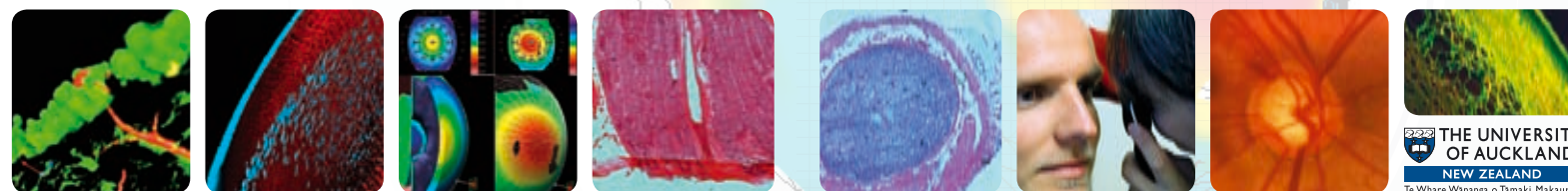


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nz national eye centre

NZ-National Eye Centre

Faculty of Medical and Health Sciences

The University of Auckland

Private Bag 92019, Auckland 1142

New Zealand

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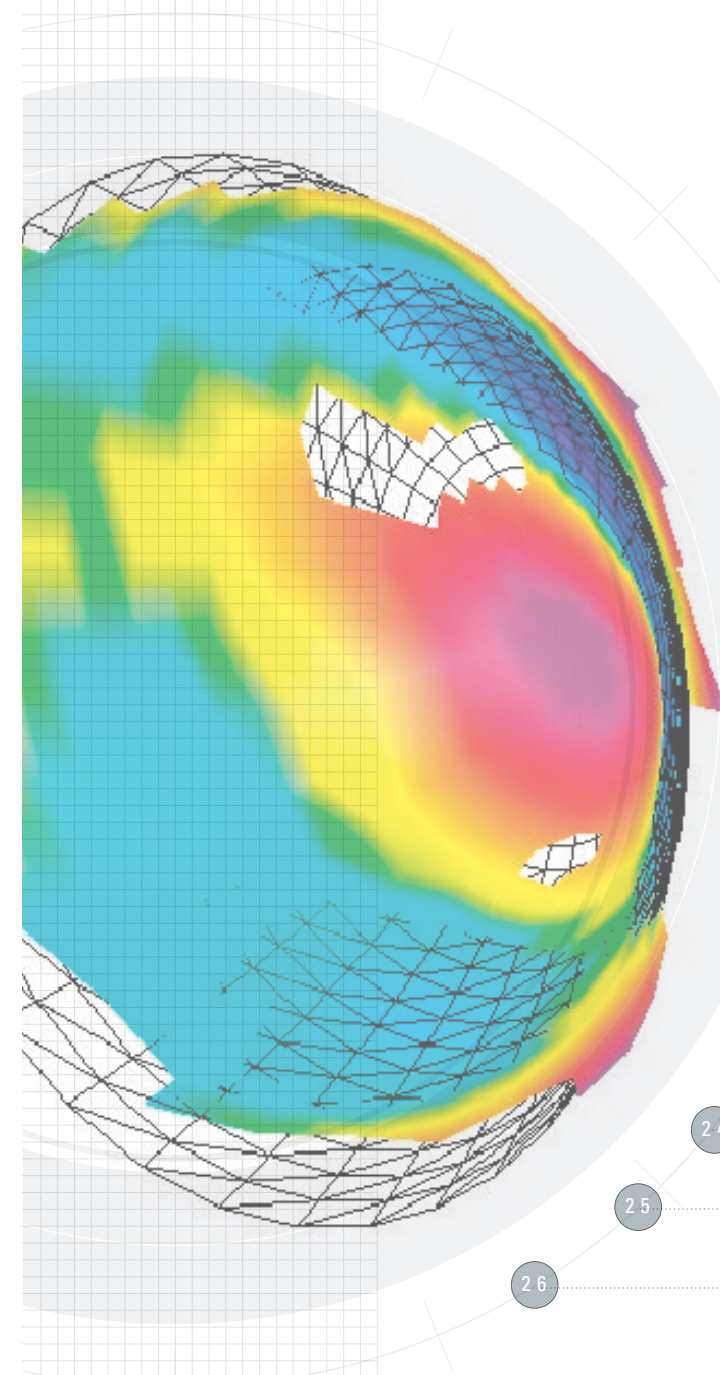
VISION FOR THE
FUTURE

INTRODUCING NZ-NEC

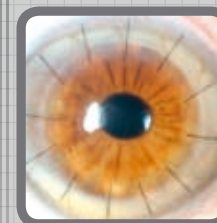
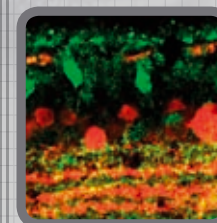
Eyesight is perceived by many as the most vital of our special senses. It has evolved to serve us well with the ancients charting the stars in our skies by naked eye and their mariners able to observe a single candle light at up to 10 miles. Thus, at its best our vision is excellent and in many ways it is how we primarily interact with the world and each other. However, as we age our eyes begin to fail us and, at its least this manifests as the annoyance of wearing reading spectacles in mid-life, but at its worst we suffer from a range of diseases, many age-related, that can cause profound visual impairment or even blindness. Fortunately, New Zealand enjoys the highest international standards of eye care from the kindred eye health professions of ophthalmology and optometry. None the less, we wage an unceasing war against the loss of sight that becomes increasingly difficult to win as our population grows and ages. Therefore, new clinical and research techniques are ever important in New Zealand and world wide if we are to better detect, prevent and hopefully cure the many causes of blindness that burden us. New Zealand has long been known to “punch above its weight” in the global research arena. Now a large team of expert clinicians, internationally recognised vision scientists, and acclaimed eye surgeons has assembled to form a centre that will provide outstanding educational opportunities, super-specialized clinical assessment and a veritable army of clinical and laboratory researchers to fight for sight – this is the New Zealand National Eye Centre.



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VISION FOR THE FUTURE

The New Zealand National Eye Centre (NZ-NEC) is the culmination of more than eight years of collaboration and planning between many researchers in the field of ophthalmology, optometry, eye health and visual sciences in the University of Auckland. The unique composition of the Centre includes the two ophthalmic professions – the Department of Ophthalmology (Faculty of Medical and Health Sciences) and the Department of Optometry and Vision Science (Faculty of Science) incorporating the Molecular Vision Laboratory, previously based in the Department of Physiology. The NZ-NEC constituent departments currently have a combined staff of more than 100 clinicians, clinician-scientists and vision-scientists, including honorary appointments, working in the area of eye health, vision research and education in New Zealand.

The scientific output of NZ-NEC members has been prodigious over the last eight years with more than 400 scientific publications, several textbooks and a number of international research patents. The diverse research groups have cumulatively raised over NZ\$18 million in research grants from a wide variety of organisations including the Health Research Council, District Health Boards, the ophthalmic industry, charitable organisations and through the generosity of individual New Zealand philanthropists. Thus the individual members of NZ-NEC have already established high profiles in their respective areas of research, both nationally and internationally. However, in the ongoing pursuit of excellence it is anticipated that under the NZ-NEC umbrella visual science and clinical research will be significantly boosted within the University of Auckland and New Zealand, through the growth of national and international collaborations.

NZ-NEC will not only increase the profile of New Zealand vision sciences but will also provide a unifying platform to support undergraduate and postgraduate teaching and the development of tertiary clinical services. NZ-NEC provides a unique base for collaborative research submissions in competitive grant acquisition, as well as contractual work with industry, since the combined expertise and facilities enable completion of projects from basic laboratory research to clinical trials.

Ultimately, the New Zealand National Eye Centre provides a common and easily identifiable focus for eye health research and education in New Zealand/Aotearoa and will facilitate greater interaction and collaboration with external organisations, research institutions, government and the general public.



Prof. Charles McGhee,
Prof. Michael Kalloniatis and
Professor Paul Donaldson,
co-signatories to the MOU
that led to the formation
of the NZ-NEC

NZ-NEC SPECIFIC GOALS

VISION

"To eliminate preventable blindness and reduce visual impairment"

MISSION

"To become a foremost international vision research, clinical and teaching centre through excellence, innovation and collaboration"

GOALS

"To develop and increase the profile of eye health, vision research and education - in New Zealand/Aotearoa and internationally"

Laboratory Research – to build a local framework for collaborative funding applications that further expands, develops and strengthens existing national and international research collaborations.

Clinical Research and Clinical Services – to use combined clinical resources to expand the scope of clinical research and promote cross-disciplinary clinical research questions and to become a national centre for clinical trials related to eye and vision care and the centre for the assessment of rare ocular disease in New Zealand.

Application of Research into Practice – to develop, promote and facilitate implementation of research into practice with a strong focus on translational visual sciences research and to facilitate appropriate, ethical, and balanced access to human trials and human tissue for research in New Zealand.

Innovation – to develop, and appropriately apply, outcomes of laboratory research in the clinical environment through translational vision research.

Collaboration – to provide a highly visible framework to promote the strength of eye research and collaborations with local, national and international research groups and to increase liaison with key stakeholders.

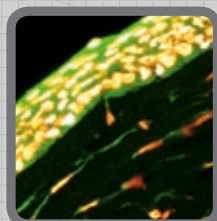
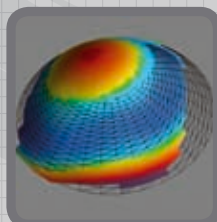
Teaching and Learning – to enhance cross-department undergraduate teaching and facilitate opportunities for increased clinically-based undergraduate training as well as to increase opportunities for Honours, Masters, MD and PhD candidates in the University of Auckland, and to review teaching programs to create additional opportunities and develop more integrated postgraduate professional education programs.

Community Outreach – to develop programs and resources to educate the public on issues related to eye health and maximise the opportunity to avoid preventable visual impairment and blindness.

Public Health Policy – to ensure that New Zealand's eye health care has an identifiable and representative voice that is heard by government health policy makers. To further develop links with District Health Boards, the Ministry of Health and the professional bodies of NZ optometrists and NZ ophthalmologists.

“... the unique
composition of
the centre
includes the two
ophthalmic
professions –
ophthalmology
and optometry”

DEPARTMENT OF OPHTHALMOLOGY



The University Section of Ophthalmology was initially created as a sub-division of the Department of Surgery in 1968. Dr Hylton LeGrice FRANZCO, OBE was appointed as the foundation Clinical Lecturer in Ophthalmology in 1970 and shortly afterwards as the Clinical Reader in Ophthalmology, a post he held until 1983. The foundations of the research and academic activities of the department were significantly enhanced when Dr Gillian Clover PhD, FRANZCO was appointed as the first Sir William and Lady Stevenson Senior Lecturer in Ophthalmology and Head of Department in 1984 and subsequently the Sir William and Lady Stevenson Associate Professor in 1999. The initial accommodation and staffing were modest with 5-6 staff occupying 3 offices and one research laboratory on the 4th floor of the pathology building on the Medical School campus.

A significant donation by the industrialist and philanthropist Dr Maurice Paykel, augmented by generous support from the local ophthalmic community, the University of Auckland, Auckland Healthcare Ltd and other donors allowed the establishment of the first Foundation Chair of Ophthalmology in New Zealand in 1998. In recognition of his generous support, the Foundation Chair was named The Maurice Paykel Chair of Ophthalmology. Professor Charles McGhee PhD, FRCS, FRCOphth was appointed as the first Maurice Paykel Professor and Chair of Ophthalmology in late 1998 and Dr Trevor Sherwin PhD and Dr Jennifer Craig PhD MCOptom joined the team shortly thereafter. Dr Helen Danesh-Meyer MB, FRANZCO was recruited from a post in the USA, as a Senior Lecturer in mid-2000 and was appointed as the Sir William and Lady Stevenson Associate Professor a year later.

An endowment from the Wendy and Bruce Hadden Trust in 2005 helped establish the W & B Hadden Chair of Ophthalmology and Translational Vision Research. Professor Colin Green PhD, DSc an eminent cell biologist with an international reputation in research into wound healing, particularly in the cornea, is the first recipient of this second chair. The addition of translational vision research to the department brings scientific and clinical aspects of ophthalmology closer by taking laboratory science directly to the clinical setting and bringing clinical questions directly to the laboratory – essentially from “laboratory to bedside”.

Subsequent Senior Lecturer appointments to faculty staff include Dr Andrea Vincent FRANZCO (ocular genetics), Dr Sue Ormonde MD FRCOphth (cornea) and Dr Dipka Patel PhD MRCOphth (anterior segment). Honorary clinical senior lecturer appointments have included Dr Tahira Malik (medical retina), Dr Mark Donaldson (medical retina and glaucoma), Dr David Pendergrast (cornea), Associate Professor Philip Polkinghorne (vitreo-retinal surgery) and Associate Professor Gerard Sutton (cornea). In addition the team now includes two post-doctoral fellows, four technical research staff, five clinical research fellows and a large number of PhD and MD candidates. The department also provides the base for the New Zealand National Eye Bank,



Dr Hylton LeGrice



A. Prof. Gillian Clover



Prof. Charles McGhee



A. Prof. HV Danesh-Meyer



Prof. Colin Green

Glaucoma New Zealand, and the RANZCO journal – Clinical and Experimental Ophthalmology.

Overall the Department of Ophthalmology and Visual Sciences has grown from a handful of staff in 1998 to around 40 staff and research students in 2008. This growth has been associated with the completion of several PhD and MD theses, the generation of approximately \$12,000,000 in research funding and the publication of more than 300 research papers and chapters. The Department now occupies an entire floor of the Pathology building on the faculty of Medical and Health Sciences campus in Grafton and contains a number of state of the art laboratories, a large microsurgical facility and extensive teaching and clinical research facilities.

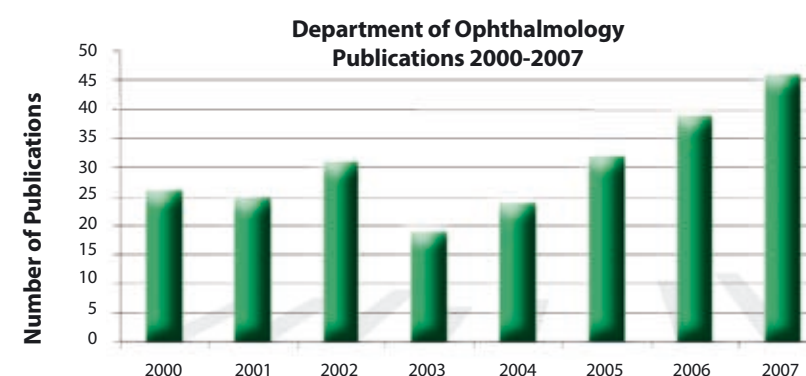


Fig 1. This graph highlights the virtually two-fold increase in peer-reviewed research publications from the Department of Ophthalmology, rising from 26 to 46 scientific papers per annum, in the period 2000-2007.

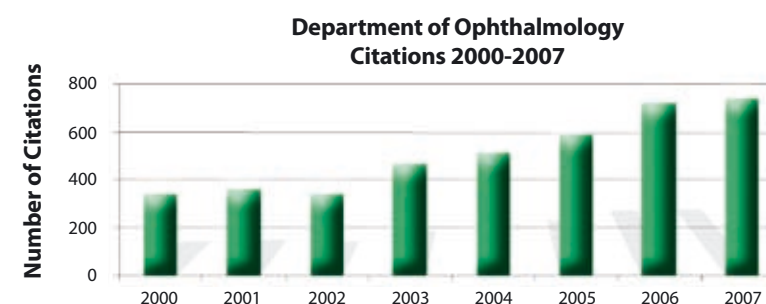
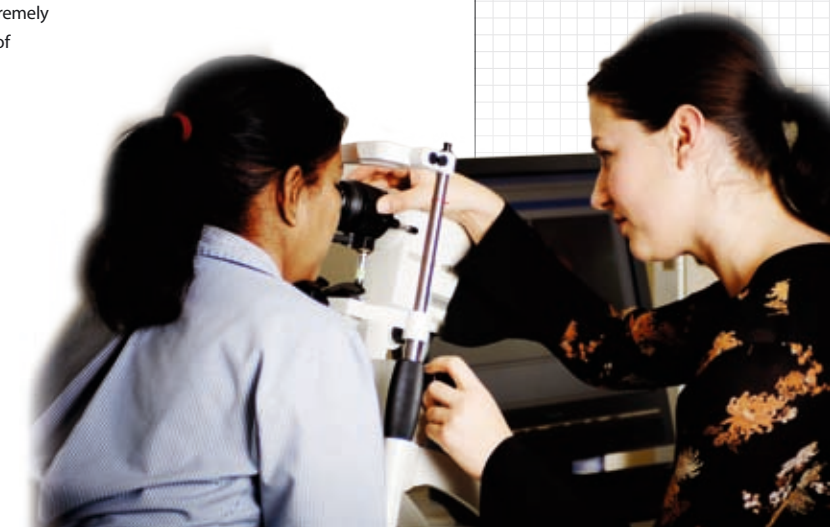
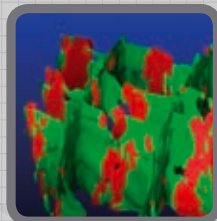


Fig 2. Citation in the published scientific literature is one useful indicator of the quality, importance and international impact of research output. This graph highlights an extremely high, and growing, citation rate of papers produced by members of the Department of Ophthalmology.

“The department has grown from six to forty staff and research students in the last ten years.”



DEPARTMENT OF OPTOMETRY AND VISION SCIENCE



The undergraduate program in Optometry at the University of Auckland was initiated with the appointment of Professor TP Grosvenor in 1964 and the current BOptom degree was subsequently introduced in 1982. The Department of Optometry and Vision Science was established in 1987 and a Chair in Optometry in 1988, with the foundation Professor being Leon Garner (now retired). To further build the research output of the Department, an additional chair in Optometry was created with Professor Michael Kalloniatis taking up the Robert G Leidl Chair in Optometry in 2002.

The undergraduate program now has on average 50 students per academic year with clinical training undertaken within the University clinics (Grafton and Tamaki campus), private optometric and ophthalmology clinics, and the Greenlane Hospital ophthalmology outpatients and accident and emergency clinics. Interdisciplinary teaching and research collaboration also includes the Department of Ophthalmology, the Molecular Vision group and the Bioengineering Institute.

A team of highly talented and dedicated teaching clinicians supports teaching provision, some of whom hold visiting lecturer/senior lecturer appointments or are senior clinical tutors. Furthermore, in response to recent legislation changes allowing optometrists to have, use and prescribe therapeutic drugs in Australia and New Zealand, the profession has embarked on an exciting era with an expanded scope of practice that encompasses a fuller role as a primary ophthalmic care provider.

The increase in number of undergraduate and graduate students and the increased research activity over the past six years, has allowed the department to more than double in size. This change has resulted in a number of new academic appointments spanning the laboratory and clinical sciences. There are two laboratories working on retinal neurochemistry and retinal development (Professor Michael Kalloniatis and Dr Monica Acosta); a large myopia group lead by Dr John Phillips, including one of our senior tutors (Andrew Collins); a number of researchers in the clinical sciences including Associate Professor Rob Jacobs, Dr Jennifer Craig and Dr Geraint Phillips. Exciting expansions in the field of visual evolution have recently occurred through the appointment of Dr Misha Vorobyev and brain imaging with the appointment of Dr Ben Thompson.

Most recently, a second professorial chair has been created, which after an extensive international search was filled by Professor Paul Donaldson, who heads the Molecular Vision Laboratory (MVL). The MVL is a laboratory science based group with extensive molecular and cellular expertise in the general field of membrane transport. Members of the laboratory utilize electrophysiology, imaging, biochemistry, proteomics, molecular biology, and computer modeling to determine how the properties of ion channels and transporters contribute to the integrative function of ocular tissues that comprise the front of the eye. The MVL team will combine with the Department of Optometry and Vision Science in mid-2008. Thus the



Prof. Leon Garner



Prof. Michael Kalloniatis



A.Prof. Rob Jacobs



Prof. Paul Donaldson

Department has undergone a significant period of growth and now contains a number of internationally distinguished vision researchers (see citations graph).

The expanding research programme over the past few years has resulted in the attraction of postgraduate students and research collaborations throughout the world and within the University of Auckland. It also included successes in national competitive grants (Health Research Council of New Zealand and Marsden Fund) and a number of grants through the Auckland Medical Research Foundation and other philanthropic organisations. The department now has a strong graduate program with six PhD students currently enrolled with two graduating in 2007/08.

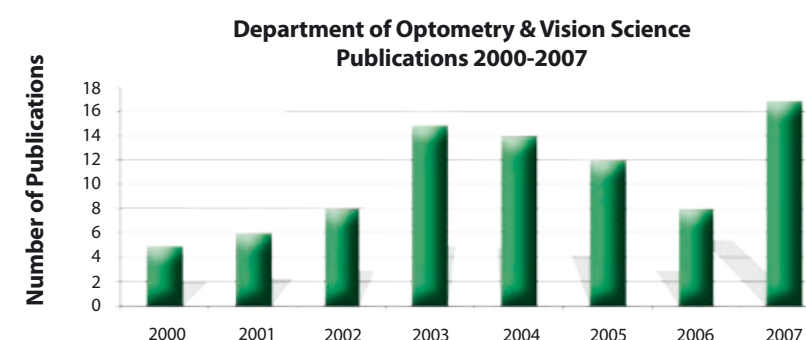


Fig 3. This graph highlights the three-fold increase in peer-reviewed research publications from staff in the Department of Optometry and Vision Science, rising from 5 to 17 scientific papers per annum, in the period 2000-2007.

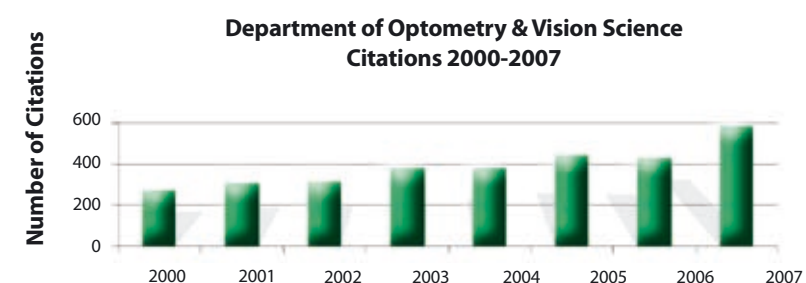
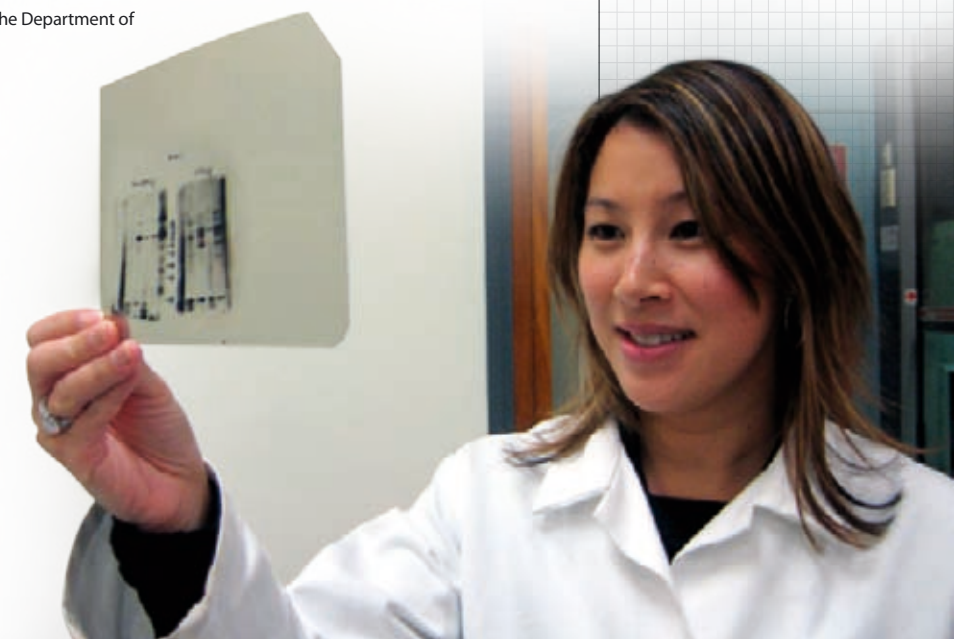


Fig 4. Citation in the published scientific literature is one useful indicator of the quality, importance and international impact of research output. This graph highlights an extremely high, and growing, citation rate of papers produced by members of the Department of Optometry and Vision Science.

“... increased research activity over the last six years, has allowed the department to more than double in size.”



NEW ZEALAND NATIONAL EYE CENTRE

FOUNDATION MEMBERS OF NZ-NEC

The founding members of NZ-NEC were the Department of Ophthalmology, Department of Optometry and Vision Science and the Molecular Vision Laboratory (Department of Physiology) who together signed a memorandum of understanding in March 2007. In mid 2008 the Molecular Vision Laboratory will join the Department of Optometry and Vision Science. Although NZ-NEC provides a unifying platform for a common vision and goals, the two key foundation departments will continue to retain their distinct professional identities.

Management Team

The management team is composed of the Director, Deputy Director and the manager of NZ-NEC working closely with their support staff for the running of the centre. This group will consult and interact closely with the scientific advisory board to coordinate the overall direction of the centre, identify new initiatives, and foster collaborations between the groups.

Professor Charles McGhee	Director NZ-NEC, HOD Ophthalmology
Professor Michael Kalloniatis	Deputy Director NZ-NEC, HOD Optometry & Vision Science
Ms Sue Raynel	Manager NZ-NEC

Advisory Board

The formal advisory board for the NZ-NEC Faculty Centre will consist of seven members: Dean of Faculty of Medicine and Health Sciences (FMHS) or nominee, the Director and Deputy Director of NZ-NEC, representative members from the two professional bodies (Optometry and Ophthalmology), and members external to the organisation.

Professor Iain Martin	Dean FMHS (or nominee) (Chair)
Professor Charles McGhee	Director NZ-NEC, HOD Ophthalmology
Professor Michael Kalloniatis	Deputy Director NZ-NEC, HOD Optometry & Vision Science
Mr Gordon Sanderson	External Member, University of Otago
Dr O Bruce Hadden	Former President, Royal Australian & New Zealand College of Ophthalmologists
To be confirmed	Member New Zealand Association of Optometrists
To be confirmed	Research Scientist, external to University of Auckland

Scientific Steering Group

Professor Charles McGhee	Director, Department of Ophthalmology
Professor Michael Kalloniatis	Deputy Director, Department of Optometry & Vision Science
Professor Paul Donaldson	HOD Elect, Department of Optometry and Vision Science
Professor Colin Green	Department of Ophthalmology
Dr Trevor Sherwin	Department of Ophthalmology
Assoc Professor Rob Jacobs	Department of Optometry & Vision Science
Dr Raid Alany	School of Pharmacy

Affiliated Members

School of Pharmacy, University of Auckland
Department of Anatomy with Radiology, University of Auckland
Auckland Bioengineering Institute, University of Auckland

Associations

Charitable Organisations:

Glaucoma New Zealand
New Zealand National Eye Bank
Save Sight Society New Zealand

National Professional Organisations

Royal Australian and New Zealand College of Ophthalmologists (RANZCO)
New Zealand Association of Optometrists (NZAO)

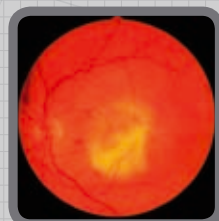
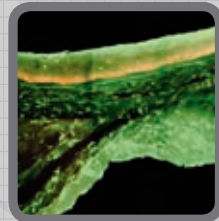
Clinical, Teaching and Research Associations

Department of Ophthalmology, Auckland District Health Board
Department of Ophthalmology, Waitemata District Health Board
Department of Ophthalmology, Counties Manukau District Health Board
Auckland Eye
City Eye Specialists
Eye Doctors
Eye Institute
Milford Eye Clinic
Retina Associates

Other Collaborations

A large number of research and teaching collaborations currently exist with universities and research organisations, nationally and internationally, including several links with: Argentina, Australia, Canada, England, Germany, Hong Kong, Japan, New Zealand, Scotland, Sweden, and the USA.

“A large number of research and teaching collaborations currently exist with universities and research organisations, nationally and internationally.”



Department of Ophthalmology



**Maurice Paykel Professor
& Chair of Ophthalmology,
Head of Department**

Charles N. J. McGhee, MBChB, BSc(Hons),
PhD, FRCS, FRCOphth, FRANZCO, FRSA



**W & B Hadden Professor
of Ophthalmology and
Translational Vision Research**

Colin R. Green, BSc, MSc, PhD, DSc



**Sir William and Lady
Stevenson Associate
Professor of Ophthalmology**

Helen V. Danesh-Meyer,
MBChB, MD, FRANZCO



**Senior Lecturers in
Ophthalmology**

Dr Trevor Sherwin, BSc, PhD



Dr Andrea Vincent, MBChB, FRANZCO



Dr Dipika V Patel, BA, MA, BM.BCh,
PhD, MRCOphth



Dr Susan E. Ormonde, MBChB, MD,
FRCOphth, FRANZCO

Lecturer / HRC Fellow

Dr Jennifer C Fan, BHB MBChB

Postdoctoral Research Fellows

Dr Kaa-Sandra Chee, BSc, MSc(Hons), PhD
Dr Simon O'Carroll, BSc, MSc (Hons), PhD

Maurice and Phyllis Paykel Research Fellow

Dr James McKelvie, BHB, MBChB

Clinical Research Fellows

Dr Ryan Eidsness, MD
Dr Andrew Thompson, BSc, MBChB
Dr Clairton De Souza, MD
Dr Rasha al Taie, MBChB
Dr Monika Pradhan, MBChB, MRCOphth

Department Administration

Hutokshi Chinoy, BCom
Maree McInerney, Dip Bus

Research and Development Manager

Susanne Raynel, RN, OND, BHSc, MA

Research and Technical Staff

Jane McGhee, BSc - Senior Research Technician
Amanda Richards, BSc - Research Technician
Elizabeth Eady, BSc(Hons) - Research Technician
Judy Loh, BSc, MSc - Research Technician

New Zealand National Eye Bank

Louise Moffatt, BSc - Manager
Nigel Brookes, BSc, MSc - Senior Technical Officer
Helen Twohill, BA - Transplant Coordinator

Editorial Office: Clinical & Experimental Ophthalmology

Victoria Cartwright, BA - Managing Editor

Glaucoma New Zealand

Heather Hyland, BA, Dip Tchg, Dip TL - Administrative Manager
Karon Farmer, DipBus
Associate Professor Helen V. Danesh-Meyer, MBChB, MD, FRANZCO
- Managing Trustee

Postgraduate Students: PhD Candidates

Ally Chang, BSc Hons
Dr Rachael Niederer, BHB, MBChB
Jinny Yoon, BSc (Hons)
Ilva Rupenthal, BSc Pharm
Assoc. Prof. Helen Danesh-Meyer, MBChB, MD, FRANZCO
Ia Chevreva, BSc (Hons), BA
Megan Marcott, BSc (Hons), MSc
Joan Davidson, BSc (Hons),
Dr Taras Papchenko, BHB, MBChB -
Alcon Optic Nerve Research Fellow
Dr Clairton De Souza, MD
Charlotte Jordan, BOptom (Hons)
Carthur Wan, BSc (Hons)
Thilini Thirimawithana, BPharm (Hons)
Dr James McKelvie, BSc(Hons), MBChB

Postgraduate Students: MD Research Thesis Candidates

Dr Narme Deva, BHB, MBChB - Alcon Glaucoma Research Fellow
Dr Catherine Wheeldon, BSc, MBChB, MRCOphth
Dr Shenton Chew, MBChB
Dr Nathan Kerr, MBChB
Dr Jennifer Fan, BHB, MBChB

BSc Honours Students

Dasha Nelidova, BSc

Honorary Academic Staff

Honorary Clinical Associate Professors in Ophthalmology

Dr Philip Polkinghorne, BSc, MB, MD, FRACS, FRANZCO, FRCOphth
Dr Gerard Sutton, MBChB, FRANZCO

Honorary Senior Lecturers

Dr Mark Donaldson, MBChB, FRANZCO
Dr Christina Grupcheva, MD, PhD, DO, FEBO
Dr Tahira Malik, MBChB, FRCOphth

Honorary Clinical Senior Lecturers

Dr Rachel Barnes, MBChB, FRANZCO
Dr Stephen Best, MBChB, FRANZCO
Dr Shuan Dai, MD, FRANZCO
Dr Michael Fisk, MBChB, FRANZCO
Dr Trevor Gray, MBChB, FRANZCO
Dr Peter Hadden, MBChB, FRANZCO
Dr Carolyn Hope, MBChB, FRANZCO
Dr Justin Mora, MBChB, FRANZCO
Dr Stephen Ng, MBChB, FRANZCO
Dr David Pendergrast, MBChB, FRACS, FRANZCO
Dr Andrew Riley, MBChB, FRANZCO
Dr Paul Rosser, MBChB, FRANZCO
Dr Dianne Sharp, MBChB, FRANZCO
Dr Brian Sloan, MBChB, FRANZCO
Dr Jo Koppens, MBChB, FRANZCO
Dr Sonya Bennett, MBChB, FRANZCO
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Dr Ian Elliott, MBChB, FRANZCO
Dr Ross McKay, MBChB, FRANZCO
Dr Simon Dean, MBChB, FRANZCO
Dr Jo Sims, MBChB, FRANZCO



Hutokshi Chinoy,
BCom

Susanne Raynel,
RGN, BHSc, MA



Clinical Associate Professor
Dr Philip Polkinghorne,
BSc, MB, MD, FRACS, FRANZCO,
FRCOphth

Department of Optometry and Vision Science (DOVS)



**Robert G Leitl
Chair of Optometry,
Head of Department**

Professor Michael Kalloniatis,
BSc(Optom), MSc(Optom), PhD



Professor of Optometry

Professor Paul Donaldson, BSc, PhD



Associate Professor

Associate Professor Robert Jacobs,
MSc, PhD, GradDipBus LOSc, FAAO



Senior Lecturers

Dr Geraint Phillips, BSc, PhD,
MCOptom, DCLP



Dr John Phillips, BSc, MSc, PhD,
MCOptom, FAAO



Dr Jennifer Craig, BSc(Hons),
PhD, MCOptom, FAAO, FBCLA



Dr Misha Vorobyev, PhD

Lecturers

Dr Monica Acosta, MSc, PhD
Dr Benjamin Thompson, BSc(Hons), DPhil

Senior Tutor/Tutor

Mr Andrew Collins, BOptom, MSc
Miss Stuti Misra, BOptom, MSc

Senior Clinic tutors

Dr Wanda Lam, OD
Dr James Rogala, OD
Dr Sara Schultz, OD
Mrs Lisa Silva, MCOptom
Miss Bhavini Solanki, BSc (Hons), MSc
Mrs Ursula White, MCOptom

Visiting Lecturers/Senior Lecturers

Grant Watters, MSc, DipCLP, FCLS
Richard Johnston, MCOptom, FAAO
Nisha Jeyaseelan, BSc, BOptom (Hons)
Nicola Anstice, BOptom (Hons)
Melinda Calderwood, BOptom, GDipSci

Post Doctoral Research Fellow

Dr Jacqueline Chua, BOptom, PhD

Research and Technical Staff

Niru Aruthavasothy, BSc(Hons)

Postgraduate Students: PhD Candidates

Jacqueline Chua, BOptom
Joanna Black, BSc, BOptom
Simon Backhouse, BOptom
Sae Kyung Shin, BOptom
Nicola Anstice, BOptom
Silvia Park, BSc(Hons)

DOVS - Molecular Vision Laboratory

Post Doctoral Research Fellows

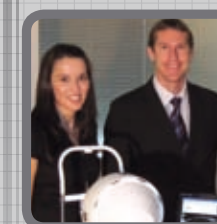
Dr Julie Lim, MSc, PhD
Dr Marc Jacobs, Humanities(Hons), BS(Hons), MS, PhD

Technicians

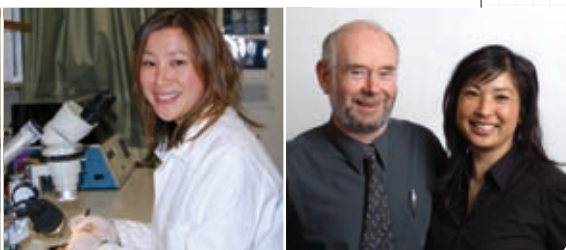
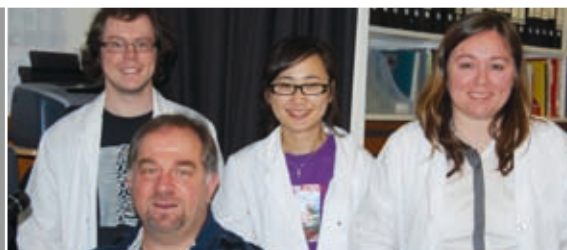
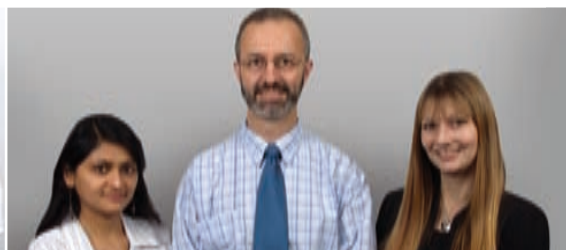
Ivy Li, MSc
Kerry Walker, MSc

Postgraduate Students: PhD Candidates

Haruna Suzuki, BSc (Hons)
Nancy (Ju-Wei) Liu, BSc (Hons)
Irene Vorontsova, BSc (Hons)
Ehsen Vaghefi, MSc



“... more than
100 clinicians,
clinician-scientists
and vision
scientists working
in the areas of
eye health, vision
research and
education”



NZ-NEC UNDERGRADUATE AND POSTGRADUATE TEACHING



Undergraduate Ophthalmology

More than 600 students in the undergraduate medical curriculum are taught each year by the Department of Ophthalmology with teaching occurring in 3rd, 4th, 5th and 6th years of the courses. In total each medical student spends more than two weeks being exposed to clinical and theoretical aspects of ophthalmology, which are then used in many other sub-specialty attachments. In addition more than a dozen medical and science students undertake extended clinical or research attachments each year. All fifth year students are also taught basic vision assessment techniques in conjunction with the Department of Optometry and Vision Science.

Undergraduate Optometry

There are over 200 students within the undergraduate optometry program. The final year optometry students are involved not only in the delivery of primary ophthalmic care, working in both the Grafton and Tamaki clinics, but also undertake community vision screenings. With the change in legislation allowing optometrists to prescribe a number of therapeutic agents, the interaction between the Department of Optometry and Vision Science and the Department of Ophthalmology has significantly increased. Undergraduate teaching by the Department of Ophthalmology is undertaken in part III and IV of the optometry program including both didactic and clinical teaching within a hospital setting.

Postgraduate Ophthalmology

The Department of Ophthalmology is heavily involved in the clinical training of eight local vocational registrars each year who are pursuing fellowship of the Royal Australian and New Zealand College of Ophthalmologists. In addition five clinical research fellows from as far afield as the UK, Germany, Bulgaria, Brazil and the USA undertake advanced clinical and surgical training each year. The department has state of the art teaching facilities including the Calvin Ring Microsurgical Wetlab and works closely with the Ophthalmology Department at Greenlane Hospital and a number of private ophthalmic practices in Auckland.

Postgraduate Optometry

The development of a large active postgraduate program has provided an additional career option for optometry graduates to pursue. In addition, it has become an avenue of increased collaboration on the research front between different laboratories involved in vision research. Postgraduate supervision is becoming interlaced between the various members of NZ-NEC.

The postgraduate teaching also involves assessment and award of postgraduate diplomas. The legislation changes allowing optometrists to use a range of therapeutic agents has not only meant a change in the undergraduate teaching, but also the development of a postgraduate ocular therapeutic course. This course is undertaken in conjunction with the Department of Ophthalmology, which provides about one half of the didactic component. The postgraduate students also undertake clinical rotations within a hospital setting and in private ophthalmology clinics. Such interaction has been conducive to establishing and developing close collaborations not only between the academic departments but also between the two ophthalmic professions.

Dr. Dipika Patel with Vice Chancellor Prof. Stuart McCutcheon

NZ-NEC Postgraduate Research

The life-blood of research productivity in any university remains the interaction between experienced mentors and up and coming researchers, particularly those pursuing research degrees in the form of masters (MSc) and doctorate degrees. The members of the NZ-NEC provide postgraduate opportunities in the full range of laboratory and clinical based higher degrees including Doctor of Philosophy (PhD) and Doctor of Medicine (MD).

The breadth of research experience offered by NZ-NEC optometrists, scientists and ophthalmologists is unparalleled in Australasia and enables the completion of projects covering all aspects of the clinical and visual sciences related to the eye and vision apparatus – from the skin of the eyelids to the inner recesses of the occipital lobe of the brain. Indeed, at the present time some 30 postgraduate students are undertaking, or have just completed, PhD and MD research studies in the departments of the NZ-NEC, making it one of the larger vision science research centres internationally.

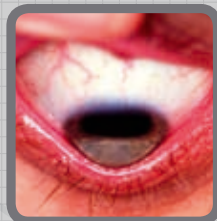


(L-R) Dr Trevor Sherwin, Prof. Charles McGhee, Dr Christina Grupcheva and Dr Jennifer Craig at graduation of Dr Grupcheva MD, PhD.



(L-R) Dr Trevor Sherwin at the inter-departmental graduations of Dr Gerry Cairns MCOptom, PhD Dr Nisha Sachdev MBChB, PhD and Dr Kaa-Sandra Chee MSc, PhD.

“... some thirty postgraduate students are undertaking, or have just completed, PhD and MD research studies...”



There are fourteen distinct but inter-related research teams under the NZ-NEC umbrella and many collaborations currently exist with national and international groups. It is anticipated that research linkages will rapidly increase as NZ-NEC becomes fully established, is successful in obtaining program grants, and further develops and expands national and international partnerships with: academic and clinical institutions, pharmaceutical companies, and the optical and surgical device industry.

The need for research into the causes and treatment of eye disease in New Zealand/Aotearoa has never been more important with a number of eye diseases specific to the ageing population, the increased incidence of diabetes, and the genetic basis of many eye diseases providing a focus and ongoing challenge for the research teams within NZ-NEC.

The foundation members of NZ-NEC are conducting research in all of the preceding areas, either collaboratively or specifically in their respective departments and/or clinical environments.

1. Cornea and External Eye Diseases

This research area includes diseases of the lid margin, conjunctiva, tear film and the cornea i.e. the front and external portion of the eye. In clinical terms it often overlaps with disease of the iris and the lens (see section 2) and a number of corneal diseases have a genetic basis (see section 7). Certain corneal diseases such as keratoconus (a progressive thinning and bowing forward of the cornea) are more common in New Zealand than elsewhere and in severe cases may lead to corneal transplantation. The New Zealand National Eye Bank, that provides the tissue for approximately 240 corneal transplantations in New Zealand each year, is based in the Department of Ophthalmology.

Research in this area is both clinical and laboratory based with a bias toward translational research i.e. research emanating from the laboratory that will eventually be used in the treatment of eye disease.

The **Cornea and Anterior Segment Research Group** (Department of Ophthalmology) is a large collaborative research group of 15-20 clinicians, scientists and research fellows that cross boundaries with several NZ-NEC research groups. Professor Charles McGhee leads the group in conjunction with Dr Dipika Patel, Dr Sue Ormonde, Dr Trevor Sherwin and Professor Colin Green. Current research fellows include: Dr Rasha al Taie, Dr Jennifer Fan, Ms Charlotte Jordan and Dr James McKelvie.

The group attracts a large number of international clinical and research fellows from as far afield as Australia, Brazil, Bulgaria, Germany, Great Britain, Iraq, Taiwan and the USA. Research projects have resulted in a large number of successful MD and PhD thesis completions. Successful grant funding has enabled the acquisition of a number of items of expensive, state-of-the-art, clinical research equipment unavailable elsewhere in New Zealand. This equipment and the associated clinical expertise of the team are also made available to patients being treated in the public or private health sector.

The interests of this research group are particularly wide-ranging and include a) studies on the pathogenesis and treatment of keratoconus, b) analyses of inherited corneal dystrophies (with Dr Andrea Vincent), c) surgical and laboratory components of corneal transplantation and graft rejection, d) cataract and corneal refractive surgery, e) several aspects of computerized corneal topography, f) in-vivo confocal microscopy of the corneal microstructure, g) ocular trauma, ocular healing and anterior segment reconstruction, h) ocular infections and ocular pharmacology including novel therapeutics (with Professor Colin Green) and i) medical education and aspects of publication and citation in scientific journals (with Dr Jennifer Fan and Ms Vicky Cartwright). These interests have led to three textbooks and more than one hundred peer-reviewed research papers in the last ten years. (Selected publications 1,2,3).

The **Ocular Surface Investigation Laboratory** (Department of Optometry and Vision Science) is led by Dr Jennifer Craig and primarily focuses on diseases associated with the ocular surface and is the

only laboratory facility of its kind in New Zealand, equipped with highly specialised equipment for the evaluation of the tear film and ocular surface.

The team includes Miss Nisha Jeyaseelan and Mr Grant Watters (Visiting Lecturers) and collaborates with Dr Raid Alany (School of Pharmacy), Professor Charles McGhee (Dept. of Ophthalmology), Dr Paul Murphy, Dr Christine Purslow (Cardiff, UK), Professor James Wolffsohn (Birmingham, UK), Dr Rob Fuller (Plymouth, UK) and Dr Ian Pearce (Glasgow, UK).

Key clinical and research interests include a) study of the tear film and ocular surface in the normal eye and in various ocular surface diseases, including dry eye and keratoconus, b) evaluation of the effect of novel drug delivery systems, including liposomal sprays, on normal, dry eye and contact lens wearing eyes and c) evaluating a novel therapy for meibomian gland dysfunction and tear film lipid deficiency. (Selected publications 4,5,6)

The **COR^{NE} Laboratory Group** (Department of Ophthalmology) is led by Dr Trevor Sherwin, an internationally recognized cell biologist, and aims to understand disease processes in the cornea and works towards therapeutic treatments for corneal repair. The work in the laboratory focuses on 3 main aspects of corneal research: a) elucidating the pathogenesis of corneal dystrophies, b) modeling the human cornea and c) the role of stem cells in corneal wound healing.

Recent collaborations between Professor Charles McGhee, Dr Trevor Sherwin and Dr Dipika Patel have led to the submission of an international research patent in relation to transplantation of individual corneal cells (keratocytes) into recipient corneas as a potential treatment for blinding corneal diseases.

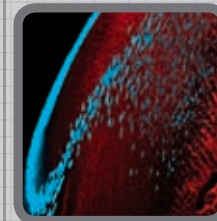
The principal research team includes Jane McGhee (Senior Research Technician), Nigel Brookes (Senior Technical Officer), Judy Loh (Research Technician), Dr Rachael Niederer, Ally Chang and Tarn Donald (PhD students) and Dr Jennifer Fan (MD student). The work is performed in collaboration with Professor Charles McGhee and Professor Colin Green. (Selected publications 7,8,9)

2. Cataract and Cataract Surgery

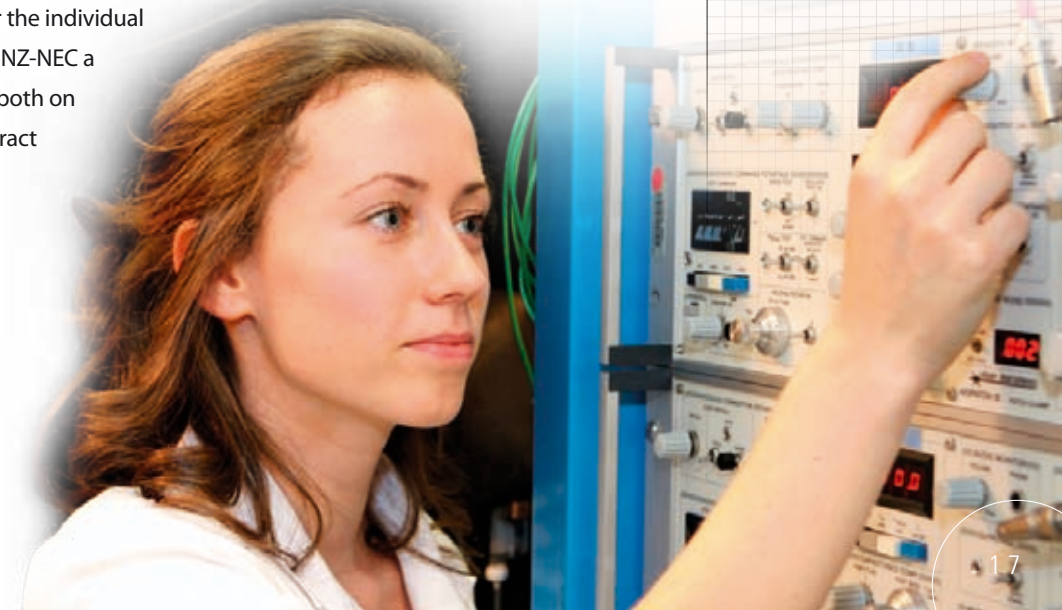
A cataract is opacity or loss of transparency in the lens of the eye resulting in reduced vision and is probably the most well-known age related eye disease. Currently the only treatment option to rehabilitate vision is surgical intervention. Indeed cataract surgery is the most common cause of blindness worldwide, and is also the most common surgical procedure performed on New Zealanders over the age of 65 years.

Although cataract surgery is highly effective in eyes that are otherwise healthy, it is anticipated that the demand for cataract surgery will increase by 60% over the next 10 years placing an overwhelming demand on the public health system that is unlikely to be met. Therefore making improvements in the surgical approach, or finding alternatives to surgery, have the potential to make an enormous impact not only for the individual but also for global health systems. Within NZ-NEC a large number of researchers are working both on the laboratory and clinical aspects of cataract development and treatment.

The **Molecular Vision Laboratory** (Department of Optometry and Vision Science), led by Professor Paul Donaldson and Dr Julie Lim, has been conducting groundbreaking research on the human lens and cataract for a number of years.



“There are fourteen distinct but inter-related research teams under the NZ-NEC umbrella...”





Professor Donaldson has recently been appointed as Professor of Optometry and Vision Science and he will relocate and integrate his Molecular Vision Laboratory team into an expanded Department of Optometry and Vision Science in 2008.

This team is investigating several aspects of the lens including: a) development of a computer model that encapsulates experimental data into an integrative model of lens function, b) targeting in-situ proteomic approaches to investigate the changes in lens membrane proteins involved in the initiation of lens cataract and c) development of an experimental model of age related nuclear cataract.

Significant research funding has been received from several sources, the major ones are: USA National Institutes of Health subcontract, a New Zealand Health Research Council International Investment Opportunity Fund and the Marsden Fund. The research from this team has been internationally recognized and has resulted in many high profile scientific publications in the last ten years. (Selected publications 10,11,12)

The Anterior Segment Clinical Research Team in the Department of Ophthalmology continues to have extensive research interests in cornea, cataract and cataract surgery. Professor Charles McGhee, Dr Andrew Riley, and Dr Jennifer Craig led the large multidiscipline team including Dr Christina Grupcheva and Dr Tahira Malik, that conducted the Auckland Cataract Study which analysed 500 consecutive patients and their outcomes over two years before and following surgery. The group has also worked closely with Professor Donaldson's Molecular Vision Laboratory team with joint research funding and supervision of PhD students including Dr Nisha Sachdev. (Selected publications 13,14,15)

3. Glaucoma and Optic Nerve

The optic nerve is the 'nerve of sight' and responsible for carrying the images of sight from the eye to the brain. Diseases of the optic nerve encompass the glaucoma and neuro-ophthalmic disorders such as tumours of the brain that compress the pathways of vision and "strokes" of the optic nerve that can result in blindness, Alzheimer's disease and multiple sclerosis.

Glaucoma is the leading cause of preventable blindness in New Zealand. It is sometimes called 'the sneak thief of sight' because it is a disease of the eye that can be present without symptoms for a number of years while vision loss is slowly occurring. It is a disease of the optic nerve that affects all ages, however, it is more prevalent in adults occurring in at least 2% of the population over 40 years of age - increasing to 1 in 10 adults over 70 years of age.

The Optic Nerve and Glaucoma Team (Department of Ophthalmology) has a clinical and basic science arm. The clinical arm is led by Associate Professor Helen Danesh-Meyer and has extensive collaborations with the world's leading ophthalmology units including Wills Eye Hospital (Philadelphia), Johns Hopkins University (Baltimore), University of Montreal, and the University of Melbourne. Research is also performed across clinical departments at the University of Auckland in conjunction with Neurosurgery and Older People's Health. The clinical Optic Nerve Research Unit has acquired state-of-the art technology for both clinical and research use, which has resulted in more than fifty major publications. The research team currently comprises Helen Danesh-Meyer and her three doctoral research fellows, Dr Taras Papchenko, Dr Shenton Chew and Dr Nathan Kerr.

The clinical focus of this group has been to develop new strategies for providing better healthcare as well as investigating the underlying causes of optic nerve diseases. Recent research in the area of brain tumours that cause blindness has been hailed as a 'revolutionary' breakthrough by international researchers and has significantly influenced clinical practice. Other areas of research by this group have led to the identification of biomarkers that correlate with disease severity or that allow the early recognition of impending diseases.

The basic science arm of the team, led by Associate Professor Helen Danesh-Meyer in close conjunction with Professor Colin Green, is focused on translational ophthalmic research. The team includes the three doctoral fellows and a research assistant, Miss Elizabeth Eady. This team's main areas of interest are: a) optic nerve ischaemia: the involvement of connexin knockdown in ischaemic optic neuropathy and investigation of the role of the inflammatory response in strokes of the optic nerve and b) glaucoma filtration surgery: investigating the use of a gel to regulate direct cell-to-cell communication during glaucoma surgery to decrease inflammation and scar formation and improve surgical results. (Selected publications 16,17,18)

4. Connexin Biology (cell to cell communication)

The Connexin Biology Group based in the Department of Ophthalmology is led by Professor Colin Green and has wide-ranging research collaborations within the University of Auckland (Pharmacy, Anatomy, Physiology) and with international wound healing groups. Professor Colin Green's research interest is connexins (cell to cell communicating junctions) primarily focused on corneal wound healing. The connexin biology group also conducts research on spinal nerve and optic nerve repair, glaucoma filtration surgery research and brain epilepsy studies.

The main areas of research include: a) corneal healing following refractive laser surgery or severe trauma, b) optic nerve repair and glaucoma filtration surgery research (with Associate Professor Helen Danesh-Meyer), c) Pharmacy - the delivery of the wound-healing product in the ocular environment (with Dr Raid Alany) and d) spinal cord injuries investigating nerve regeneration post injury with and without treatment with connexin knockdown agents and investigating if there can be neuronal recovery after epilepsy (with Associate Professor Louise Nicholson, Anatomy).

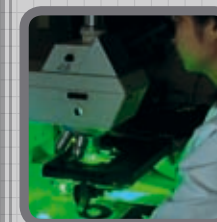
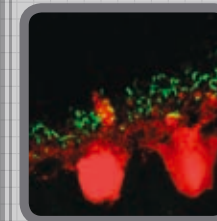
Professor Green and colleagues' work led him to found the drug discovery companies CoDaTherapeutics (NZ) Ltd. and CoDa Therapeutics Inc. USA. to commercialise their patents in the field of connexin biology. CoDaTherapeutics has raised US\$20 million to develop potential therapies based on connexin technology. Recently phase I/II international trials of Nexagon, a single dose drug to improve corneal healing following surgery, commenced in Auckland in 2008 in conjunction with Dr Sue Ormonde and Professor Charles McGhee. (Selected publications 19,20,21)

5. Retinal Disease

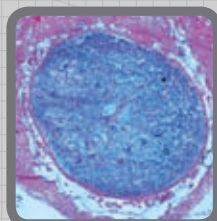
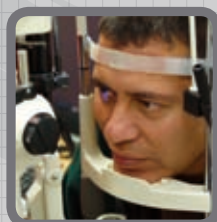
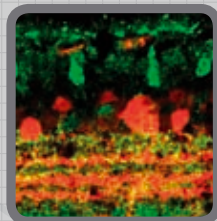
Retinal disease related to ageing, diabetes, cardiovascular disease and inherited conditions is a common cause of serious visual impairment and blindness. NZ-NEC members, the Department of Optometry and Vision Science and the Department of Ophthalmology are conducting research individually and collaboratively on several fronts from basic retinal development and the neurochemical and biochemical changes in the retina after metabolic stress in the laboratory environment to studies of disease progress and administration of innovative treatments in the clinical environment.

The Retinal Networks Laboratory (Department of Optometry and Vision Science) is led by Professor Michael Kalloniatis and the study of the neurochemistry of the vertebrate retina is its central theme. Major research projects include: a) exploring the neurochemical localisation and quantification of the amino acid neurotransmitters in different vertebrate retinas, b) retinal development and functional ion channel characterization and c) the neurochemical and biochemical changes in the retina after metabolic stress.

Collaborations include: Professor Charles McGhee, Dr Clairton de Souza (PhD student), Professor Paul Donaldson, Associate Professor David Christie (School of Biological Sciences), Professor Robert Marc (University of Utah), Professor Seong-Seng Tan (Howard Florey Institute), Professor Algis Vingrys and Dr Fletcher (University of Melbourne). (Selected publications 22,23,24)



“Glaucoma is the leading cause of preventable blindness in New Zealand”



The Retinal Diseases Synergy Group (Department of Ophthalmology) is a collaborative team of clinicians and scientists (Professor Colin Green and Dr Kaa-Sandra Chee) working on aspects of retinal disease – both medical and surgical – and innovative treatment options. Associate Professor Philip Polkinghorne, Dr Mark Donaldson and Dr Tahira Malik undertake the clinical lead. Areas of interest are diverse and cross-departmental. Significant interest by international pharmaceutical companies has led to the funding of a number of major clinical research trials.

Research interests include: a) thermotherapy in the treatment of macular disease (Dr Mark Donaldson), b) analyses of rhegmatogenous retinal detachment (Assoc. Professor Philip Polkinghorne), c) retinal and vitreous metabolism in the presence of retinal detachment (Assoc. Professor Philip Polkinghorne and Professor Michael Kalloniatis), d) novel therapeutics in the treatment of age-related macular degeneration (Dr Mark Donaldson, Professor Colin Green, Dr Kaa-Sandra Chee), e) novel therapeutics in the treatment of diabetic retinopathy (Dr Tahira Malik and Dr Mark Donaldson) and f) study of intra-ocular tumours (Dr Peter Hadden). (Selected publications 25,26,27)

The Retinal Cell and Molecular Biology Laboratory (Department of Optometry and Vision Science) centres on understanding biochemical and molecular functions of the central nervous system, particularly the retina. The team includes Dr Monica Acosta, Alex Petty, Chee Seang Loh and Professor Michael Kalloniatis.

Research interests of this group include: a) investigating the molecular mechanisms of neurological and metabolic disorders using in vitro studies, b) identifying the metabolic and neurochemical changes associated with fetal brain damage, c) immunohistochemical analysis of the kiwi retina and d) analysis of the neuro-protective effect of drugs in in vitro and in vivo models of ischaemic retinas. (Selected publications 28,29,30)

6. Visual Perception Group

This group incorporates colour vision, clinical research and the myopia laboratory.

The theme of the **Clinical Research Group** (Department of Optometry and Vision Science) is clinical research in ocular function, ocular disorders and refractive error. Within the study of corneal function, areas of research include computer modelling of the contact lens correction of keratoconus. Other research activities have explored the relationship between intra-ocular pressure and age. More recently, working with Nicola Anstice (Visiting Lecturer), the prevalence of refractive error in central Auckland school children has been studied. This continuing work, for the first time, offers a quantitative analysis of the visual function of New Zealand school children. Additionally, educational and interesting cases seen in the Optometry Clinic are written up for publication. The team includes: Geraint Phillips (Senior Lecturer), Nicola Anstice (Visiting Lecturer), Grant Watters (Visiting Lecturer), Richard Johnson (Visiting Lecturer), Melinda Calderwood (Visiting Lecturer), Nisha Jeyaseelan (Visiting Lecturer), and Associate Professor Rob Jacobs. (Selected publications 31,32,33)

The main theme of the **Ecology of Colour Vision Laboratory** (ECVL) (Department of Optometry and Vision Science) is the relationship between colour vision systems and the visible environment. The ECVL has a collaboration on signalling in birds with Dr. Mark Hauber (School of Biological Science, University of Auckland), on colour vision and colours in reef fish with Prof. Justin Marshall, Drs. Nathan Hart and Ulrike Seibeck (University of Queensland), on signalling in fiddler crabs with Drs. Jochen Zeil and Jan Hemmi (Australian National University), on colour vision in butterflies with Prof. Kentaro Arikawa (Yokohama City University, Japan) and Dr. Almut Kelber (University of Lund, Sweden), on ecology of primate colour vision with Prof. Daniel Osorio (University of Sussex, UK), on flower colours and colour vision of insect pollinators with Dr. Natalie Hempel de Ibarra (University of Exeter, UK) and Prof. Randolph Menzel (Free University

Berlin). Psychophysical methods are utilised to study colour vision of human beings and animals. To understand the ecological significance of diversity of photoreceptor designs in animal kingdom, the group use computational optics. The team comprises Dr. Misha Vrobyev and Associate Professor Robert Jacobs. (Selected publications 34,35,36)

Research in the **Myopia Laboratory** (Department of Optometry and Vision Science) addresses the underlying causes of myopia (genetic and environmental influences), why myopia inevitably progresses with time and how myopia development might be inhibited in children. There are three separate research threads within the group: a) a guinea pig model in which eye enlargement and myopia is studied in animals by manipulating the visual environment –the aims are to understand the changes in biomechanical properties and cellular populations of the sclera and the retino-scleral signal pathways involved in myopia, b) a canine model of myopia - dogs are the only non-human species with naturally occurring myopia, our studies have shown that the myopia is inherited and are further studying the genetics of myopia now that the dog genome is available, c) clinical studies of children with myopia. The aim is to investigate optical manipulations aimed at inhibiting the progression of myopia in children – including a clinical trial of a new soft contact lens designed by this team, aimed at inhibiting the progression of myopia in schoolchildren. Commercially funded clinical trials of the lens will commence in 2008. The team consists of Dr John Phillips, Mr Andrew Collins, Simon Backhouse (PhD student), Nicola Anstice (PhD student), and Joanna Black (PhD student). (Selected publications 37,38,39)

7. Genetic Eye Disease

Recognising the genetic basis for eye disease aids in our understanding of the control of eye function and structure, in both health and disease. With the sequencing of the human genome, and the advent of newer technologies for clinical and molecular characterisation, it is now apparent that many ocular diseases are, at least in part, genetically determined. Some of these genetically related eye diseases appear more common in New Zealand/Aotearoa and are the subject of a number of interdisciplinary studies.

The Genetic Eye Disease Investigation Unit (Department of Ophthalmology), is led by Dr Andrea Vincent, a paediatric ophthalmologist who previously studied at the Toronto Hospital for Sick Children, Canada. This research unit aims to perform and provide quality research into genetic eye diseases and is in the process of establishing a New Zealand registry for inherited retinal disease.

A broad portfolio of clinical and laboratory based eye genetic research is underway into: a) molecular characterisation of the corneal dystrophies and keratoconus, b) blepharophimosis syndrome, c) glaucoma, d) inherited eye movement disorders and e) juvenile Pagets disease.

The team includes Dr Andrea Vincent, Dr Monika Pradhan (Research Fellow) and a research technician. This group also works closely with the anterior segment group including Professor Charles McGhee and Dr Trevor Sherwin. (Selected publications 40,41,42).

“... many ocular diseases are at least in part genetically determined.”



SUPPORTERS & DONORS

Sir William and Lady Stevenson Associate Professor of Ophthalmology

Academic Ophthalmology was established in the University of Auckland in 1968. However, funding for a full time academic appointment was extremely difficult to obtain until the extremely far-sighted and benevolent donations of Sir William and Lady Stevenson to fund a number of academic posts within the University. One of these posts was a senior lecturer position in ophthalmology and Dr Gillian Clover PhD, FRANZCO, was attracted back from the UK to be appointed as the first Sir William and Lady Stevenson Senior Lecturer in 1984. Due to her success in substantially further establishing academic ophthalmology, including research and teaching aspects as well as the creation of the New Zealand National Eye Bank, Gillian Clover was subsequently appointed as the Sir William and Lady Stevenson Associate Professor of Ophthalmology. Following the retirement of Associate Professor Gillian Clover, Dr Helen Danesh-Meyer MD FRANZCO who had recently been recruited as a Senior Lecturer following prestigious USA based glaucoma and neuro-ophthalmology fellowships, was appointed as the second Sir William and Lady Stevenson Associate Professor in Ophthalmology, the post she currently occupies.

The Maurice Paykel Chair of Ophthalmology

Although ophthalmology as an academic subspecialty has a long history in New Zealand neither of the medical schools had established a Chair of Ophthalmology prior to 1998. Due to the very generous support of Dr Maurice Paykel and the Maurice and Phyllis Paykel Trust, in conjunction with the Hadden Trust, Auckland Surgeons Eye Research Fund, the Royal New Zealand Foundation for the Blind, the University of Auckland, Auckland Healthcare Services Ltd. and several other individual and group benefactors, a substantial fund was created for the purpose of establishing a full Chair of Ophthalmology in New Zealand. This foundation Chair in Ophthalmology, the first in New Zealand, was subsequently named in honour of the industrialist and philanthropist, Maurice Paykel. Professor Charles McGhee was recruited from a Professorial position at the University of Dundee and appointed to the Maurice Paykel Chair in 1998 - he took up the Professorial post in September 1999 and relocated from the UK with a six-member research team.

The Robert G Leitl Chair of Optometry

The Robert G Leitl chair is the second chair in optometry at the University of Auckland. It was established through a generous bequest from the estate of Robert G Leitl, who was a successful optical manufacturer in New Zealand. Robert G Leitl was involved with the optical industry from the mid 1940's in his native Germany before moving to New Zealand in the mid-1960's. Mr Leitl was a large contributor to the New Zealand Optometric Vision Research Foundation: a research fund providing small grants-in-aid for vision research. His support for optometry and research was also reflected in his Will where he stipulated to the trustees "to ascertain how the study of science and optometry could be advanced at the University - whether by making grants or scholarships or otherwise". The trustees, Lorne Weir and Robert Benton, chose "or otherwise" and had extensive discussions with Professor Leon Garner and the Optometry Department. It was their combined

opinion that the objectives of the Will would be best met by the creation of a Research Chair in Optometry. Professor Michael Kalloniatis is the current holder of the chair.

W&B Hadden Chair of Ophthalmology and Translational Vision Research

The W&B Hadden Chair in Ophthalmology and Translational Vision Research was funded by generous donations from Drs Wendy and Bruce Hadden, and bequests from the Sidney James Taylor and Helen Cadman estates. The Hadden trust has supported a number of initiatives in ophthalmology and due to this generous support of this second full chair in ophthalmology the University chose to name it in their honour. Professor Colin Green PhD DSc has worked in France, England and the USA. He won the International Robert Feulgen Prize for cardiac research in 1992 and has published in Nature and Science. He was founding Director of the University's Biomedical Imaging Research Unit and attained a Personal Chair in Anatomy in 2004. In 2005 he was appointed as the first W&B Hadden Chair in Ophthalmology and Translational Vision Research. He is Regional Editor (Oceania) for Cell Biology International and on Editorial Boards for Clinical and Experimental Ophthalmology and Clinical Ophthalmology. Professor Green co-founded CoDaTherapeutics (NZ) Ltd in 2003 and CoDa Therapeutics Inc., USA, in 2005 His first product, Nexagon™ has entered clinical trials with a second platform, Peptagon™, developed for systemic applications.

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The Maurice Paykel Chair of Ophthalmology: Mr Maurice Paykel and Professor Charles McGhee



The Robert G. Leitl Chair of Optometry: Dean R. Bellamy & Prof. Michael Kalloniatis with Lorne Weir, Prof. S. McCutcheon (VC), and Robert Benton (seated R-L)



W&B Hadden Chair of Ophthalmology & Translational Vision Research: Prof. Colin Green with Dr Wendy and Dr Bruce Hadden

Sir William and Lady Stevenson Associate Professors of Ophthalmology: Dr Helen Danesh-Meyer and Dr Gillian Clover

“Eye Research in New Zealand has been sustained by the great generosity and philanthropy of Kiwis”



AFFILIATED ORGANISATIONS



Top: Heather Hyland
Manager GNZ

Middle: New Zealand
National Eye Bank Staff,
Helen Twohill, Nigel
Brookes & Louise Moffatt

Lower: CEO Editorial
Office, Victoria Cartwright
and Prof Charles McGhee

Glaucoma NZ

Glaucoma New Zealand is a registered charitable trust with a mission to eliminate blindness from glaucoma in the New Zealand community. The Trust was established in 2002 and is an independent unit based within the Department of Ophthalmology. (Charities Register No. CC21421)

Glaucoma NZ takes four key approaches to preventing glaucoma blindness:

- Research is the key to providing quality care in the short term and to finding a solution to glaucoma in the long term. Glaucoma NZ supports research into glaucoma in New Zealand by means of grants for independently assessed projects.
- Glaucoma NZ initiates awareness programs to enhance understanding of glaucoma in the community. Early detection of glaucoma and its risk factors is critical to elimination of blindness from glaucoma.
- Glaucoma NZ informs and educates people affected by glaucoma to avoid further loss of eyesight through improved compliance with treatments.
- Glaucoma NZ promotes high quality glaucoma care by all health workers. A range of Professional Education programs are provided for health professionals.

New Zealand National Eye Bank (NZNEB)

The National Eye Bank, established in 1989, is a charitable organisation responsible for the supply of donated corneas and other tissues required for transplantation within New Zealand. A Board of Trustees governs the Eye Bank, and donations and grants are required to supplement direct revenue. It is an independent unit located within the Department of Ophthalmology, and the staff of three operates a 24 hour, 365 day service to coordinate eye donations from hospitals and the community. This involves screening of potential donors, discussing donation with families and obtaining consent, processing, storage and evaluation of tissue before distribution for transplantation.

Each year, an average of 240 corneas are transplanted, restoring vision to people of all ages with corneal disorders and diseases. In addition, sclera is used for reconstruction after ocular trauma or glaucoma treatment, and amniotic membrane is utilised as a 'living bandage' for ocular surface disorders. The NZNEB maintains the New Zealand Corneal Transplant Registry, which tracks patient characteristics and outcome for all transplants. Vital support for ophthalmic research is also a core function, with the provision of corneas, lens and retinal tissues where consent is provided.

Clinical and Experimental Ophthalmology Editorial Office

Clinical and Experimental Ophthalmology is the international clinical and laboratory research journal of the Royal Australian and New Zealand College of Ophthalmologists. It has a wide international circulation and is particularly well represented in Asia, Europe and North America with research papers regularly being submitted from more than fifty countries. Many members of NZ-NEC regularly perform reviews of submitted manuscripts, recruit scientific papers and contribute to key editorials.

Professor Charles McGhee is the Editor in Chief of the journal and a number of senior staff in the Department of Ophthalmology are represented on the editorial board. The journal offices are based within Ophthalmology in the NZ-NEC and run by the Managing Editor, Ms Vicky Cartwright. The journal is increasingly cited in the scientific literature and recently published the scientific abstracts and hosted the speakers' reception of the World Ophthalmology Congress in Hong Kong. Worldwide more than 80,000 full research articles were downloaded from Clinical and Experimental Ophthalmology in 2007.

NZ-NEC SCIENTIFIC PUBLICATIONS 1999-2007

Scientific publications 1999-2007

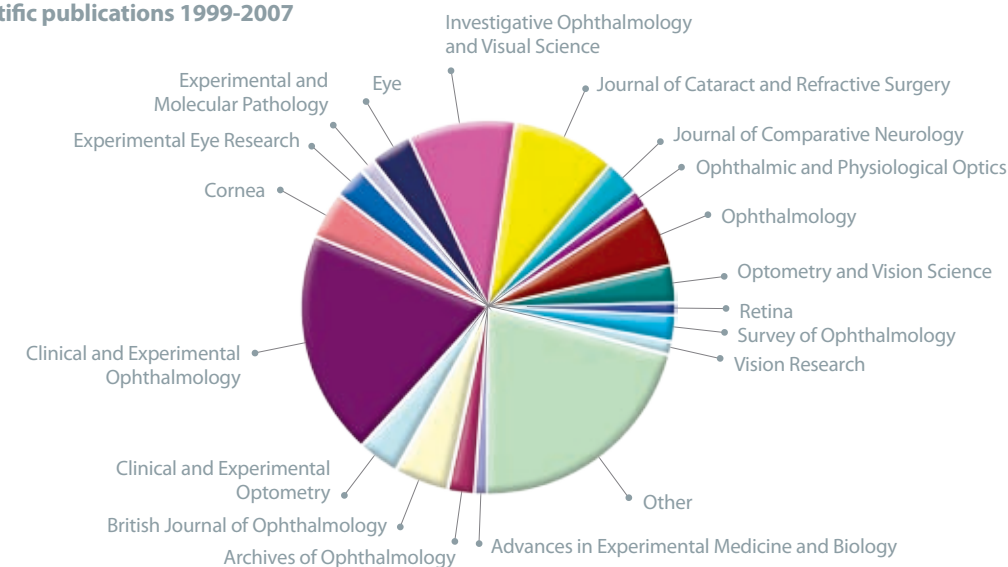
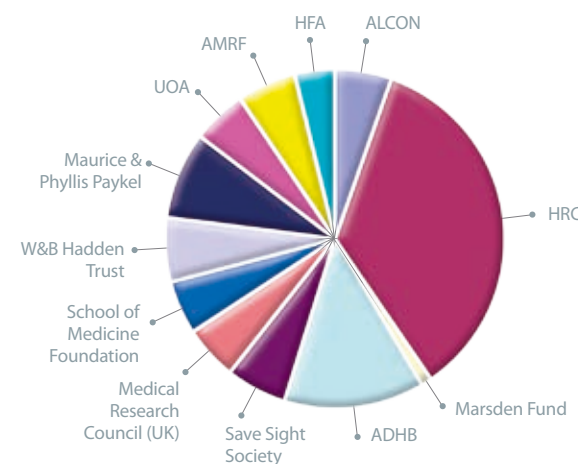
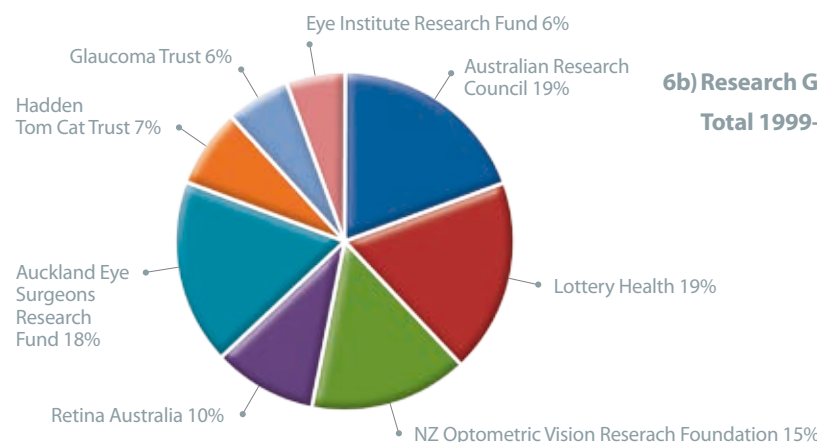


Figure 5. Scientific research publications – in the period 1999 to 2007 the principal partners of the New Zealand National Eye Centre published more than 400 research papers and chapters with many appearing in top-ranked scientific journals.

NZ-NEC CUMULATIVE RESEARCH FUNDING 1999-2007



6a) Research Grants: NZ \$500k+
Total 1999-2007

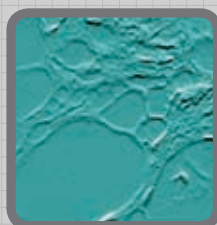


6b) Research Grants: NZ \$100-499k
Total 1999-2007

Figures 6a and 6b: Figure 6a highlights cumulative research grants, each totalling more than NZ\$500,000, acquired by members of the principal partner NZ-NEC research teams in the period 1999-2007. Figure 6b highlights cumulative grants of NZ\$100,000 – NZ\$500,000 awarded to members of the NZ-NEC research teams in the same period. A total of NZ\$18,927,165 was raised in this period for clinical and laboratory research projects. This included NZ\$13.85 million in substantial grants (cumulative total >NZ\$500K) and approximately \$2.5 million in large grants (NZ\$100K-499K). Abbreviations: Health Research Council (HRC); Auckland District Health Board (ADHB); University of Auckland (UoA); Auckland Medical Research Fund (AMRF); Health Funding Authority (HFA).

“A total of NZ\$18.9 million was raised in this period for clinical and laboratory research projects”

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