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ABOUT US

Established in 1997, the Singapore Eye Research Institute (SERI) is Singapore’s national research institute for ophthalmic and vision research. It is the research arm of the Singapore National Eye Centre, and affiliated to the National University of Singapore and the Duke-NUS Medical School. In two decades, SERI has grown from a team of 5 to over 220 staff, encompassing clinician scientists, scientists, fellows, students, support staff, as well as more than 100 distinguished adjunct faculty members to become the largest eye research institute in the Asia-Pacific region. As of Dec 2016, SERI has published 2,782 peer-reviewed papers supported by $222 million in competitive research grants. SERI has trained more than 150 current and past graduate students; and has been conferred over 408 national & international awards and 120 patents. SERI further undertakes eye research in collaboration with local & international ophthalmic medical centres and research institutions, which has ensured a high level of research competency & skills transfer. Notably, SERI’s research has translated to actual patient success stories & significant improvements in eye care delivery. Today, SERI is recognized as a pioneering center for high quality eye research in Asia, with breakthrough discoveries that has translated to significant paradigm shift in eye care delivery.
I would like to congratulate the SERI team for another year of excellent performance. Whilst being young and lean, SERI is proud to rank among the global heavyweights in terms of research productivity. In a study published by the Peer Journal, Singapore was ranked 2nd globally and 1st in Asia-Pacific respectively, in terms of number of peer-reviewed scientific articles per capita and mean 5-year impact factor per article. The findings were based on 62,123 articles retrieved from PubMed using keyword search and classified according to the country the first author was affiliated to. Of note was the fact that approximately 90% publication were generated by SERI. Indeed, this study offers an objective assessment of the scientific impact of Singapore’s eye research, both in terms of quantity and quality.

In addition, a study commissioned by NMRC to measure the internal rates of return (IRRs) generated from eye research in Singapore, showed an estimated 15% Internal Rates of Return, IRR from Singapore’s investment in eye research, which would be considered to be highly favorable by most investment standards. What it essentially translates to is that for every $1 spent in eye research funding, it brings in $0.30 annually in perpetuity. This study concluded that eye research expenditure by the public sector in Singapore generated high economic returns.

These two reports not only serve as a testimony of SERI’s academic research excellence via high quality research and high impact publications, but further underpins SERI’s core mission to drive value creation and generate economic ROI.

Nonetheless, in the pursuit of excellence, SERI needs to be keenly attuned to the evolving research landscape, and pursuant to this, constantly strategize, evolve, invest and innovate in new areas of research that align with the national funding agenda, and/ or directly addresses national healthcare burden needs.

Professor Wong Tien Yin
Chairman
EXECUTIVE DIRECTOR’S MESSAGE

2016 has been a bountiful year for SERI: our publication numbers escalated to 307, hitting a historic high; our cumulative quantum of active grant increased by $2.6 Million from the previous year to $29.8 Million this year.

Two SERI teams were successful in securing the $2M Clinical Trial Grant- one study intended to investigate the clinical effect of Atropine on the prevention and progression of Myopia, while the other was a multicenter randomized controlled trial on surgical procedures for glaucoma.

SERI was pleased to welcome Prof Leopold Schmetterer, as the new Research Head, Ocular Imaging. Prof Schmetterer, who is well known internationally for his work on ocular blood flow in humans, is additionally involved in a wide array of imaging studies in ophthalmology ranging from glaucoma, medical retina to dry eye syndrome. His other main areas of interest are ocular pharmacology and clinical trials. Professor Schmetterer had in the recent past led the MANTA study, a multi-center study in Austria that compared the effects of ranibizumab and bevacizumab for the treatment of neovascular age-related macular degeneration. Prof Schmetterer brings to SERI world-leading expertise and experience that we hope will lead to further novel and innovative healthcare solutions in Ocular Imaging.

As we congratulate ourselves on another year of excellent performance, let us also remember to thank our Board, our collaborators, our donors and supporters, all of whom play an integral role in our research success story, and to whom, we are eternally indebted to for their unwavering support. With their help, and support, SERI will continue in our strive to make a difference in Ophthalmology research, harnessing the latest know-how, therapeutics and technology to enable better outcomes for our patients!

Prof Aung Tin
Executive Director
INSTITUTIONAL REPORT

BACKGROUND

The Singapore Eye Research Institute (SERI), affiliated to the Singapore National Eye Centre, the National University of Singapore, and the Duke-NUS Medical School is a non-profit charitable organization tasked to lead and conduct research into vision and eye diseases based in Singapore and focused on Asia. It further works in collaboration with Ophthalmology departments of the various public healthcare entities and biomedical research institutions, as well as major eye centers and research institutes throughout the world. SERI has developed a world-leading reputation in broad-based clinical translational research and epidemiological programs for many eye diseases, specifically eye diseases endemic to Asia, such as myopia, angle closure glaucoma, and corneal diseases.

KEY PERFORMANCE INDICATORS (as of December 2016)

- SERI is one of the largest research institutes in Singapore and the largest eye research institute in the Asia-Pacific, with a faculty of 231, encompassing clinician scientists, scientists, fellows, students, and support staff.
- SERI has successfully secured external peer-reviewed competitive grant funding worth approximately S$ 10.31 million this year, and a cumulative quantum of approximately S$224 million.
- SERI continues its leading performance in publication, with 307 scientific papers published in 2016, and with a cumulative publication quantum of 2,782 scientific papers.
- As of December 2016, the SERI faculty has received 408 national and international awards and 120 patent applications were filed during the same period.
- Since 1997, SERI has conducted 1501 studies, encompassing the entire spectrum of eye research, from basic laboratory research, pre-clinical animal research, translational clinical research, and population health research. There are currently 459 ongoing research projects at SERI, of which approximately 70% cover clinical/translational research, 12% basic research and 18% epidemiology, imaging and health service research.
- SERI has further contributed to the training of research manpower, including over 168 Masters, PhD and post-doctoral students, many of whom are now working in hospitals, biomedical sciences industry, academic institutions and research institutes locally and overseas.

ACHIEVEMENTS & INNOVATIONS (as of December 2016)

- Third National Ophthalmology Residents’ Research (NORR) Day
  The 3rd National Ophthalmology Residents’ Research Day (NORR) 2015 was hosted by Singapore National Eye Centre, concurrently with the Singapore Eye Research Institute. This event which is targeted at Residents, Registrars and Medical Officers within Singapore’s public healthcare network aims to promote and propagate research amongst these young doctors, while concurrently serving as a networking conduit for the sharing of research ideas.

  The event was attended by 125 participants with 55 abstracts submitted. It was generally felt that the NORR 2015 meeting was a success, and boosted the highest number of attendees as compared to the previous years.
• The IES Prestigious Engineering Achievement Award 2015

The Angle closure Glaucoma Risk assessment (AGAR) team comprising of Prof Aung Tin, Adj. A/Prof Shamira Perera & Dr Baskaran Mani, in collaboration with Dr Jimmy Liu Jiang, Dr Xu Yanwu & Dr Damon Wong from the Institute for Infocomm Research (I2R) was recently awarded the Institution of Engineers, Singapore (IES) Prestigious Engineering Achievement Award 2015 for their project entitled, “Automated Angle Closure Detection Software for Anterior Segment OCT Imaging”.

This award recognizes the outstanding achievements of engineers and is typically granted to an organization or persons responsible for an outstanding engineering project in Singapore.

It is meant to honor engineering achievements that demonstrate outstanding engineering skills, and which have made a significant contribution to the engineering progress and the quality of life in Singapore, including the wellbeing of people and communities; resourcefulness in planning and in the solution of design problems, pioneering in use of materials and methods; innovations in planning, design and construction; unusual aspects and aesthetic values.

• Review by International Scientific Advisory Boards of Two of SERI’S Key Program Grants

Two of SERI’s key program grants underwent on-site review by NMRC-appointed International Scientific Advisory Board (SAB) panel members.

SERI was awarded a $25 million TCR flagship programme, Eye Surgery and Innovative Technologies (EyeSITe) that builds on the strengths of SERI’s previous TCR flagship programme, Translational Research Innovations in Ocular Surgery (TRIOS).

EyeSITe, aims to develop novel and innovative approaches to diagnose and treat corneal diseases and glaucoma (2 of the major causes of blindness worldwide), and is represented by 5 themes i.e.

• Theme 1: Antimicrobial Molecules Against Ocular Pathogens
• Theme 2: Novel Ocular Drug Delivery Systems
• Theme 3: The Bionic Cornea.
• Theme 4: Femtosecond Laser-Assisted Ocular Surgery Systems
• Theme 5: Stratified Medicine for Primary Angle-Closure Glaucoma

As EyeSITe approaches its second year in August 2015, this program will undergo an on-site review by an NMRC-appointed International Scientific Advisory Board, comprising of the following distinguished members:

1. Prof James C. Tsai
   President, New York Eye and Ear Infirmary of Mount Sinai Chair,
   Department of Ophthalmology, Icahn School of Medicine at Mount Sinai and the Mount Sinai Health System

2. Prof Makoto Araie
   Director, Kanto Central Hospital

3. Prof Dwight Cavanagh
   Professor and Vice-Chairman The Dr. W. Maxwell Thomas Chair in Ophthalmology and Associate Dean for Clinical Affairs The University of Texas Southwestern Medical Center
Further to this, SERI’s $18 million Centre Grant i.e. Multi-PlAtform STRATEGY for Eye Research 2 (MASTER-2) has passed its 2-year mark as of April 2015; and this program too will be subject to review by a panel of International Scientific Advisory Board, specifically appointed by NMRC to conduct a mid-term review of all Centre Grant awardees.

- **SERI Researchers awarded two x $2M Clinical Trial Grants**

A/Prof Audrey Chia, in collaboration with Prof Donald Tan was awarded the $2M Clinical Trial Grant to investigate the clinical effect of Atropine on prevention and progression of Myopia. Since the observation of the myopia epidemic in the 1990s, SERI has conducted extensive clinical trials into treatments that may prevent the development and progression of myopia.

SERI is now the first in the world to fine-tune the dosage of atropine eye drops from the 1% available in market to a new 0.01%, an optimal dose that balances between efficacy and safety. The findings of the study will importantly contribute to the prevention of the onset and progression of myopia in children and reducing the societal and healthcare costs related to myopia.

Adj A/Prof Ho Ching Lin, in collaboration with Prof Aung Tin was awarded the $2M Clinical Trial Grant to conduct a multicenter randomized controlled trial on surgical procedures for glaucoma. In this multicenter randomized controlled trial, SERI intends to identify the most effective and safe surgical approach for glaucoma patients in Asia. This trial will compare the efficacy and safety of Ahmed Glaucoma Implants (AGI) against Trabeculectomy/ MMC over a 5-year period, and would involve 300 patients with uncontrolled glaucoma who have never had previous glaucoma surgery.

This study will elucidate the most appropriate surgery for management of glaucoma in Asians and provide valuable data on glaucoma in Asia. SERI will be the leading centre for the trial with 14 trial sites both locally and internationally.

**PERFORMANCE OVER PAST SEVENTEEN YEARS (as of December 2016)**

- SERI has seen a steady increase in staff strength over the years.

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*Figure 1: Number of staff members at SERI*
• SERI boosts of a diverse and global faculty that serves as melting pot of ideas that propels innovation.

Figure 2: Nationalities of staff members at SERI

• SERI stands out as one of the most productive institutions and well holds up against global heavyweights in the field.

![International Comparison Trends in Publication 2012 to 2016](image)

**Number of publications of Various Institutes based on Web of Science data***

*All searches filtered for 'ophthalmology' related*

Figure 3: Number of publications by SERI and other institutions around the world, during the period of 2005-2016
• The stellar achievements of SERI have been well endorsed with numerous international and local awards.

![NUMBER OF AWARDS](image)

*Figure 4: Number of awards received by SERI and its staff (Data from 1997-1999 are not available)*

**APPRECIATION & ACKNOWLEDGEMENT**

SERI owes its success to its people – the honorable SERI Board of Directors, our eminent academic collaborators, the senior management, and clinicians of the Singapore National Eye Centre (SNEC), as well as, very importantly, the SERI faculty and staff members.

However, our greatest gratitude is reserved for our patients and their families. They are the driving force behind all that we do. Indeed, their journey and courage spur us on in our research endeavors and make us determined to make a positive difference to their vision and their lives.

SERI would also like to extend our appreciation to the National Medical Research Council, the Biomedical Research Council, the National Research Foundation, as well as our industry collaborators for their generous funding and support. It enables us to continue in our pursuit of impactful research with the ultimate aim to alleviate vision loss and blinding eye diseases.
OUR PEOPLE

SERI’s BOARD OF DIRECTORS (updated as of December 2017)

SERI’s Memorandum and Articles of Association stipulates that the SERI Board of Directors shall have at least one representative each from the Ministry of Health, the National University of Singapore and the Singapore National Eye Centre. Today, besides representation from the above three organizations, SERI’s Board additionally has Directors from the Duke-NUS Graduate Medical School, Lee Kong Chian School of Medicine, SingHealth, National Healthcare Group as well as M C Tong Cardiothoracic Surgery Pte Ltd.

Prof Prof Wong Tien Yin
Medical Director,
Singapore National Eye Centre
Chairman,
Singapore Eye Research Institute

Dr Dr Lim Eng Kok
Director, Performance & Technology Assessment,
Ministry of Health

Prof Prof Ang Chong Lye
Deputy Group CEO
(Clinical Services & Informatics), SingHealth
CEO,
Singapore General Hospital

Prof Prof Soo Khee Chee
Deputy Group CEO (Research & Education),
SingHealth
Director,
National Cancer Centre Singapore

Assoc Assoc Prof Yeoh Khay Guan
Dean, Yong Loo Lin School of Medicine,
National University of Singapore

Ms Ms Ooi Chee Kar
Chartered Accountant (Singapore)

Dr Dr Geh Min
Consultant Eye Surgeon,
M C Tong Cardiothoracic Surgery Pte Ltd

Prof Prof Thomas Coffman
Dean
Duke-NUS Medical School

Prof Prof Wang Linfa
Program Director,
Emerging Infectious Diseases
Duke-NUS Medical School

Prof Prof James Best
Dean,
Lee Kong Chian School of Medicine

Prof Prof Lim Tock Han
Deputy Group CEO (Education & Research),
National Healthcare Group
Senior Consultant,
NHG Institute,
Tan Tock Seng Hospital
SERI’s DIRECTORS / STRATEGIC PLANNING COMMITTEE (updated as of December 2016)

The SERI Directors/ Strategic Planning Committee serves as the highest governing body at SERI, working closely with the Executive Director, SERI to ensure the overall stewardship of the Institute; leading and promoting research within the Institute; ensuring sufficient funding to ensure its future viability; safeguarding overall governance and integrity of the Institute; and proactively increasing the visibility and broadening of research collaborations with national and international agencies.

Prof Aung Tin  
Executive Director

Assoc Prof Jodhbir Mehta  
Director, Clinical Translational Research

Prof Roger Beuerman  
Senior Scientific Director

Prof Ecosse Lamoureux  
Director, Population Health

Ms Sharmila Kannan  
Director, Administration, Research Affairs & Support Services

Dr Danny Belkin  
Director, Technology Development & Commercialization

Assoc Prof Eranga Vithana  
Director, Laboratory Translational Research
SERI’s MANAGEMENT COMMITTEE (updated as of December 2016)

The SERI Management Committee serves as a principle body actively engaged in the review and implementation of SERI’s research policies and strategies. It further plays an integral role in conceptualizing SERI’s research framework, in consultation with the SERI Senior Leadership, as the Institute moves onwards to face new challenges in its strive for continued research excellence.

Prof Aung Tin  
Executive Director

Prof Roger Beuerman  
Senior Scientific Director

Ms Sharmila Kannan  
Director, Administration, Research Affairs & Support Services

Assoc Prof Eranga Vithana  
Director, Laboratory Translational Research

Assoc Prof Jodhbir Mehta  
Director, Clinical Translational Research

Prof Ecosse Lamoureux  
Director, Population Health

Prof Wong Tien Yin  
Medical Director, Singapore National Eye Centre  
Chairman, Singapore Eye Research Institute

Sis Peck Chye Fong  
Deputy Director, Research Clinic

Ms Charity Wai  
Chief Operating Officer, SNEC

Assoc Prof Tina Wong  
Head, Ocular Therapeutics and Drug Delivery Research Group

Assoc Prof Louis Tong  
Head, Ocular Surface Research Group

Prof Saw Seang Mei  
Co-Head, Myopia Research Group
SERI’s MANAGEMENT COMMITTEE (continued)

Dr Danny Belkin  
Director, Technology Development & Commercialization

Adj Assoc Prof Audrey Chia  
Co-Head, Myopia Research Group

Assoc Prof Cheng Ching-Yu  
Head, Ocular Epidemiology Research Group

Dr Amutha Barathi  
Head, Translational Pre-Clinical Model Platform

Assoc Prof Gemmy Cheung  
Head, Retina Research Group

Dr Zhou Lei  
Head, Proteomics Research Platform

Dr Michael Girard  
Co-Head, Bioengineering & Devices Research Group

Dr Rajkumar Patil  
Principal Research Scientist

Prof Dan Milea  
Head, Visual Neuroscience Research Group

Dr Seet Li Fong  
Assistant Director, Laboratory Translational Research

Prof Chee Soon Phaik  
Head, Cataract Research Group

Dr Gary Yam  
Head, Experimental Microscopy Platform

Prof Leopold Schmetterer  
Head, Ocular Imaging Research Group
SNEC’s RESEARCH COMMITTEE (updated as of November 2017)

Terms of reference:

- Plays a pivotal role in the review of research budgets, as well as the evaluation and endorsement of the appropriateness of research projects, including the scientific merit of such projects.
- Oversight over the review/ approval of the SNEC HREF grants for research projects.
- Provides directions for the development of SERI’s translational and clinical research capabilities.

Prof Aung Tin
Executive Director
SERI
Deputy Medical Director (Research), SNEC
Senior Consultant, Glaucoma Dept, SNEC

Assoc Prof Tina Wong
Head & Senior Consultant, Glaucoma Dept, SNEC
Head, Ocular Therapeutics and Drug Delivery Research Group, SERI

Adj Assoc Prof Lee Shu Yen
Deputy Head & Senior Consultant, Surgical Retina Dept, SNEC

Assoc Prof Jodbir Mehta
Head & Senior Consultant (Research), Cornea & External Eye Disease Dept, SNEC
Director, Clinical Translational Research, SERI

Adj Assoc Prof Sharon Tow
Head and Senior Consultant, Neuro-Ophthalmology Dept, SNEC
Adjunct Senior Clinician Investigator, SERI

Assoc Prof Gemmy Cheung
Deputy Head & Senior Consultant, Medical Retina Dept, SNEC
Head, Retina Research Group, SERI

Adj Assoc Prof Audrey Chia
Head and Senior Consultant, Paediatric Ophthalmology & Strabismus Dept, SNEC
Co-Head, Myopia Research Group, SERI

Prof Dan Milea
Senior Clinician, Neuro-Ophthalmology Dept, SNEC
Head, Visual Neuroscience Research Group, SERI

Adj Assoc Prof Shamira Perera
Senior Consultant, Glaucoma Dept, SNEC
Co-Head, Bioengineering & Devices Research Group, SERI

Dr Sunny Shen
Head & Senior Consultant, Oculoplastic Dept, SNEC

Assoc Prof Louis Tong
Senior Consultant, Cornea & External Eye Disease Dept, SNEC
Head, Ocular Surface Research Group, SERI

Dr Desmond Quek
Consultant, Glaucoma Dept, SNEC
**TEACHING & TRAINING**

SERI has been actively hosting research seminars, courses and talks which serve as a platform for information transfer and idea sharing, as well as networking conduit between the internal and external research communities. Besides serving as a fertile platform for the incubation of research ideas and generation of collaborative initiatives between the SERI faculty and external academics/researchers, these activities further promote research-related talent development within SERI that is high value-added and knowledge-based.

The talks presented via these channels at SERI offer discourse on scientific ideas and discoveries in ophthalmology and vision research, as well as in other biomedical disciplines, including bioengineering, genomics, tissue engineering, stem cell therapy and therapeutics, etc.; blending clinical, epidemiological, translational and basic approaches within specific disciplines. These seminars have certainly led to the launch of many new projects and successful collaborative partnership between SERI and local as well as international academic/research entities.

This initiative serves as an ideal teaching platform for our junior faculty, paving the way for immense synergies as they work together to tackle emerging challenges in the field of ophthalmology.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>SPEAKER</th>
</tr>
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</table>
| 16 Jul 2015| Functional optical coherence tomography                               | Prof Leopold Schmetterer  
*Ophthalmic Pharmacology, Department of Clinical Pharmacology, Medical University of Vienna* |
| 17 Aug 2015| Emerging concepts in the pathogenesis and treatment of diabetic retinopathy | A/Prof Elia Duh  
*Associate Professor of Ophthalmology, Wilmer Eye Institute, Johns Hopkins School of Medicine* |
| 9 Sep 2015 | Optically transparent collagen for biomedical research in 3D           | A/Prof Li Hoi Yeung  
*School of Biological Sciences, Nanyang Technological University* |
| 30 Sep 2015| Making microfluidic tools available to clinical researches: Fabrication and applications | Dr Michinao Hashimoto  
*Engineering Product Development, Singapore University of Technology and Design* |
| 16 Oct 2015| Wayward trafficking in RPE: Implications for age-related alteration of proteolytic activity and pathogenesis of AMD | Dr Luminita Paraoan  
*Institute of Ageing and Chronic Disease, Faculty of Health and Life Sciences, University of Liverpool, UK* |
| 27 Oct 2015| Inhibition of bacterial quorum-sensing and development of an anti-microbial contact lens surface | Prof Mark Willcox  
*School of Optometry and Vision Science, Associate Dean for Research Training, University of New South Wales*  
Prof Naresh Kumar  
*Professor, School of Chemistry, University of New South Wales* |
| 9 Dec 2015 | Ophthalmic pharmaceuticals: From laboratory to patient                | Dr Gary D Novack  
*PharmaLogic Development, Inc. (San Rafael CA USA), University of California, Davis, School of Medicine* |
| 23 Dec 2015| High fat diet induced NHP diabetic metabolic disease model development and characterization | Dr Tony Wang  
*Chief Technology Officer, Kunming Biomedical International* |
<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Jan 2016</td>
<td>The Joslin Medalist Study: Identification of retinal protective factor in patients with extreme duration of diabetes</td>
<td>Dr George L King &lt;br&gt; <em>Senior Vice President, Chief Scientific Officer, and Head of the Section on Vascular Cell Biology at Joslin Diabetes Center</em></td>
</tr>
<tr>
<td>29 Jan 2016</td>
<td>Ocular drug development: repurposing strategy and life cycle management</td>
<td>Dr Ni Jinsong &lt;br&gt; <em>CEO and CSO at Cloudbreak Therapeutics, LLC</em></td>
</tr>
<tr>
<td>23 Mar 2016</td>
<td>Therapeutic targeting of LRG1 in ocular disease</td>
<td>Prof Hugh Davson &lt;br&gt; <em>Professor of Biomedical Research, Head, Department of Cell Biology, Institute of Ophthalmology, University of College London</em></td>
</tr>
<tr>
<td>23 Mar 2016</td>
<td>The complement system and AMD pathogenesis</td>
<td>Prof Stephen Moss &lt;br&gt; <em>Vice-Dean for Enterprise, Norman Ashton Professor of Biomedical Research, Department of Cell Biology, Institute of Ophthalmology, University of College London</em></td>
</tr>
</tbody>
</table>
OUR COLLABORATIONS

Local Institutions

- Bioinformatics Institute
- Bioprocessing Technology Institute
- Biomedical Sciences Institute
- Changi General Hospital (Department of Ophthalmology)
- Citymed Health Associates Pte Ltd
- Community Eye Clinic
- Defense Medical & Environmental Research Institute
- DSO National Laboratories
- Duke-NUS Medical School
- Experimental Therapeutics Centre
- Genome Institute of Singapore
- Institute for Infocomm Research
- Institute of Bio-Nanotechnology
- Institute of Materials Research and Engineering
- Institute of Medical Biology
- Institute of Microelectronics
- Institute of Molecular and Cell Biology
- Khoo Teck Puat Hospital
- KK Women’s and Children’s Hospital (Department of Ophthalmology)
- Lions Home for the Elders
- Ministry of Health Holdings
- Nanyang Polytechnic
- Nanyang Technological University
- National Cancer Centre
- National Healthcare Group Polyclinics
- National Heart Centre
- National Neuroscience Institute
- National University Health Systems
- National University Hospital
- National University Singapore
- Ngee Ann Polytechnic
- Novena Heart Centre
- Singapore Armed Forces
- Singapore Bioimaging Consortium
- Singapore Centre on Environmental Life Sciences Engineering
- Singapore Chung Hwa Medical Institute
- Singapore General Hospital
- Singapore Immunology Network
- Singapore Institute for Clinical Sciences
- Singapore Institute of Manufacturing Technology
- Singapore National Eye Centre
- Singapore Stem Cell Consortium
- Singapore-Stanford Biodesign
- SingHealth Polyclinics
- Tan Tock Seng Hospital
Overseas Institutions (Academic)

- Aston University, UK
- Centre for Eye Research Australia, University of Melbourne, Australia
- Centre for Vision Research, University of Sydney, Australia
- Erasmus University, Netherlands
- Indiana University, School of Medicine and Rehabilitation Hospital, USA
- Institute for Aviation Psychology, Netherlands
- Johns Hopkins University, USA
- Lions Eye Institute, Australia
- Max Planck Institute for Evolutionary Anthropology, Germany
- Moorfields Eye Hospital, UK
- Oregon Health and Science University, USA
- Rotterdam Eye Hospital, Netherlands
- Save Sight Institute, Australia
- Seoul National University Bundang Hospital, South Korea
- The Institute of Endocrinology and Diabetes (IED), Australia
- University College London, UK
- University of Amsterdam, Netherlands
- University of British Columbia, Canada
- University of California, USA
- University of Melbourne, Australia
- University of Miyazaki, Japan
- University of New South Wales, Australia
- University of Sydney, Australia
- University of York, UK
- West Virginia University Eye Institute (School of Public Health), USA
- Wilmer Eye Institute, USA

Industry Collaborations

- AcuFocus
- Alcon Research Ltd
- Allergan
- Angioblast Systems Inc
- AqueSys, Inc
- Astonix Life Science (S) Pte Ltd
- AYOXXA Living Health Technologies Pte Ltd
- Bausch & Lomb
- Bayer Healthcare
- Canon
- Carl Zeiss Pte Ltd
- Ceepro Pte Ltd
- Chugai Pharmabody Research Pte Ltd
- Essilor
- Excellens
- GlaxoSmithKline
- IMS Health Asia Pte Ltd
- INC Research UK Limited
- i-Optics
- Ivantis Inc
- KEIO-NUS CUTE Centre
- Kendle Pte Ltd
- Novartis
- Ocular Therapeutix, Inc
- Project Orbis
- Quark Pharmaceuticals Inc
- Revision Optics Inc
- Roche
- Santen Pharmaceutical
- Samsung Medical Center
- Technolas Perfect Vision
- Utrecht University Enceladus Pharmaceuticals
- Welch Allyn
INTERNATIONAL & LOCAL ACTIVITIES

SERI staff and associates participated actively in both overseas and local conferences during the year to establish links with overseas institutes, meet up with overseas collaborators and to promote and enhance SERI’s presence in the international scene. Conferences / meetings participated includes:

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>DATE</th>
<th>VENUE</th>
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<tbody>
<tr>
<td>The 30th Asia-Pacific Academy of Ophthalmology Congress (APAO)</td>
<td>1 – 4 Apr 2015</td>
<td>Guangzhou, China</td>
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<tr>
<td>The 119th Annual Meeting of the Japanese Ophthalmological Society</td>
<td>16 – 19 Apr 2015</td>
<td>Sapporo, Japan</td>
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<tr>
<td>American Society of Cataract and Refractive Surgery (ASCRS) Annual Symposium</td>
<td>17 – 21 Apr 2015</td>
<td>San Diego, USA</td>
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<tr>
<td>The Biology of Regenerative Medicines</td>
<td>22 – 24 Apr 2015</td>
<td>Cambridge, UK</td>
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<tr>
<td>18th Annual International Ocular Surface Society Meeting</td>
<td>2 May 2015</td>
<td>Denver, USA</td>
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<tr>
<td>The Association for Research in Vision and Ophthalmology (ARVO) 2015</td>
<td>3 – 7 May 2015</td>
<td>Denver, USA</td>
</tr>
<tr>
<td>EMBO Conference: Chromatin and Epigenetics</td>
<td>6 – 10 May 2015</td>
<td>Heidelberg, Germany</td>
</tr>
<tr>
<td>International Society for Pharmacoeconomics and Outcomes Research (ISPOR) 20th Annual International Meeting</td>
<td>16 – 20 May 2015</td>
<td>Philadelphia, USA</td>
</tr>
<tr>
<td>6th World Glaucoma Congress 2015</td>
<td>6 – 9 Jun 2015</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>European Society of Ophthalmology (SOE) Congress 2015</td>
<td>6 – 9 Jun 2015</td>
<td>Vienna, Austria</td>
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<tr>
<td>13th Meeting of European Society of Neuro-ophthalmology (EUNOS)</td>
<td>21 – 24 Jun 2015</td>
<td>Slovenia</td>
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<tr>
<td>53rd Symposium of International Society for Clinical Electrophysiology of Vision (ISCEV)</td>
<td>23 – 27 Jun 2015</td>
<td>Slovenia</td>
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<tr>
<td>The International Symposium on Ocular Pharmacology and Therapeutics (ISOPT) Clinical</td>
<td>9-12 Jul 2015</td>
<td>Berlin, Germany</td>
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<tr>
<td>Alzheimer's Association International Conference (AAIC) 2015</td>
<td>18 – 23 Jul 2015</td>
<td>Washington, USA</td>
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<tr>
<td>17th International Conference on Nano and Biomaterials (ICNB)</td>
<td>29 – 30 Jul 2015</td>
<td>Zurich, Switzerland</td>
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<tr>
<td>9th Congress of Asia-Pacific Vitreo-Retina Society (APVRS)</td>
<td>31 Jul – 2 Aug 2015</td>
<td>Sydney, Australia</td>
</tr>
<tr>
<td>Joint Statistical Meeting 2015</td>
<td>8 – 13 Aug 2015</td>
<td>Seattle, USA</td>
</tr>
<tr>
<td>XXXIII Congress of the European Society of Cataract &amp; Refractive Surgeons (ESCRS)</td>
<td>5 – 9 Sep 2015</td>
<td>Barcelona, Spain</td>
</tr>
<tr>
<td>34th Annual Meeting of European Society of Ophthalmic Plastic and Reconstructive Surgery (ESOPRS)</td>
<td>10 – 12 Sep 2015</td>
<td>Belgium</td>
</tr>
<tr>
<td>26th Annual Meeting of the Japan Glaucoma Society</td>
<td>11 – 13 Sep 2015</td>
<td>Nagoya, Japan</td>
</tr>
<tr>
<td>Topic</td>
<td>Date</td>
<td>Venue</td>
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<tr>
<td>ASM’s Interscience Conference of Antimicrobial Agents and Chemotherapy (ICAAC) / International Congress of Chemotherapy and Infection (ICC) 2015</td>
<td>17 – 21 Sep 2015</td>
<td>San Diego, USA</td>
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<tr>
<td>The 15th International Myopia Conference</td>
<td>23 – 27 Sep 2015</td>
<td>Wenzhou, China</td>
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<tr>
<td>14th Human Proteome Organisation World Congress (HUPO)</td>
<td>27 – 30 Sep 2015</td>
<td>Vancouver, Canada</td>
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<tr>
<td>37th Meeting of the European Strabismological Association</td>
<td>1 – 4 Oct 2015</td>
<td>Venezia, Italy</td>
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<tr>
<td>24th Annual Congress of the College of Ophthalmologists of Sri Lanka</td>
<td>1 – 4 Oct 2015</td>
<td>Colombo, Sri Lanka</td>
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<tr>
<td>American Society of Human Genetics (ASHG) Annual Meeting 2015</td>
<td>6 – 10 Oct 2015</td>
<td>Baltimore, USA</td>
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<tr>
<td>The European Association for Vision and Eye Research (EVER) 2015</td>
<td>7 – 10 Oct 2015</td>
<td>Nice, France</td>
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<tr>
<td>American Academy of Optometry 2015</td>
<td>7 – 10 Oct 2015</td>
<td>New Orleans, USA</td>
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<tr>
<td>7th American Society for Microbiology (ASM) Conference on Biofilms</td>
<td>24 – 29 Oct 2015</td>
<td>Chicago, USA</td>
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<tr>
<td>11th Australian Peptide Conference</td>
<td>25 – 30 Oct 2015</td>
<td>Kingscliff, Australia</td>
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<tr>
<td>Asian Eye Genetics Consortium</td>
<td>29 Oct 2015</td>
<td>Hanoi, Vietnam</td>
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<tr>
<td>American Society of Nephrology (ASN) Kidney Week 2015</td>
<td>3 – 8 Nov 2015</td>
<td>San Diego, USA</td>
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<tr>
<td>American Academy of Ophthalmology 2015</td>
<td>14 – 17 Nov 2015</td>
<td>Las Vegas, USA</td>
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<tr>
<td>American Society for Cell Biology (ASCB) Annual Meeting 2015</td>
<td>12 – 16 Dec 2015</td>
<td>San Diego, USA</td>
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<tr>
<td>World Ophthalmology Congress (WOC) 2016</td>
<td>5 – 9 Feb 2016</td>
<td>Mexico</td>
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<tr>
<td>The Australian and New Zealand Glaucoma Interest Group (ANZGIG) Scientific Meeting</td>
<td>12 – 13 Feb 2016</td>
<td>Auckland, New Zealand</td>
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<tr>
<td>The 2nd Asia-Australia Congress on Controversies in Ophthalmology (COPHy AA)</td>
<td>18 – 21 Feb 2016</td>
<td>Bangkok, Thailand</td>
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<tr>
<td>39th Annual Macula Society Meeting</td>
<td>24 – 27 Feb 2016</td>
<td>Florida, USA</td>
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<tr>
<td>Gordon Research Conference: Cornea, Biology &amp; Pathobiology of the Function of the Ocular Surface and Tear Film in Health and Disease</td>
<td>28 Feb – 4 Mar 2016</td>
<td>California, USA</td>
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<tr>
<td>31st Malaysia-Singapore Joint Ophthalmic Congress 2016</td>
<td>4 – 6 Mar 2016</td>
<td>Malaysia</td>
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<tr>
<td>The 31st Asia-Pacific Academy of Ophthalmology Congress</td>
<td>24 – 27 Mar 2016</td>
<td>Taipei, Taiwan</td>
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</tbody>
</table>

**LOCAL ACTIVITIES**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Date</th>
<th>Venue</th>
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</thead>
<tbody>
<tr>
<td>Singapore General Hospital (SGH) 21st Annual Scientific Meeting</td>
<td>10 – 11 Apr 2015</td>
<td>Singapore</td>
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<tr>
<td>EMBO Gold Medallist Symposium 2015</td>
<td>11 – 13 May 2015</td>
<td>Singapore</td>
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<tr>
<td>SNEC 25th Anniversary International Meeting</td>
<td>22 – 24 May 2015</td>
<td>Singapore</td>
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<tr>
<td>5th Molecular Materials Meeting</td>
<td>3 – 5 Aug 2015</td>
<td>Singapore</td>
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<tr>
<td>7th International Peptide Symposium</td>
<td>9 – 11 Dec 2015</td>
<td>Singapore</td>
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</table>
GALA FUND RAISING DINNER, THE EYE BALL 2016

The SNEC/SERI’s Gala Fund-Raising dinner i.e. “The EYE Ball” intends to spread awareness of eye diseases and the fragility of vision, while concurrently raising funds for the VisionSave campaign, so that SNEC/ SERI can continue in our strive to initiate positive life-changing outcomes for our patients.

The VisionSave campaign was conceptualized to aid us in this quest to improve the lives of our patients. It serves as a bold and transformational effort to leverage on philanthropic investments to pave the way for a holistic augmentation of ophthalmology care delivery, with the ultimate goal of saving sight and transforming lives of our patients, and beyond, through innovative, cost-effective impactful eye care therapeutics, preventative and treatment strategies.

Funds garnered will go towards supporting the five causes for support/ focus areas of the VisionSave campaign:

- Financial assistance for complex, cutting-edge & novel therapies/surgeries for sight – threatening eye diseases
- Public Education/ Community Outreach/ Humanitarian
- Future-Focused Education
- Research & Innovation
- Infrastructure/ Capacity Building

In conjunction with the Visionsave campaign, the annual event was held at The St Regis, Singapore on 19 November 2016. The EYE Ball 2016 - An OP-ARTY Affair was the brainchild of our celebrity extraordinaire, Mr Dick Lee and also featured renowned jazz singer, Alemay Fernandez, talented polymath Rany Moran, as well as a brilliant master of ceremony Nikki Muller.

This year’s EYE Ball 2016 also saw the inauguration of The Visionary Award, which aims to recognise individuals whose steadfast efforts have culminated in societal benefit in Singapore and beyond. SNEC/SERI was very privileged and honored to confer Professor Tommy Koh, Singapore’s Ambassador-at-large, with the inaugural Visionary Award 2016.

The event also had a very special auction segment where a whole selection of mesmerizing art pieces, exquisite jewelry and relaxing lifestyle experiences were auctioned off.

A total net fund of approximately $500,000 was raised, with a total of 32 tables and 25 seats sold.

In conclusion, the EYE Ball 2016 has played an integral role in boosting our efforts towards creating better awareness of eye diseases and vision loss. Indeed, the significant endorsement garnered for this event further underpins the value of the work that SERI does, and certainly gives us further impetus to strive on in our pursuit of eye research endeavors to benefit our patients and community as a whole.
ACHIEVEMENTS

OUR AWARDS

Local Awards

- **Singapore General Hospital (SGH) 21st Annual Scientific Meeting: Basic / Translational Research - Young Investigator Award (Third) [Apr 2015]**
  Mr Andri Kartasasmita Riau, SERI

- **National Medical Research Council: Clinician Scientist Award-Senior Investigator [Jun 2015]**
  “Development of a layer by layer nanoparticle sustained delivery system for nucleic acid therapeutics”
  A/Prof Tina Wong, SNEC

- **ASEAN Outstanding Engineering Achievement Award / IES Prestigious Engineering Achievement Awards 2015 [Jul 2015]**
  “Angle closure imaging software (AGAR)”
  Prof Aung Tin, Adj A/Prof Shamira Perera, Dr Baskaran Mani

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Faculty Award [Aug 2015]**
  Dr Anshu Arundhati, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Faculty Award [Aug 2015]**
  Dr Sunny Shen, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Faculty Award [Aug 2015]**
  Prof Wong Tien Yin, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Resident Award [Aug 2015]**
  Dr Saadia Zohra Farooqui, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Resident Award [Aug 2015]**
  Dr Olivia Huang, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Faculty Appreciation Award [Aug 2015]**
  Dr Daniel Su, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Faculty Appreciation Award [Aug 2015]**
  A/Prof Ian Yeo, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Inspiring Resident-Educator Award [Aug 2015]**
  Dr Daniel Ting, SNEC

- **Dean’s Appreciation for Clinical Teachers – Singapore General Hospital: Junior Doctor Teaching Award [Oct 2015]**
  Dr Andrew Tsai, SNEC

- **SingHealth Publish! Award: Medical Research [Nov 2015]**
  “Kidney and eye diseases: Common risk factors, etiological mechanisms, and pathways”
  Dr Wong Chee Wai, SNEC

- **SingHealth Publish! Award: Outstanding [Nov 2015]**
  “Common variants near ABCA1 and in PMM2 are associated with primary open-angle glaucoma”
  A/Prof Eranga Vithana, SERI

- **National Medical Research Council: Transition Award [Dec 2015]**
  “Clinical, mechanical and histological characterization of trabecular meshwork in ocular hypertensive primates - Exploring mechanical strain in glaucoma”
  Dr Baskaran Mani, SERI
- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Resident Award [Aug 2015]**
  Dr Ng Si Rui, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Outstanding Resident Award [Aug 2015]**
  Dr Daniel Ting, SNEC

- **RISE (Residency in SingHealth Excels) Awards Ceremony: Faculty Appreciation Award [Aug 2015]**
  Adj A/Prof Shamira Perera, SNEC

**International Awards**

- **30th Asia-Pacific Academy of Ophthalmology Congress 2015: APAO Outstanding Service in Prevention of Blindness Award [Apr 2015]**
  Prof Ecosse Lamoureux, SERI

- **30th Asia-Pacific Academy of Ophthalmology Congress 2015: APAO Distinguished Service Award [Apr 2015]**
  Dr Audrey Looi, SNEC

- **30th Asia-Pacific Academy of Ophthalmology Congress 2015: APAO Distinguished Service Award [Apr 2015]**
  Dr Doric Wong, SNEC

- **30th Asia-Pacific Academy of Ophthalmology Congress 2015: APAO Achievement Award [Apr 2015]**
  Prof Saw Seang Mei, SERI

- **30th Asia-Pacific Academy of Ophthalmology Congress 2015: APAO Achievement Award [Apr 2015]**
  Prof Chee Soon Phaik, SNEC

  Prof Wong Tien Yin, SNEC

- **The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
  Dr Fan Qiao, SERI

- **The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
  Dr Henrietta Ho, SERI

- **The Association for Research in Vision and Ophthalmology 2015: ARVO MIT Outstanding Poster Award [May 2015]**
  “Increased burden of vision impairment and eye diseases in patients with chronic kidney disease”
  Dr Wong Chee Wai, SNEC

- **The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
  Dr Wong Chee Wai, SNEC

**National Medical Research Council: Clinician Scientist Award [Jan 2016]**
“Analysis of oxidative stress in cultured and diseased human corneal endothelial cells”
A/Prof Jodhbir Mehta, SNEC

**National Medical Research Council: Transition Award [Feb 2016]**
Dr Monisha Nongpiur, SERI

Prof Saw Seang Mei, SERI

**The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
Dr Wong Chee Wai, SNEC

**The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
Dr Henrietta Ho, SERI

**The Association for Research in Vision and Ophthalmology 2015: ARVO MIT Outstanding Poster Award [May 2015]**
“Increased burden of vision impairment and eye diseases in patients with chronic kidney disease”
Dr Wong Chee Wai, SNEC

**The Association for Research in Vision and Ophthalmology 2015: ARVO Travel Award [May 2015]**
Dr Wong Chee Wai, SNEC
• XXXIII Congress of the ESCRS, Barcelona, Spain: Best Video Award [Sep 2015]
  “Femtophaco follies”
  Dr Ronald Yeoh, SERI

• American Academy of Ophthalmology 2015: Achievement Award [Oct 2015]
  Adj A/Prof Shamira Perera, SNEC

• EMBO Young Investigator Award [Nov 2015]
  Dr Khor Chiea Chuen, SERI

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: APAO Outstanding Service in Prevention of Blindness Award [Mar 2016]
  Prof Saw Seang Mei, SERI

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: APAO Distinguished Service Award [Mar 2016]
  Dr Sonal Farzavandi, SNEC

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: APAO Distinguished Service Award [Mar 2016]
  Dr Seah Lay Leng, SNEC

  Prof Donald Tan, SNEC

• XXXIII Congress of the ESCRS, Barcelona, Spain: 1st Prize, Refractive Poster Award [Sep 2015]
  “Corneal wound healing and inflammatory responses after small incision lenticule extraction (SMILE): Comparison of the effects of different refractive corrections and surgical experiences”
  Dr Liu Yu-Chi, SERI

  Prof Wong Tien Yin, SNEC

  Prof Aung Tin, SERI

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: Achievement Award [Mar 2016]
  Dr Seah Lay Leng, SNEC

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: Achievement Award [Mar 2016]
  Adj A/Prof Shamira Perera, SNEC

• 31st Asia-Pacific Academy of Ophthalmology Congress 2016: Achievement Award [Mar 2016]
  Adj A/Prof Yasuo Yanagi, SNEC
OUR GRANTS

NMRC

- “Detection and quantitation of post-surgical fibrosis with biophotonic imaging technology”. A/Prof Tina Wong; S$245,983.00
- “Optimization of SELENA - An automated, real time detection tool for early detection of diabetic retinopathy”. Prof Wong Tien Yin; S$208,000.00
- “Analysis of oxidative stress in cultured and diseased human corneal endothelial cells”. A/Prof Jodhbir Mehta; S$674,900.00
- “Development of a layer by layer nanoparticle sustained delivery system for nucleic acid therapeutics”. A/Prof Tina Wong; S$1,721,990.30
- “The Singapore Chinese eye study 2 (SCES-2) – Prospective cohort study of 6-year incidence, risk factors, and impact of major age-related eye diseases”. A/Prof Cheng Ching-Yu; S$1,499,900.00
- “Characterizing the role of CACNA1 in exfoliation syndrome and glaucoma”. Prof Aung Tin; S$1,375,720.00
- “Whole exome sequencing to identify actionable mutations causative of primary angle closure glaucoma”. Prof Aung Tin; S$1,442,100.00
- “The clinical and economic effectiveness of extending diabetic eye screening in Singapore”. Prof Ecosse Lamoureux; S$1,425,279.35
- “Characterizing the role of iris surface features in iris sponginess and their relevance to angle-closure glaucoma”. A/Prof Cheng Ching-Yu; S$744,630.26
- “Investigating the prevalence and impact of vision impairment, hearing loss and dual sensory impairment in residential care facilities in Singapore”. Dr Ryan Man; S$199,521.00
- “The glaucoma initial treatment study: Comparing the effectiveness of selective laser trabeculoplasty with topical medication. A multi-centre, prospective and randomized controlled clinical trial”. Adj A/Prof Shamira Perera; S$930,818.00
- “The Asia primary tube versus trab (TVT) study”. Adj A/Prof Ho Ching Lin; S$2,100,168.00
- “The use of atropine 0.01% in the prevention and progression of myopia: ATOM 3”. Adj A/Prof Audrey Chia; S$1,933,306.17
- “Clinical, mechanical and histological characterization of trabecular meshwork in ocular hypertensive primates - Exploring mechanical strain in glaucoma”. Dr Baskaran Mani; S$374,829.00
- “Investigating the role of inflammation in primary angle closure glaucoma”. Dr Monisha Nongpiur; S$374,695.00
• “Enhanced angle closure glaucoma risk assessment system (AGAR+)”.  
  Prof Aung Tin; S$625,000.00

• “Development of a smart, thermo-sensitive and bio-degradable hydrogel as an internal tamponading agent during vitreo-retinal surgery”.  
  Dr Amutha Barathi Veluchamy; S$170,922.00

• “Genetics of primary open angle glaucoma (POAG) in populations of African Ancestry”.  
  Prof Michael Hauser; S$300,000.00

• “Exploring the potential diagnostic value of retinal microvascular morphology in pediatric kawasaki disease”.  
  Dr Queenie Li Lingjun; S$30,025.00

• “Randomized controlled trial of lutein as a novel neuroprotective adjunctive therapy to improve visual outcome of rhegmatogenous retinal detachment (LUNAR Trial)”.  
  Dr Ning Cheung; S$300,000.00

• “Continuation of ATX in glaucoma- ATX inhibitor study in Dutch belted rabbits”.  
  Dr Amutha Barathi Veluchamy; S$40,798.21

• “Influence of severity of myopic maculopathy on efficacy of aflibercept treatment in eyes with choroidal neovascularization (mCNV) secondary to pathologic myopia”.  
  A/Prof Gemmy Cheung; S$33,375.66

• “New ophthalmic antifungal, DE-109”.  
  Prof Roger Beuerman; S$134,710.24

• “Myopia 1: Sustained release formulation for atropine delivery”.  
  Prof Roger Beuerman; S$51,360.00

• “Evaluating a novel eye care model for visually impaired people in various communities in Singapore: A pilot study”.  
  Dr Anna Tan; S$20,000.00

• “Dielectric fresnel zone plate lens: Enabling submicron resolution femtosecond laser for the next generation corneal refractive surgery”.  
  A/Prof Jodhbir Mehta; S$22,000.00
SingHealth

- “Investigating ethnic variations of corneal rigidity in Asians and its role in glaucoma”.  
  Dr Jacqueline Chua; S$110,100.00

- “Discrete event simulation of a primary angle closure glaucoma model in Singapore”.  
  Dr Hla Myint Htoon; S$50,000.00

- “Evaluation of immune response and the role of TEM cells in the pathogenesis of a chronic eye model”.  
  Dr Hou Ai Hua; S$149,738.56

- “Evaluation of corneal endothelial cell injection therapy for the treatment of Fuchs corneal endothelial dystrophy”.  
  Dr Gary Peh; S$149,950.00

Commercial

- “The efficacy and safety of bimatoprost SR in patients with open-angle glaucoma or ocular hypertension”.  
  Prof Aung Tin; S$117,484.10

- “Clinical outcomes comparison between visumax flocket and LDV pocket for implantation of the raindrop corneal inlay for the correction of presbyopia”.  
  A/Prof Jodhbir Mehta; S$59,621.58

- “Safety and efficacy of abicipar pegol (AGN-150998) in patients with neovascular age-related macular degeneration”.  
  A/Prof Ian Yeo; S$437,752.25

- “A two-year, randomized, double-masked, multicenter, two-arm study comparing the efficacy and safety of rth258 6 mg versus aflibercept in subjects with neovascular age-related macular degeneration”.  
  A/Prof Gemmy Cheung; S$158,263.05

- “Evaluation of a novel treatment for presbyopia, scleral Er:YAG laser procedure, on its feasibility, optimization and wound healing profiles”.  
  Dr Liu Yu-Chi; S$50,000.00

- “Natural phenolic compounds for durable antimicrobial contact lens wears”.  
  Dr Chetna Dhand; S$50,000.00

- “Reduction of post-surgical fibrosis in the SPARC- and Hevin-deficient conjunctiva by interleukin-5 inhibition”.  
  Dr Seet Li Fong; S$149,998.79

- “Engineering corneal stromal keratocytes from dental stem cells for cell replacement therapy to treat corneal opacities”.  
  Dr Gary Yam; S$150,000.00

- “A multiple-center, investigator/subject masked, adaptive, multiple-ascending dose, randomized, placebo-controlled, parallel study to investigate the safety, tolerability, pharmacokinetics and pharmacodynamics of RO5093151 following 7 days administration in patients with primary open angle glaucoma or ocular hypertension”.  
  Prof Aung Tin; S$85,065.39

- “New ophthalmic antifungal, DE-109”.  
  Prof Roger Beuerman; S$352,827.59

- “Glaucoma HFA / OCT specificity study”.  
  Prof Aung Tin; S$46,428.21

- “Myopia-1: Sustained release formulation for atropine delivery”.  
  Prof Roger Beuerman; S$159,175.00
OUR PUBLICATIONS


• Leong YY, Tong L. Barrier function in the ocular surface: from conventional paradigms to new opportunities. Ocul Surf. 2015 Apr;13(2):103-9.


- Ting DS, Tan S, Lee SY, Rosman M, Aw AT, Yeo IY. **Extracapsular cataract extraction training: Junior ophthalmology residents’ self-reported satisfaction level with their proficiency and initial learning barrier.** *Postgrad Med J.* 2015 Jul;91(1077):368-72.


• Loh XJ, Wu YL. Cationic star copolymers based on \( \beta \)-cyclodextrins for efficient gene delivery to mouse embryonic stem cell colonies. *Chem Commun (Camb).* 2015 Jul 11;51(54):10815-8.


medication as initial treatment (the glaucoma initial treatment study): Study protocol for a randomised controlled trial. *Trials.* 2015 Sep 11;16(1):406.


Cohort Research Group. **MMP20 and ARMS2/HTRA1 are associated with neovascular lesion size in age-related macular degeneration.** Ophthalmology. 2015 Nov;122(11):2295-2302.e2.B120


• Chew SS, Martins A, Strouthidis N. Retinal and optic nerve changes in glaucoma: From animal study to clinical implication. Prog Brain Res. 2015;220:173-83.


• Low ZW, Chee PL, Kai D, Loh XJ. The role of hydrogen bonding in alginate / poly (acrylamide-co-dimethylacrylamide) and alginate / poly (ethylene glycol) methyl ether methacrylate-based tough hybrid hydrogels. RSC Adv. 2015;5:57678.


• Looi AL, Yong KL. "Walk the rim, feel the bone" technique in superior sulcus filling. Plast Reconstr Surg Glob Open. 2016 Jan 7;3(12):e592.


FINANCIAL REPORT

DIRECTORS’ REPORT
We are pleased to submit this annual report to the member of the Company together with the audited financial statements for the financial year ended 31 March 2016.

Directors
The directors (who are also the charity trustees) in office at the date of this report are as follows:

Associate Professor Yeoh Khay Guan
Doctor Geh Min
Professor Ang Chong Lye
Professor Wang Linfa
Doctor Lim Eng Kok
Professor Soo Kee Chee
Ms Ooi Chee Kar
Professor Donald Tan Tiang Hwee
Professor Wong Tien Yin
Associate Professor Lim Tock Han
Professor James D Best
Professor Thomas M Coffman

Directors’ Interests
The Company has no share capital and its members’ liability is limited by guarantee.

Neither at the end of, nor at any time during the financial year, was the Company a party to any arrangement whose objects are, or one of whose objects is, to enable the directors of the Company to acquire benefits by means of the acquisition of shares in or debentures of the Company or any other body corporate.

Share options
The Company does not have any share capital and accordingly has not issued any share options.

Auditors
The auditors, KPMG LLP, have indicated their willingness to accept re-appointment.
On behalf of the Board of Directors

Professor Wong Tien Yin  
*Director*

Ms Ooi Chee Kar  
*Director*
STATEMENT BY DIRECTORS

In our opinion:

(a) the financial statements set out on pages FS1 to FS23 are drawn up so as to give a true and fair view of the financial position of the Company as at 31 March 2016 and the financial performance and cash flows of the Company for the year ended on that date in accordance with the provisions of the Singapore Companies Act, Chapter 50, the Singapore Charities Act, Chapter 37 and Singapore Financial Reporting Standards; and

(b) at the date of this statement, there are reasonable grounds to believe that the Company will be able to pay its debts as and when they fall due.

The Board of Directors has, on the date of this statement, authorised these financial statements for issue.

On behalf of the Board of Directors

Professor Wong Tien Yin  
Director

Ms Ooi Chee Kar  
Director
INDEPENDENT AUDITORS’ REPORT

Member of the Company
Singapore Eye Research Institute

Report on the financial statements
We have audited the accompanying financial statements of Singapore Eye Research Institute (the Company), which comprise the balance sheet as at 31 March 2016, the statement of comprehensive income and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information, as set out on pages FS1 to FS23.

Management’s responsibility for the financial statements
Management is responsible for the preparation of financial statements that give a true and fair view in accordance with the provisions of the Singapore Companies Act, Chapter 50 (the Act), the Singapore Charities Act, Chapter 37 (the Charities Act) and Singapore Financial Reporting Standards, and for devising and maintaining a system of internal accounting controls sufficient to provide a reasonable assurance that assets are safeguarded against loss from unauthorised use or disposition; and transactions are properly authorised and that they are recorded as necessary to permit the preparation of true and fair financial statements and to maintain accountability of assets.

Auditors’ responsibility
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Singapore Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor’s judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity’s preparation of financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity’s internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.
Opinion

In our opinion, the financial statement are properly drawn up in accordance with the provisions of the Act, the Charities Act and Singapore Financial Reporting Standards so as to give a true and fair view of the financial position of the Company as at 31 March 2016 and the financial performance and cash flows of the Company for the year ended on that date.

Report on other legal and Regulatory requirements

In our opinion, the accounting and other records required by the Act to be kept by the company have been properly kept in accordance with the provisions of the Act.

KPMG LLP
Public Accountants and Chartered Accountants
Singapore
Balance sheet  
*As at 31 March 2016*

<table>
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<tr>
<th>Note</th>
<th>2016</th>
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<tr>
<td><strong>Assets</strong></td>
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<td>Property, plant and equipment</td>
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<td>Intangible assets</td>
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<td><strong>Non-current assets</strong></td>
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<td>Trade and other receivables</td>
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<td>Prepayments</td>
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<td>Cash and cash equivalents</td>
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</tr>
<tr>
<td><strong>Current assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28,416,571</td>
<td>23,695,482</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td>35,247,345</td>
</tr>
</tbody>
</table>

| Accumulated fund | 9 | 3,075,144 | 7,505,449 |

| Non-current liability |  |  |
| Deferred income | 10 | 4,387,425 | 4,257,067 |
| **Current liabilities** |  |  |
| Trade payables | 11 | 2,551,928 | 2,593,639 |
| Other payables | 12 | 22,621,077 | 13,360,408 |
| Deferred income | 10 | 1,931,771 | 2,477,586 |
| Employee benefits | 13 | 680,000 | 695,354 |
| **Total liabilities** |  | 32,172,201 | 23,384,054 |
| **Total accumulated fund and liabilities** |  | 35,247,345 | 30,889,503 |
## Statement of comprehensive income

*Year ended 31 March 2016*

<table>
<thead>
<tr>
<th>Note</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Operating expenditure grants</td>
<td>14</td>
<td>27,010,926</td>
</tr>
<tr>
<td>Amortisation of capital grants</td>
<td>18</td>
<td>1,703,939</td>
</tr>
<tr>
<td>Other income</td>
<td>15</td>
<td>3,222,247</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31,937,112</td>
</tr>
<tr>
<td>Staff costs</td>
<td></td>
<td>(17,230,143)</td>
</tr>
<tr>
<td>Supplies and consumables</td>
<td></td>
<td>(5,058,010)</td>
</tr>
<tr>
<td>Depreciation of property, plant and equipment</td>
<td>4</td>
<td>(1,698,143)</td>
</tr>
<tr>
<td>Amortisation of intangible assets</td>
<td>5</td>
<td>(232,618)</td>
</tr>
<tr>
<td>Rental and utilities</td>
<td></td>
<td>(3,766,297)</td>
</tr>
<tr>
<td>Purchased and contracted services</td>
<td></td>
<td>(2,740,040)</td>
</tr>
<tr>
<td>Repairs and maintenance</td>
<td></td>
<td>(928,146)</td>
</tr>
<tr>
<td>Other operating expenses</td>
<td></td>
<td>(4,695,592)</td>
</tr>
<tr>
<td><strong>Results from operating activities</strong></td>
<td></td>
<td>(4,411,877)</td>
</tr>
<tr>
<td>Finance costs</td>
<td>16</td>
<td>(18,428)</td>
</tr>
<tr>
<td><strong>(Deficit)/surplus before tax</strong></td>
<td></td>
<td>(4,430,305)</td>
</tr>
<tr>
<td>Tax expense</td>
<td>17</td>
<td>–</td>
</tr>
<tr>
<td><strong>(Deficit)/surplus for the year</strong></td>
<td>18</td>
<td>(4,430,305)</td>
</tr>
<tr>
<td>Other comprehensive income for the year, net of tax</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td><strong>Total comprehensive income for the year</strong></td>
<td></td>
<td>(4,430,305)</td>
</tr>
<tr>
<td>Accumulated fund brought forward</td>
<td></td>
<td>7,505,449</td>
</tr>
<tr>
<td><strong>Accumulated fund carried forward</strong></td>
<td></td>
<td>3,075,144</td>
</tr>
</tbody>
</table>

The Company had no other changes in accumulated fund except for deficit for the year of $4,430,305 (2015: surplus of $1,260,679) for the financial year ended 31 March 2016.
## Statement of Cash Flows

*Year ended 31 March 2016*

<table>
<thead>
<tr>
<th>Note</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td><strong>Cash flows from operating activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Deficit)/surplus for the year</td>
<td>(4,430,305)</td>
<td>1,260,679</td>
</tr>
<tr>
<td>Adjustments for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation of property, plant and equipment</td>
<td>4</td>
<td>1,698,143</td>
</tr>
<tr>
<td>Loss on disposal of property, plant and equipment</td>
<td>18</td>
<td>2,470</td>
</tr>
<tr>
<td>Amortisation of intangible assets</td>
<td>5</td>
<td>232,618</td>
</tr>
<tr>
<td>Amortisation of deferred income</td>
<td>18</td>
<td>(1,703,939)</td>
</tr>
<tr>
<td><strong>Net cash (used in)/from operating activities</strong></td>
<td>(4,201,013)</td>
<td>1,531,027</td>
</tr>
<tr>
<td><strong>Changes in working capital:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>(5,741,557)</td>
<td>(4,489,474)</td>
</tr>
<tr>
<td>Prepayments</td>
<td>35,971</td>
<td>(78,297)</td>
</tr>
<tr>
<td>Trade and other payables</td>
<td>9,218,958</td>
<td>3,243,115</td>
</tr>
<tr>
<td>Employee benefits</td>
<td>(15,354)</td>
<td>39,969</td>
</tr>
<tr>
<td><strong>Net cash (used in)/from operating activities</strong></td>
<td>(702,995)</td>
<td>246,340</td>
</tr>
<tr>
<td><strong>Cash flows from investing activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of property, plant and equipment</td>
<td>(1,300,701)</td>
<td>(1,660,108)</td>
</tr>
<tr>
<td>Purchase of intangible assets</td>
<td>(269,495)</td>
<td>(500,411)</td>
</tr>
<tr>
<td>Proceeds from disposal of property, plant and equipment</td>
<td>212</td>
<td>97,453</td>
</tr>
<tr>
<td>Grants for capital expenditure</td>
<td>1,288,482</td>
<td>1,673,186</td>
</tr>
<tr>
<td><strong>Net cash used in investing activities</strong></td>
<td>(281,502)</td>
<td>(389,880)</td>
</tr>
<tr>
<td><strong>Net decrease in cash and cash equivalents</strong></td>
<td>(984,497)</td>
<td>(143,540)</td>
</tr>
<tr>
<td>Cash and cash equivalents at beginning of the year</td>
<td>9,149,768</td>
<td>9,293,308</td>
</tr>
<tr>
<td><strong>Cash and cash equivalents at end of the year</strong></td>
<td>8</td>
<td>8,165,271</td>
</tr>
</tbody>
</table>

During the year, the Company acquired property, plant and equipment and intangible assets with an aggregate cost of $1,570,196 (2015: $2,160,519), of which $1,288,482 (2015: $1,673,186) was acquired using grants received.
NOTES TO THE FINANCIAL STATEMENTS

These notes form an integral part of the financial statements.

The financial statements were authorised for issue by the Board of Directors on

1. Domicile and activities

Singapore Eye Research Institute (the Company) is incorporated in the Republic of Singapore. The address of the Company’s registered office is 31 Third Hospital Avenue, #03-03 Bowyer Block, Singapore 168753.

The principal activities of the Company are to carry out eye-related medical research projects.

The immediate, intermediate holding companies and ultimate holding party during the financial year are Singapore National Eye Centre Pte Ltd, Singapore Health Services Pte Ltd and MOH Holdings Pte Ltd, and Minister for Finance respectively. These companies were incorporated in the Republic of Singapore.

The Company, limited by guarantee, has been registered as a Charity, under the Charities Act, Cap. 37 with effect from 27 November 2002.

2. Basis of preparation

2.1 Statement of compliance

The financial statements have been prepared in accordance with Singapore Financial Reporting Standards (FRS).

2.2 Basis of measurement

The financial statements have been prepared on the historical cost basis except for certain financial assets and financial liabilities which are measured at fair values.

2.3 Functional and presentation currency

The financial statements are presented in Singapore dollars, which is the Company’s functional currency.

2.4 Use of estimates and judgements

The preparation of financial statements in conformity with FRSs requires management to make judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised and in any future periods affected.

There are no critical judgements in applying accounting policies that have significant effect on the amount recognised in the financial statements and no assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment within the next financial year.
Measurement of fair values

A few of the Company’s accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities.

When measuring the fair value of an asset or a liability, the Company uses market observable data as far as possible. Fair values are categorised into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

If the inputs used to measure the fair value of an asset or a liability might be categorised in different levels of the fair value hierarchy, then the fair value measurement is categorised in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement (with Level 3 being the lowest).

The Company recognises transfers between levels of the fair value hierarchy as of the end of the reporting period during which the change has occurred.

Further information about the assumptions made in measuring fair values is included in note 19.

3. Significant accounting policies

The accounting policies set out below have been applied consistently to all periods presented in these financial statements, and have been applied consistently by the Company.

3.1 Foreign currency

Foreign currency transactions

Transactions in foreign currencies are translated to the functional currency of the Company at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency at the exchange rate at that date. The foreign currency gain or loss on monetary items is the difference between amortised cost in the functional currency at the beginning of the year, adjusted for effective interest and payments during the year, and the amortised cost in foreign currency translated at the exchange rate at the end of the year.

Non-monetary assets and liabilities denominated in foreign currencies that are measured at fair value are retranslated to the functional currency at the exchange rate at the date that the fair value was determined. Non-monetary items in a foreign currency that are measured in terms of historical cost are translated using the exchange rate at the date of the transaction. Foreign currency differences arising on retranslation are recognised in surplus or deficit.
3.2 Financial instruments

Non-derivative financial assets

The Company initially recognises loans and receivables on the date that they are originated. All other financial assets (including assets designated at fair value through profit or loss) are recognised initially on the trade date, which is the date that the Company becomes a party to the contractual provisions of the instrument.

The Company derecognises a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows on the financial asset in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred, or it neither transfers nor retains substantially all of the risk and rewards of ownership and does not retain control over the transferred asset. Any interest in transferred financial assets that is created or retained by the Company is recognised as a separate asset or liability.

Financial assets and liabilities are offset and the net amount presented in the balance sheet when, and only when, the Company has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Company classifies non-derivative financial assets into the following categories: loans and receivables.

Loans and receivables

Loans and receivables are financial assets with fixed or determinable payments that are not quoted in an active market. Such assets are recognised initially at fair value plus any directly attributable transaction costs. Subsequent to initial recognition, loans and receivables are measured at amortised cost using the effective interest method, less any impairment losses.

Loans and receivables comprise trade and other receivables, and cash and cash equivalents.

Cash and cash equivalents comprise cash and bank balances.

Non-derivative financial liabilities

The Company initially recognises all financial liabilities on the trade date, which is the date that the Company becomes a party to the contractual provisions of the instrument.

The Company derecognises a financial liability when its contractual obligations are discharged, cancelled or expire.

Financial assets and liabilities are offset and the net amount presented in the balance sheet when, and only when, the Company has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Company classifies non-derivative financial liabilities into other financial liabilities category. Such financial liabilities are recognised initially at fair value plus any directly attributable transaction costs. Subsequent to initial recognition, these financial liabilities are measured at amortised cost using the effective interest method.

Other financial liabilities comprise employee benefits, trade payables and other payables.

The Company do not have any financial assets and financial liabilities that:
- are offset in the balance sheet; or
- are subject to an enforceable master netting arrangement, irrespective of whether they are offset in the balance sheet.
3.3 Property, plant and equipment

Recognition and measurement

Items of property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses.

Cost includes expenditure that is directly attributable to the acquisition of the asset. The cost of self-constructed assets includes:

- the cost of materials and direct labour;
- any other costs directly attributable to bringing the asset to a working condition for its intended use;
- when the Company has an obligation to remove the asset or restore the site, an estimate of the costs of dismantling and removing the items and restoring the site on which they are located; and
- capitalised borrowing costs.

Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

Low value assets costing less than $1,000 individually are written off in the period of outlay.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

The gain or loss on disposal of an item of property, plant and equipment (calculated as the difference between the net proceeds from disposal and the carrying amount of the item) is recognised in surplus or deficit.

Subsequent costs

The cost of replacing a component of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the component will flow to the Company, and its cost can be measured reliably. The carrying amount of the replaced component is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in surplus or deficit as incurred.

Depreciation

Depreciation is calculated based on the cost of an asset, less its residual value. Significant components of individual assets are assessed and if a component has a useful life that is different from the remainder of that asset, that component is depreciated separately.

Depreciation is recognised as an expense in surplus or deficit on a straight-line basis over the estimated useful lives of each component of an item of property, plant and equipment, unless it is included in the carrying amount of another asset.

Depreciation is recognised from the date that the property, plant and equipment are installed and are ready for use, or in respect of internally constructed assets, from the date that the asset is completed and ready for use.
The estimated useful lives for the current and comparative years are as follows:

- Building improvements: 3 to 10 years
- Medical and laboratory equipment: 3 to 8 years
- Computers: 3 years
- Office equipment: 5 years
- Furniture and fittings: 8 years

Depreciation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

3.4 Intangible assets

Computer software, which is not an integral part of the related hardware, is accounted for as an intangible asset and is stated at cost less accumulated amortisation and accumulated impairment losses.

Subsequent expenditure

Subsequent expenditure is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, is recognised in surplus or deficit as incurred.

Amortisation

Amortisation is calculated based on the cost of asset, less its residual value. Amortisation of computer software is recognised in surplus or deficit on a straight-line basis over its estimated useful life of 3 to 5 years, from the date that they are available for use.

Amortisation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

3.5 Impairment

i. Non-derivative financial assets

A financial asset not carried at fair value through profit or loss is assessed at the end of each reporting period to determine whether there is objective evidence that it is impaired. A financial asset is impaired if objective evidence indicates that a loss event(s) has occurred after the initial recognition of the asset, and that the loss event(s) had a negative effect on the estimated future cash flows of that asset that can be estimated reliably.

Objective evidence that financial assets are impaired can include default or delinquency by a debtor, restructuring of an amount due to the Company on terms that the Company would not consider otherwise, indications that a debtor or issuer will enter bankruptcy, adverse changes in the payment status of borrowers or issuers in the group, economic conditions that correlate with defaults or the disappearance of an active market for a security.
**Loans and receivables**

The Company considers evidence of impairment for loans and receivables at both specific asset and collective level. All individually significant loans and receivables are assessed for specific impairment. All individually significant loans and receivables found not to be specifically impaired are then collectively assessed for any impairment that has been incurred but not yet identified. Loans and receivables that are not individually significant are collectively assessed for impairment by grouping together loans and receivables with similar risk characteristics.

In assessing collective impairment, the Company uses historical trends of the probability of default, timing of recoveries and the amount of loss incurred, adjusted for management’s judgement as to whether current economic and credit conditions are such that the actual losses are likely to be greater or less than suggested by historical trends.

An impairment loss in respect of a financial asset measured at amortised cost is calculated as the difference between its carrying amount and the present value of the estimated future cash flows discounted at the asset’s original effective interest rate. Losses are recognised in surplus or deficit and reflected in an allowance account against loans and receivables. Interest on the impaired asset continues to be recognised. When the Company considers that there are no realistic prospects of recovery of the asset, the relevant amounts are written off. If the amount of impairment loss subsequently decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, then the previously recognised impairment loss is reversed through surplus or deficit.

**ii. Non-financial assets**

The carrying amounts of the Company’s non-financial assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset’s recoverable amount is estimated. An impairment loss is recognised if the carrying amount of an asset or its related cash-generating unit (CGU) exceeds its estimated recoverable amount.

The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU. For the purpose of impairment testing, assets that cannot be tested individually are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or CGU.

Impairment losses are recognised in surplus or deficit. Impairment losses recognised in respect of CGUs are allocated to reduce the carrying amounts of the other assets in the CGU (group of CGUs) on a pro rata basis.

Impairment loss recognised in prior periods is assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset’s carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.
3.6 Employee benefits

*Defined contribution plans*

A defined contribution plan is a post-employment benefit plan under which an entity pays fixed contributions into a separate entity and will have no legal or constructive obligation to pay further amounts. Obligations for contributions to defined contribution pension plans are recognised as an employee benefit expense in surplus or deficit in the periods during which related services are rendered by employees.

*Short-term employee benefits*

Short-term employee benefit obligations are measured on an undiscounted basis and are expensed as the related service is provided. A liability is recognised for the amount expected to be paid under short-term cash bonus or profit-sharing plans if the Company has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

3.7 Income recognition

*Grant income*

Grant income designated for research purposes is recognised in surplus or deficit when the relevant qualifying costs are incurred.

Grants which are designated for property, plant and equipment, and intangible assets purchases whose individual value of more than $1,000 is taken to deferred income in the period of receipt. The deferred income is amortised over the useful life of the property, plant and equipment and intangible assets by crediting to the surplus or deficit an amount so as to match the related depreciation and amortisation expense.

*Programme fees*

Programme fees relate to fees or income which the Company receives when it carries out activities through direct service provision to undertake the work that contributes to its objectives. Programme fees are recognised in surplus or deficit when the relevant milestone is achieved.

3.8 Research

Expenditure on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, is recognised in surplus or deficit as incurred.

3.9 Lease payments

Payments made under operating leases are recognised in surplus or deficit on a straight-line basis over the term of the lease. Lease incentives received are recognised as an integral part of the total lease expense, over the term of the lease.
3.10 Finance income and finance costs

Finance income comprises interest income on funds invested and net foreign currency gains that are recognised in surplus or deficit. Interest income is recognised as it accrues in surplus or deficit, using the effective interest method.

Finance costs comprise net foreign currency losses that are recognised in surplus or deficit.

Foreign currency gains and losses on financial assets and financial liabilities are reported on a net basis as either finance income or finance cost depending on whether foreign currency movements are in a net gain or net loss position.

3.11 Tax

The Company has been registered as a Charity, under Charities Act, Cap. 37 with effect from 27 November 2002. No provision for taxation has been made in the financial statements as the Company is a registered charity with income tax exemption.

3.12 New standards and interpretations not adopted

A number of new standards, amendments to standards and interpretations are effective for annual periods beginning after 1 April 2015, and have not been applied in preparing these financial statements. The Company is currently assessing the potential impact of adopting these new standards and interpretations, on the financial statements of the Company.

These new standards include, among others, FRS 115 Revenue from Contracts with Customers and FRS 109 Financial Instruments which are mandatory for the adoption by the Company on 1 April 2018.

- FRS 115 establishes a comprehensive framework for determining whether, how much and when revenue is recognised. It also introduces a new cost guidance which requires certain costs of obtaining and fulfilling contracts to be recognised as separate assets when specified criteria are met. When effective, FRS 115 replaces existing revenue recognition guidance, including FRS 18 Revenue, FRS 11 Construction Contracts, INT FRS 113 Customer Loyalty Programmes, INT FRS 115 Agreements for the Construction of Real Estate, INT FRS 118 Transfers of Assets from Customers and INT FRS 31 Revenue – Barter Transactions Involving Advertising Services.

- FRS 109 replaces most of the existing guidance in FRS 39 Financial Instruments: Recognition and Measurement. It includes revised guidance on classification and measurement of financial instruments, a new expected credit loss model for calculating impairment on financial assets, and new general hedge accounting requirements.

As FRS 115 and FRS 109, when effective, will change the existing accounting standards and guidance applied by the Company in accounting for revenue and financial instruments, these standards are expected to be relevant to the Company. The Company does not plan to adopt these standards early.
## 4. Property, plant and equipment

<table>
<thead>
<tr>
<th></th>
<th>Building Improvements</th>
<th>Medical and laboratory equipment</th>
<th>Computers</th>
<th>Office Equipment</th>
<th>Furniture and fittings</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 1 April 2014</td>
<td>1,106,235</td>
<td>14,821,868</td>
<td>1,137,682</td>
<td>116,487</td>
<td>822,134</td>
<td>18,004,406</td>
</tr>
<tr>
<td>Additions</td>
<td>–</td>
<td>1,381,924</td>
<td>215,364</td>
<td>1,359</td>
<td>61,461</td>
<td>1,660,108</td>
</tr>
<tr>
<td>Disposals</td>
<td>(59,133)</td>
<td>(1,327,264)</td>
<td>(99,742)</td>
<td>–</td>
<td>(606,150)</td>
<td>(2,092,289)</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>1,047,102</td>
<td>14,876,528</td>
<td>1,253,304</td>
<td>117,846</td>
<td>277,445</td>
<td>17,572,225</td>
</tr>
<tr>
<td>Additions</td>
<td>–</td>
<td>1,242,555</td>
<td>56,746</td>
<td>–</td>
<td>1,400</td>
<td>1,300,701</td>
</tr>
<tr>
<td>Disposals</td>
<td>–</td>
<td>(125,781)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>(125,781)</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>1,047,102</td>
<td>15,993,302</td>
<td>1,310,050</td>
<td>117,846</td>
<td>278,845</td>
<td>18,747,145</td>
</tr>
<tr>
<td><strong>Accumulated depreciation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 1 April 2014</td>
<td>1,060,807</td>
<td>8,394,321</td>
<td>906,071</td>
<td>101,849</td>
<td>658,893</td>
<td>11,121,941</td>
</tr>
<tr>
<td>Depreciation charge for the year</td>
<td>9,449</td>
<td>1,368,000</td>
<td>144,484</td>
<td>5,056</td>
<td>36,202</td>
<td>1,563,191</td>
</tr>
<tr>
<td>Disposals</td>
<td>(44,590)</td>
<td>(1,163,796)</td>
<td>(99,742)</td>
<td>–</td>
<td>(538,292)</td>
<td>(1,846,420)</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>1,025,666</td>
<td>8,598,525</td>
<td>950,813</td>
<td>106,905</td>
<td>156,803</td>
<td>10,838,712</td>
</tr>
<tr>
<td>Depreciation charge for the year</td>
<td>5,261</td>
<td>1,500,250</td>
<td>161,657</td>
<td>5,081</td>
<td>25,894</td>
<td>1,698,143</td>
</tr>
<tr>
<td>Disposals</td>
<td>–</td>
<td>(123,099)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>(123,099)</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>1,030,927</td>
<td>9,775,676</td>
<td>1,112,470</td>
<td>111,986</td>
<td>182,697</td>
<td>12,413,756</td>
</tr>
<tr>
<td><strong>Carrying amounts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 1 April 2014</td>
<td>45,428</td>
<td>6,427,547</td>
<td>231,611</td>
<td>14,638</td>
<td>163,241</td>
<td>6,882,465</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>21,436</td>
<td>6,278,003</td>
<td>302,491</td>
<td>10,941</td>
<td>120,642</td>
<td>6,733,513</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>16,175</td>
<td>6,017,626</td>
<td>197,580</td>
<td>5,860</td>
<td>96,148</td>
<td>6,333,389</td>
</tr>
</tbody>
</table>
5. Intangible assets

<table>
<thead>
<tr>
<th>Cost</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At 1 April 2014</td>
<td>744,773</td>
</tr>
<tr>
<td>Additions</td>
<td>500,411</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>1,245,184</td>
</tr>
<tr>
<td>Additions</td>
<td>269,495</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>1,514,679</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accumulated amortisation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At 1 April 2014</td>
<td>630,312</td>
</tr>
<tr>
<td>Amortisation charge for the year</td>
<td>154,364</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>784,676</td>
</tr>
<tr>
<td>Amortisation charge for the year</td>
<td>232,618</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>1,017,294</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carrying amounts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At 1 April 2014</td>
<td>114,461</td>
</tr>
<tr>
<td>At 31 March 2015</td>
<td>460,508</td>
</tr>
<tr>
<td>At 31 March 2016</td>
<td>497,385</td>
</tr>
</tbody>
</table>

6. Trade and other receivables

<table>
<thead>
<tr>
<th>Note</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits and other receivables</td>
<td>7</td>
<td>19,264,842</td>
</tr>
<tr>
<td>Trade amounts due from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Immediate holding company</td>
<td></td>
<td>325,778</td>
</tr>
<tr>
<td>- Intermediate holding company</td>
<td></td>
<td>581,502</td>
</tr>
<tr>
<td>- Related corporations</td>
<td></td>
<td>36,852</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20,208,974</td>
</tr>
</tbody>
</table>

Outstanding balances with related parties are unsecured. There are no allowance for doubtful debts arising from these outstanding balances.

The Company’s exposure to credit and currency risks is disclosed in note 19.
7. **Deposits and other receivables**

<table>
<thead>
<tr>
<th>Note</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits</td>
<td>$15,568</td>
<td>$15,567</td>
</tr>
<tr>
<td>Receivables from funding bodies</td>
<td>$18,328,717</td>
<td>$12,074,507</td>
</tr>
<tr>
<td>Grant receivables from third parties</td>
<td>$875,122</td>
<td>$1,391,212</td>
</tr>
<tr>
<td>Sundry receivables</td>
<td>$45,435</td>
<td>$8,292</td>
</tr>
<tr>
<td></td>
<td><strong>6</strong></td>
<td><strong>$19,264,842</strong></td>
</tr>
</tbody>
</table>

Receivables from funding bodies are non-interest bearing and have no credit terms.

8. **Cash and cash equivalents**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash at bank and in hand</td>
<td>$8,165,271</td>
<td>$9,149,768</td>
</tr>
</tbody>
</table>

9. **Accumulated fund**

The Company is limited by guarantee and has no share capital. In the event of a winding up of the Company, the liability of each member of the Company is limited to such amount as may be required, but not exceeding the sum of one hundred dollars ($100). The accumulated fund represents the cumulative surplus of the Company.

The Company’s reserve policy is to maintain funds at a minimum sufficient to cover budgeted operating and capital cost for the current fiscal year.

**Capital management**

Capital comprises the accumulated fund of the Company. The Company’s operation is funded primarily from grants from various funding bodies and loan from immediate holding company. There was no change in the Company’s approach to capital management during the year. The Company is not subject to externally imposed capital requirements.
10. Deferred income

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>At cost</td>
<td>19,211,228</td>
<td>18,045,845</td>
</tr>
<tr>
<td>Less: Accumulated amortisation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 1 April</td>
<td>11,311,192</td>
<td>11,438,659</td>
</tr>
<tr>
<td>Amortisation for the year</td>
<td>1,703,939</td>
<td>1,595,623</td>
</tr>
<tr>
<td>Disposal of assets funded by grants</td>
<td>(123,099)</td>
<td>(1,723,090)</td>
</tr>
<tr>
<td>At 31 March</td>
<td>12,892,032</td>
<td>11,311,192</td>
</tr>
<tr>
<td></td>
<td>6,319,196</td>
<td>6,734,653</td>
</tr>
<tr>
<td>Non-current</td>
<td>4,387,425</td>
<td>4,257,067</td>
</tr>
<tr>
<td>Current</td>
<td>1,931,771</td>
<td>2,477,586</td>
</tr>
<tr>
<td></td>
<td>6,319,196</td>
<td>6,734,653</td>
</tr>
</tbody>
</table>

Deferred income relates to capital expenditure grants (note 14) received for the purchase of property, plant and equipment ("PPE") and intangible assets ("IA"). Deferred income is amortised over the periods necessary to match the depreciation of the PPE and amortisation of the IA purchased with the related grants.

11. Trade payables

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Trade payables</td>
<td>1,650,257</td>
<td>1,171,400</td>
</tr>
<tr>
<td>Amounts due to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Immediate holding company (trade)</td>
<td>382,058</td>
<td>891,498</td>
</tr>
<tr>
<td>- Intermediate holding company (trade)</td>
<td>435,258</td>
<td>508,940</td>
</tr>
<tr>
<td>- Related corporations (trade)</td>
<td>84,355</td>
<td>21,801</td>
</tr>
<tr>
<td></td>
<td>2,551,928</td>
<td>2,593,639</td>
</tr>
</tbody>
</table>

The Company’s exposure to currency and liquidity risks related to trade payables is disclosed in note 19.
12. Other payables

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pledged donations</td>
<td>$3,000,000</td>
<td>$–</td>
</tr>
<tr>
<td>Accrued operating expenses</td>
<td>$9,885,146</td>
<td>$5,530,290</td>
</tr>
<tr>
<td>Loans from immediate holding company</td>
<td>$6,000,000</td>
<td>$6,000,000</td>
</tr>
<tr>
<td>Research grants received in advance from government</td>
<td>$1,161,613</td>
<td>$219,633</td>
</tr>
<tr>
<td>Research grants received in advance from third parties</td>
<td>$2,573,378</td>
<td>$1,609,545</td>
</tr>
<tr>
<td>Refundable deposits</td>
<td>$940</td>
<td>$940</td>
</tr>
<tr>
<td></td>
<td>$22,621,077</td>
<td>$13,360,408</td>
</tr>
</tbody>
</table>

Pledged donations relate to donations by the Company to Duke-NUS Medical School amounting to $3,000,000 (2015: $nil).

Loans from immediate holding company are unsecured, interest-free and repayable on demand.

The Company’s exposure to currency and liquidity risks related to other payables is disclosed in note 19.

13. Employee benefits

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liability for short-term accumulating compensated absences</td>
<td>$680,000</td>
<td>$695,354</td>
</tr>
</tbody>
</table>

14. Operating / Capital expenditure grants

These grants are received mainly from National Medical Research Council, Biomedical Research Council, Singhealth Foundation, Singapore Health Services Pte Ltd, Singapore National Eye Centre Pte Ltd and SNEC Health Research Endowment Fund for research projects.

15. Other income

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other research grant and programme fees</td>
<td>$2,953,904</td>
<td>$4,447,581</td>
</tr>
<tr>
<td>Other miscellaneous income</td>
<td>$268,343</td>
<td>$281,412</td>
</tr>
<tr>
<td></td>
<td>$3,222,247</td>
<td>$4,728,993</td>
</tr>
</tbody>
</table>
16. Finance costs

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange loss (net)</td>
<td>(18,428)</td>
<td>(36,835)</td>
</tr>
</tbody>
</table>

17. Tax expense

The Company is a non-profit organisation registered with the Commissioner of Charities under the Singapore Charities Act. With effect from Year of Assessment 2008, all registered and exempt charities will enjoy automatic income tax exemption. Thus, no provision for taxation was made in the financial statements.

18. Surplus for the year

The following items have been included in arriving at surplus for the year:

<table>
<thead>
<tr>
<th>Note</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortisation of deferred income</td>
<td>10</td>
<td>(1,703,939)</td>
</tr>
<tr>
<td>Temporary occupation licence (“TOL”) and</td>
<td>2,970,957</td>
<td>2,802,764</td>
</tr>
<tr>
<td>other operating lease expense</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributions to defined contribution plan</td>
<td>1,707,359</td>
<td>1,917,504</td>
</tr>
<tr>
<td>included in staff costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss on disposal of property, plant and</td>
<td>2,470</td>
<td>148,416</td>
</tr>
<tr>
<td>equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donation expense</td>
<td>3,000,000</td>
<td>–</td>
</tr>
</tbody>
</table>

19. Financial risk management

Overview

The Company has exposure to the following risks from its use of financial instruments:

- credit risk
- liquidity risk
- market risk

This note presents information about the Company’s exposure to each of the above risks, the Company’s objectives, policies and processes for measuring and managing risk.

Risk management framework

Risk management is integral to the whole business of the Company. The Company has a system of controls in place to create an acceptable balance between cost of risks and the cost of managing the risks. The management continually monitors the Company’s risk management process to ensure that an appropriate balance between risk and control is achieved. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Company’s activities.
Credit risk

Credit risk is the risk of financial loss to the Company if a customer or counterparty to a financial instrument fails to meet its contractual obligations, arises principally from the funding bodies and related parties, as and when they fall due.

The carrying amount of financial assets in the balance sheet represents the Company’s respective maximum exposure to credit risk, before taking into account any collateral held. The Company does not hold any collateral in respect of its financial assets.

Cash is placed with financial institutions which are regulated.

At the reporting date, there is no significant concentration of credit risk.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding bodies</td>
<td>18,328,717</td>
<td>12,074,507</td>
</tr>
<tr>
<td>Corporations</td>
<td>1,880,257</td>
<td>2,392,910</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,208,974</strong></td>
<td><strong>14,467,417</strong></td>
</tr>
</tbody>
</table>

The funding bodies and corporations are established and reputable institutions which management regarded the associated credit risk to be minimum.

Impairment losses

The ageing of trade and other receivables that were not impaired at the reporting date was:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not past due</td>
<td>19,839,770</td>
<td>14,248,000</td>
</tr>
<tr>
<td>Past due 1 – 30 days</td>
<td>18,628</td>
<td>75,101</td>
</tr>
<tr>
<td>Past due 31 – 150 days</td>
<td>116,729</td>
<td>49,476</td>
</tr>
<tr>
<td>Past due over 150 days</td>
<td>233,847</td>
<td>94,840</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,208,974</strong></td>
<td><strong>14,467,417</strong></td>
</tr>
</tbody>
</table>

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset. The Company’s approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due under normal and stressed conditions without incurring unacceptable losses or risking damage to the Company’s reputation.

The Company’s operation is funded primarily from grants from National Medical Research Council and loans from immediate holding company. As such, the Company’s exposure to liquidity risk is minimised.
The Company monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate by management to finance the Company’s operations and to mitigate the effects of fluctuations in cash flows.

The following are the contractual maturities of financial liabilities, including estimated interest payments and excluding the impact of netting agreements:

<table>
<thead>
<tr>
<th>Note</th>
<th>Carrying amount ($)</th>
<th>Total contractual cash flows ($)</th>
<th>Within 1 year ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-derivative financial liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade payables</td>
<td>11</td>
<td>2,551,928</td>
<td>(2,551,928)</td>
</tr>
<tr>
<td>Other payables*</td>
<td>12</td>
<td>18,886,086</td>
<td>(18,886,086)</td>
</tr>
<tr>
<td>Employee benefits</td>
<td>13</td>
<td>680,000</td>
<td>(680,000)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>22,118,014</td>
<td>(22,118,014)</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-derivative financial liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade payables</td>
<td>11</td>
<td>2,593,639</td>
<td>(2,593,639)</td>
</tr>
<tr>
<td>Other payables*</td>
<td>12</td>
<td>11,531,230</td>
<td>(11,531,230)</td>
</tr>
<tr>
<td>Employee benefits</td>
<td>13</td>
<td>695,354</td>
<td>(695,354)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>14,820,223</td>
<td>(14,820,223)</td>
</tr>
</tbody>
</table>

*Excludes research grants received in advance from government and third parties

**Market risk**

Market risk is the risk that changes in market prices, such as interest rates, foreign exchange rates and equity prices will affect the Company’s income or the value of its holdings of financial instruments. The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimising the return.

**Interest rate risk**

The Company has no significant exposure to interest rate risk.

**Foreign currency risk**

The financial assets and liabilities of the Company are primarily denominated in Singapore dollars.

The Company has no significant exposure to foreign currency risk.

**Accounting classifications and fair values**

The carrying amounts of recognized financial assets and liabilities which are not measured at fair value as shown in the balance sheet are as follows. It does not include fair value information for financial assets and financial liabilities not measured at fair value if the carrying amount is a reasonable approximation of fair value.

The carrying amounts of financial assets and liabilities with a maturity of less than one year (including trade and other receivables, cash and cash equivalents, trade payables, other payables and employee benefits) approximate their fair values because of the short period to maturity.
31 March 2016
Financial assets not measured at fair value
Cash and cash equivalents  8  8,165,271  –  8,165,271
Trade and other receivables  6  20,208,974  –  20,208,974
28,374,245  –  28,374,245

Financial liabilities not measured at fair value
Trade payables  11  –  (2,551,928)  (2,551,928)
Other payables  12  –  (22,621,077)  (22,621,077)
Employee benefits  13  –  (680,000)  (680,000)
(25,853,005)  (25,853,005)

31 March 2015
Financial assets not measured at fair value
Cash and cash equivalents  8  9,149,768  –  9,149,768
Trade and other receivables  6  14,467,417  –  14,467,417
23,617,185  –  23,617,185

Financial liabilities not measured at fair value
Trade payables  11  –  (2,593,639)  (2,593,639)
Other payables  12  –  (13,360,408)  (13,360,408)
Employee benefits  13  –  (695,354)  (695,354)
(16,649,401)  (16,649,401)

20. Commitments
At 31 March 2016, the Company has commitments for future minimum lease payments under non-cancellable operating leases (including those under Temporary Occupation License) as follows:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 1 year</td>
<td>2,735,810</td>
<td>2,738,118</td>
</tr>
<tr>
<td>After 1 year but within 5 years</td>
<td>10,876,774</td>
<td>10,905,570</td>
</tr>
<tr>
<td></td>
<td>13,612,584</td>
<td>13,643,688</td>
</tr>
</tbody>
</table>

The operating lease commitments mainly relate to the lease of space and office equipment. The leases run for a period of one to five years with an option to renew the lease after that date.
21. Related parties

*Collectively, but not individually significant transactions*

The Company charges its immediate holding company for manpower services provided and purchases services from its intermediate holding company, immediate holding company and related corporations.

*Other related party transactions*

Other than disclosed elsewhere in the financial statements, the transactions with related parties are as follows:

<table>
<thead>
<tr>
<th>Transaction Description</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale of manpower services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>(893,625)</td>
<td>(897,011)</td>
</tr>
<tr>
<td>Related corporation</td>
<td>–</td>
<td>(75,386)</td>
</tr>
<tr>
<td>Sale of other services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>(318)</td>
<td>(700)</td>
</tr>
<tr>
<td>Related corporation</td>
<td>(1,334)</td>
<td>(9,968)</td>
</tr>
<tr>
<td>Purchase of manpower services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>404,192</td>
<td>–</td>
</tr>
<tr>
<td>Related corporation</td>
<td>19,240</td>
<td>–</td>
</tr>
<tr>
<td>Purchase of other services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>11,308</td>
<td>–</td>
</tr>
<tr>
<td>Intermediate holding company</td>
<td>213,926</td>
<td>404,400</td>
</tr>
<tr>
<td>Related corporations</td>
<td>268,709</td>
<td>197,809</td>
</tr>
<tr>
<td>Purchase of supplies and consumables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate holding company</td>
<td>1,224,051</td>
<td>1,112,901</td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>8,762</td>
<td>2,647</td>
</tr>
<tr>
<td>Related corporations</td>
<td>–</td>
<td>187,579</td>
</tr>
<tr>
<td>Other expenses paid/payable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate holding company</td>
<td>3,646,854</td>
<td>78,023</td>
</tr>
<tr>
<td>Immediate holding company</td>
<td>183,241</td>
<td>248,804</td>
</tr>
<tr>
<td>Related corporations</td>
<td>43,351</td>
<td>32,896</td>
</tr>
</tbody>
</table>

The Company occupies space at the premises of its intermediate and immediate holding companies. The current year rental of $225,855 (2015: $341,862) is waived by the immediate holding company.
**Key management personnel remuneration**

Key management personnel of the Company are those persons having the authority and responsibility for planning, directing and controlling the activities of the Company. The senior management are considered as key management personnel of the Company.

Key management personnel remuneration recognised in the statement of comprehensive income is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key management personnel</td>
<td>$1,383,888</td>
<td>$1,607,669</td>
</tr>
<tr>
<td>- short-term employee benefits</td>
<td>1,334,675</td>
<td>1,543,485</td>
</tr>
<tr>
<td>- contribution to defined contribution plan</td>
<td>49,213</td>
<td>64,184</td>
</tr>
</tbody>
</table>

In compliance with the Code of Corporate Governance for Charities and Institutions of a Public Character - Guideline 8.3, the annual remuneration of the Company’s three highest paid staff who each received remuneration exceeding $100,000, in the following bands in the year are as follows:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of personnel in bands:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $200,001 to $300,000</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>- $300,001 to $400,000</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>- $400,001 to $500,000</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>