian Development Assistance Bureau (ADAB). After the elapse of 10 years the program gradually became more self-sustaining with building of hospitals, training of ophthalmologists and eye health professionals and funding of a Chair in Community Ophthalmology. The millionth cataract was performed in the program in 2002. It was accomplished by the training of personnel through eight base hospitals throughout Bangladesh and providing additional training in Australia and countries in the Region.

2003 has also seen plans to further assist the development and management of prevention of blindness in infancy and childhood in Bangladesh through further developing the Chittagong Eye Infirmary and Training Complex as a South East Asian regional centre for training in paediatric ophthalmology. To this end, plans are advanced for a regional workshop to be held in the Chittagong Eye Infirmary and Training Complex in February 2004. Foresight has programs in Sri Lanka, Vietnam and China.

Closer to Australia Foresight has facilitated the further development of the projects served by Foresight Flyers, involving Dr Geoffrey Painter and Dr Neale Mulligan (Solomon Islands), Dr Nitin Verma (East Timor) and Dr Roger Dethlefs (Nepal).

The contribution of these experienced volunteers who have given so much of their time to relieve the burden of avoidable blindness and cataract blindness and assist in skills transfer to local health personnel, nurses, doctors and paramedics is a reflection of deep commitment to serve countries less fortunate than our own. Their achievements will continue in the countries they have served well after they have gone.

9. Community Activities in World Ophthalmic Health *(continued)*



Sick premature baby in Sushi Hospital, Bangladesh

Foresight is very much the quiet achiever with 90% of donations going towards projects. The cost effectiveness of programs depends on volunteer staff together with contributions from the SSI in which the Foresight agency is now located.

The SSI provides significant administrative support with material resources for communication and human resources working with Foresight Flyers to achieve prevention and cure of blindness objectives in the Asia Pacific Region.

Foresight programs are all aimed at in-country development through skills transfer and training in programs developed in partnership with and tailored to the needs of particular communities. The advent of new developments in information technology through the internet together with access and faster communication through fibre optic and satellite hold further promise of increased educational opportunity.

The volunteers for the Foresight Recycled Glasses Program include Mr Paul Davis, Mr John Wilmott, Mr Donald McDonald, Mr Livio Siviz, Miss Doris

Flood and Mr Arthur Durham with Mrs Anne Leach and Ms Mary Kane providing administration support and finance control with Mr Hassan Al Khatab. Since September, Ms Linda Young has provided administration support to Foresight.

We welcome two new Directors Dr Geoffrey Painter and Mrs Anne Leach. The Board of Foresight Directors is to be commended for their assistance in Foresight through a difficult period. Thanks to all of the volunteers and to each of them individually for their consistent contribution. It is their contribution as volunteers that puts a human face on the activities of Foresight Australia, including its Glasses Program and is deserving of Australian community support.

In October 2003 Foresight learned of the passing of one of its benefactors, Miss Christina Gordon. Miss Gordon had supported Foresight projects for a number of years, especially in the Solomon Islands associated with the work of Dr Geoffrey Painter. Trainee ophthalmologists and ophthalmic nurses come to Australia from the Solomon Islands for conferences and further training. Miss Gordon left Foresight a most generous donation of \$425,000. This will ensure the work in the region continues. In Miss Gordon's memory, the Foresight Board has established the Christina Gordon Scholarship Fund. The first Scholarship is planned for 2004.

Foresight thanks its donors and benefactors for their donations that ensure Foresight's fight against avoidable blindness continues.

Foresight looks forward to an exciting and productive 2004, as it reviews its programs and seeks further support for prevention and treatment of blindness in the Asia Pacific Region, with an increasing focus on the world's blind children that reside in this region.



***Foresight Volunteers (l to r)
Livio Siviz, Paul Davis, John Wilmott and Anne Leach***

10. Clinical and Laboratory Research



A powerful
interface
between
Clinical and
Laboratory
research

The SSI provides a powerful interface between two domains of vision science research – clinical and laboratory.

Clinical Research

Clinical research supported by national and state research grants from Sydney Foundation for Medical Research, the Ophthalmic Research Institute of Australia (the ORIA) and the Federal Government at the SSI has a major focus in Age-related Macular Degeneration (AMD). New therapies to suppress the leaking of blood vessels in the reading centre of the eye in AMD and diabetic eye disease are being trialled at the Institute. A new technique, Orbital Computerised Tomography (OCT) is proving a most sensitive way to study clinical images showing cross sections of the retina in patients revealing disturbances in diabetes and AMD. With objective perimetry field-testing we are also trialling new therapies for glaucoma. This testing provides early detection of glaucoma. In addition children are being studied and monitored after early detection of tumours of the visual pathway using the AccuMap.

The AccuMap, developed from intellectual property within the SSI (see pages 12 & 13), is now within the public domain and used in clinical practice in Australia. It has continued to excite international interest. In September 2003 it gained approval and licence to be distributed in the USA from the prestigious American Federal Drug Administration (FDA). The AccuMap has won two Australian Design Awards, and orders continued to grow in 2003.

Ocular cancer research focusing on melanoma tumours has progressed. Collaborative studies have shown how melanomas can be destroyed by tagging antibodies with radioactive material forming magic bullets that kills tumour cells.

Laboratory Research

Gaining a good understanding of the cellular and molecular origins of eye disease is central to its prevention.

Progress was made in identifying the factors that influence the permeability of the retinal vasculature. Advances were also made in understanding the role of members of the FGF, TGF β and Wnt growth factor families in the normal and pathological development of the retina and lens.

Researchers in the SSI laboratories continue to make advances towards understanding the changes that occur in the cells and tissues of the eye during the processes of vision impairment. Projects aimed at identifying the molecular disturbances that cause these diseases received a major boost in 2003 by the expansion of the cell and tissue imaging facilities in the SSI laboratories with the purchase of a new inverted fluorescent microscope workstation and an automated tissue processing facility. This has been made possible by support (totalling \$120,000) from the University of Sydney Major Equipment Fund, the Ramaciotti Foundation, the Rebecca Cooper Medical Research Foundation and the Sydney Eye Hospital Foundation.

11. Funded Research Projects

National Health and Medical Research Council (NHMRC)

Researchers: Provis JM, Madigan MC.
Title: Development of the Primate Fovea.
Funding: 2001-2003, \$65,000 per annum.

Researcher: Conway RM. Neil Hamilton Fairley Fellowship
Title: Development of a protein truncation test for the detection of germline retinoblastoma (RBI) gene mutations.
Funding: 2002-2005, \$89,449 per annum.

Researchers: McAllister I, Mitchell P, Gillies MC.
Title: Chorioretinal anastomosis for central retinal vein occlusion.
Funding: 2000-03, \$24,000.

Researchers: Little MH, McAvoy JW, Lovicu FJ. (Jointly held with the University of Queensland)
Title: The role of Crim-1 in lens development and eye disease.
Funding: 2001-2003, \$65,000 per annum.

National Institutes of Health (USA)

Researcher: McAvoy JW.
Title: Lens differentiation and cataract: role of FGF, RA & Wnt.
Funding: 2002-2007, \$185,000 per annum.

Researchers: McAvoy JW, Lovicu FJ.
Title: Inductive interactions between lens and optic vesicle specify cell fates.
Funding: 3 years, \$85,000 in 2003.

Ophthalmic Research Institute of Australia

Researchers: Madigan MC, Collier S.
Title: A role for EMMPRIN in ocular tumours.
Funding: 1 year, \$16,000.

Researchers: Billson FA, Allen B, Zhu M, Li Y, Madigan MC.
Title: Radioimmunoconjugates for targeted alpha therapy for uveal melanoma.
Funding: 2003-4, \$31,421.



11. Funded Research Projects *(continued)*

Sesqui Major Equipment Grant

Researchers: McAvoy JW, Gillies MC, Lovicu FJ, Madigan MC, Provis JM, Penfold PL.

Title: Equipment: Tissue Processor and Embedding Centre.

Funding: \$436,500.

Sydney Eye Hospital Foundation

Researchers: Provis JM, Madigan MC.

Title: Development of Primate Fovea.

Funding: 1 year, \$15,000.

Sydney Foundation for Medical Research

Researcher: McAvoy JW.

Title: Normal and Pathological Lens Development in Relation to Cataract.

Funding: 5 years, \$200,191.

Researcher: Madigan MC.

Title: Factors Involved in Growth and Invasion of Ocular Melanoma and Retinoblastoma.

Funding: 2002-2007, \$120,000 per annum

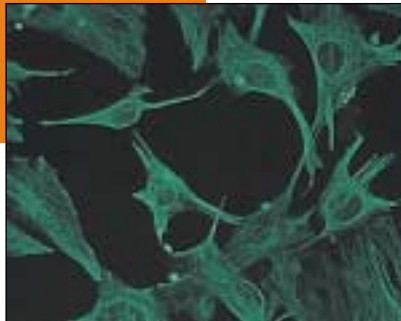
Wenkart Foundation Medical Grant

Researcher: Chong, C.

Title: Transforming growth factor-beta in the resolution of ocular wound healing.

Funding: To be specified.

12. Publications in 2003



Fluorescence preparation of bovine Muller cells

SSI vision science research papers are regularly published in major ophthalmic publications worldwide.

1. Anderson, DRS, Graham S, et al. (2003). "Normal-tension glaucoma." *Journal of Glaucoma* 12(2): 164-166.
2. Balachandran C, Klistorner AI, et al. (2003). "Effect of stimulus check size on multifocal visual evoked potentials." *Documenta Ophthalmologica* 106(2): 183-188.
3. Birkebaek NH, Patel L, Wright NB, Grigg JR, Sinha S, Hall CM et al. (2003) "Endocrine status in patients with optic nerve hypoplasia: relationship to midline central nervous system abnormalities and appearance of the hypothalamic-pituitary axis on magnetic resonance imaging." *Journal of Clinical Endocrinology and Metabolism* 88: 5281-5286.
4. Chang AA, Guyer DR, et al. (2003). "Age-dependent variations in the drusen fluorescence on indocyanine green angiography." *Clinical & Experimental Ophthalmology* 31(4): 300-304.
5. Conway RM, Holbach LM, et al. (2003). "Benign fibrous histiocytoma of the corneoscleral limbus: unique clinicopathologic features." *Archives of Ophthalmology* 121(12): 1776-1779.
6. Conway RM, Hammer T, et al. (2003). "Cutaneous angiosarcoma of the eyelids." *British Journal of Ophthalmology* 87(4): 514-515.
7. Conway RM, Cursiefen C, et al. (2003). "Biomolecular markers of malignancy in human uveal melanoma: the role of the cadherin-catenin complex and gene expression profiling." *Ophthalmologica* 217(1): 68-75.
8. Gillies MC, Simpson JM, et al. (2003). "A randomized clinical trial of a single dose of intravitreal triamcinolone acetonide for neovascular age-related macular degeneration - One year results." *Archives of Ophthalmology* 121(5): 667-673.
9. Golchin B, Butler TKH, et al. (2003). "Long-term follow up result of lamellar keratoplasty as a treatment for recurrent pterygium Beta irradiation scleral necrosis." *Cornea* 22: 612-618.
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Published book

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13. Financial Statements

Save Sight Institute Statement of Income and Expenditure for the year ended 31 December 2003

	31 December 2003 \$	31 December 2002 \$
Income		
Grants and HECS	1,203,210	922,770
Scholarships, Donations and Bequests	179,598	211,218
Business & Investment Income	118,261	98,054
Fees and Charges	221,571	78,296
Internal & Other Income	511,070	665,632
Total Income	<u>2,233,710</u>	<u>1,975,970</u>
Expenditure		
Salaries	1,208,177	902,623
Consumables	136,917	100,624
Equipment & Repairs/Maintenance	377,088	404,975
Services and Utilities	25,475	36,449
Travel	40,605	44,515
Conference and Entertainment	19,677	12,088
Other Expenses	285,670	247,061
Business Group Expenses	435	0
Total Expenditure	<u>2,094,044</u>	<u>1,748,335</u>
Surplus	139,666	227,635
Accumulated Funds as at 1 January	699,035	471,400
Total Accumulated Funds	<u>838,701</u>	<u>699,035</u>

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2003

1. Statement of Significant Accounting policies

- a) These accounts have been prepared on a cash basis and amounts are stated at historical cost.
- b) Income Tax is not applicable to activities of the Foundation.
- c) All fixed assets are expensed in the year of purchase.

2 Suspense

The amount of \$13,780 is being held on behalf of a disbanded organisation.

13. Financial Statements *(continued)*

Save Sight Institute Balance Sheet as at 31 December 2003

	Notes	31 December 2003 \$	31 December 2002 \$
Assets			
Current Assets			
Expense Advance		1,065	0
Funds Participating in University Pool Interest		851,416	713,461
Total Current Assets		<u>852,481</u>	<u>713,461</u>
Total Assets		<u>852,481</u>	<u>713,461</u>
Liabilities			
Current Liabilities			
Suspense Account	2	13,780	13,780
Expense advance		0	646
Total Current Liabilities		<u>13,780</u>	<u>14,426</u>
Net Assets		<u>838,701</u>	<u>699,035</u>
Equity			
Accumulated Funds		838,701	699,035
Total Equity		<u>838,701</u>	<u>699,035</u>

I certify that the Statement of Income and Expenditure and Balance Sheet have been prepared in accordance with the University's accounting practices and procedures and reflect the transactions as recorded in the University's general ledger



BP McLaughlin FCPA
College Manager, Finance & Resources
College of Health Sciences
February 3, 2004

14. Major Donations

The SSI would like to thank all of our supporters who have, over the last year helped us to continue our research, teaching and community awareness programs. Listed below are the major contributors for the year 2003.

Corporate/ Industry organisations

Advanced Medical Optics
Alcon Laboratories Australia Pty Ltd
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BOC Instruments
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McFarlane Medical
Medfin Australia
National Ophthalmic Supplies Association
OPSM
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Lions NSW-ACT Save Sight Foundation
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Lions Club of The Entrance
Lions Club of Wauchope
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Northbridge Cameray Masonic Hall Co P/L
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Mr Ross Field
Ms Edit Gillott
Mr William Harper
Mr Peter Ketley
Mr Andrew Martin
Mr Ben Meek
Mr David & Mrs Terri Solsky
Mr Steven Stux
Mr Andrew Tosio
Mr David Tukerman OAM
Dr Derrick Woodhouse

14. Major Donations *(continued)*

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Lions Club of Burragorang
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Lions Club of Canberra Lake Tuggeranong
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Lions Club of Manilla
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17. Share the Vision ... Invest in the future



Share with us
a vision of
Sight for Life!

Bequests and Donations ensure the future of The Save Sight Institute.

Bequests & Donations

Donations over \$2 are tax deductible.

A bequest could take one of the following forms in your Will.

Money

I GIVE to The Save Sight Institute, The University of Sydney, the sum of \$.....which I direct to be paid to the Honorary Treasurer of the The Save Sight Institute to be applied for the purposes of The Save Sight Institute in such manner as the Council of Governors may determine.

Property

I GIVE to The Save Sight Institute, The University of Sydney, my property (insert address) or (my shares, debentures, etc. and describe them, e.g. BHP shares) to be applied for the purposes of The Save Sight Institute in such manner as the Council of Governors may determine.

General

If you wish to leave the whole or part of your estate:
I GIVE to The Save Sight Institute, The University of Sydney, the whole (or specified percentage, or the residue) of my estate or whatsoever nature or kind and wheresoever situated to be applied for the purposes of The Save Sight Institute in such manner as the Council of Governors may determine.

**For further information, please contact
The Save Sight Institute on:**

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Sight for Life

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