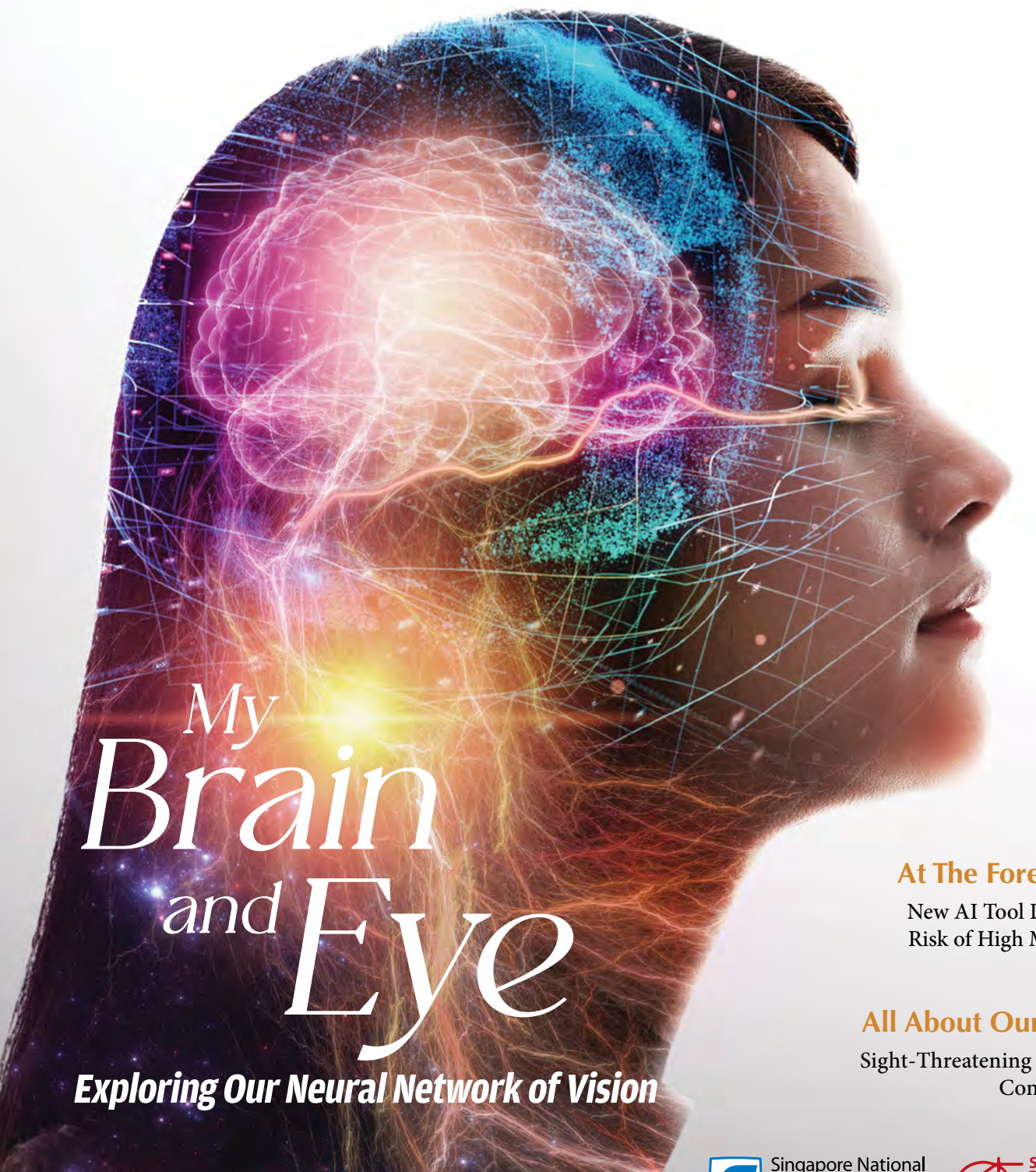


SingV^{ision}

TOMORROW'S EYE CARE, TODAY

ISSUE 2 . 2023 | WWW.SNEC.COM.SG | WWW.SERI.COM.SG



*My
Brain
and Eye*

Exploring Our Neural Network of Vision

At The Forefront

New AI Tool Detects
Risk of High Myopia

All About Our Eyes

Sight-Threatening Retinal
Conditions

A publication of Singapore National Eye Centre & Singapore Eye Research Institute



Singapore National
Eye Centre
SingHealth



SINGAPORE
EYE
RESEARCH
INSTITUTE

EDITORIAL COMMITTEE

EDITOR-IN-CHIEF
ASSOC PROF AUDREY CHIA

CO-EDITOR-IN-CHIEF
DR LOH KAI-LYN

EDITOR; CO-EDITOR
RAVI CHANDRAN; WONG CUI YAN;
JACLYN TAN

MEMBERS
DR RACHEL CHONG
DR SHWETA SINGHAL
DR TAY SU ANN
DR GILLIAN TEH
DR CHAN HIOK HONG
DR TAN PENG YI
JOANNA CHIA
GOH HUI JIN
SHIRLYN SAM
WENDY TSAI
DR RYAN MAN

PUBLISHING AGENT
OXYGEN STUDIO DESIGNS PTE LTD

WITH ADDITIONAL CONTRIBUTIONS BY
DR TAN TIEN-EN
DR YAP ZHU LI
DR LOO JING LIANG

Singapore National Eye Centre is the designated national centre within the public sector healthcare network. It spearheads and coordinates the provision of specialised ophthalmological services, with emphasis on quality education and research.

SINGVISION is a publication of Singapore National Eye Centre and Singapore Eye Research Institute. No material may be reproduced in part or in whole without prior written consent from the Publishers. Views and opinions expressed in SINGVISION are not necessarily those of the Publishers or the Editors. Although reasonable care has been taken to ensure the accuracy and objectivity of the information provided in this publication, neither the Publishers, Editors or their employees or agents can be held liable for any errors or omissions, nor any action taken based on the views expressed or information provided within this publication. Oxford Graphic Printers Pte Ltd. MCI (P) 095/10/2022.

EDITOR'S NOTE

In line with feedback from our readers, SINGVISION has taken on a fresh new look. Our cover story discusses neuro-ophthalmology, the field of medicine that deals with visual problems caused by conditions of the brain and nervous system. Do take a look and give the accompanying quiz on pages 8 and 9 a try!

We also spotlight key international ophthalmology conferences and meetings hosted by SNEC. Local and international delegates came together to discuss innovative and cutting-edge topics at our 35th Asia-Pacific Association of Cataract and Refractive Surgeons (APACRS) meeting and the inaugural Asia-Pacific Orbital Disease and Thyroid Eye Disease Meeting. SNEC-SERI also partnered with the International Agency for the Prevention of Blindness (IAPB) for the 2030 In Sight Live conference on global eye health, receiving over 350 delegates from 50 countries and many more online.

We also welcomed two world-renowned experts, Professor David S Friedman and Professor Anthony Moore, under the Health Manpower Development Plan by the Ministry of Health.

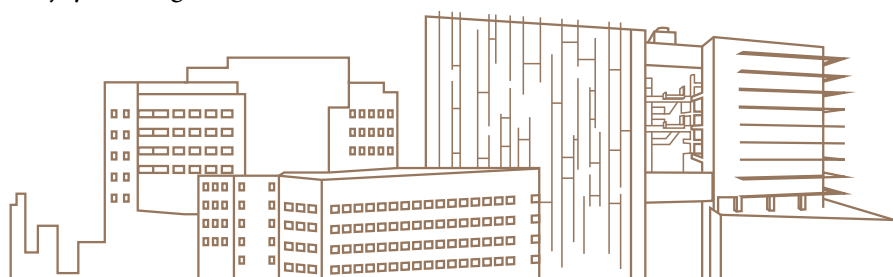
For parents of little ones, you may be interested in the newly-developed artificial intelligence tool by our Myopia Centre and SERI to determine a child's risk for developing high myopia. We have also partnered Health Promotion Board (HPB) to launch our first Preschool Myopia Campaign. In May, 12 SNEC optometrists spoke with 140 children at five preschools to share myopia prevention tips.

For a dose of inspiration, we have stories on our Inspirational Patient & Caregiver Awards (IPCA) recipients; a patient and a caregiver who demonstrated amazing strength and resilience. We also interviewed a new-generation nurse, who takes on multiple roles and responsibilities to keep patients safe during surgery.

In this issue, you can learn about Singapore's ophthalmology history and SNEC's transformation from two dilapidated blocks in Singapore General Hospital (SGH) into a one-stop eye centre of international repute.

Lastly, don't miss out on the tips shared by our specialists on how retinal-related conditions can affect vision and cause blindness, as well as the treatment options available for stopping or slowing such conditions.

Enjoy reading!



Follow us on
f @SNEC.SERI
i @SNEC_SERI
in @SNEC-SERI
t @SNEC_SERI

CONTENTS Issue 2 2023



Teaming Up with **WORLD-RENOWNED EXPERTS**

4 **At the Forefront**

- 4. Honouring Our Ophthalmologists
- 10. Teaming Up with World-renowned Experts
- 12. Advancing Eye Care: From Bench to Bedside
- 13. New Artificial Intelligence Tool Detects Risk of High Myopia
- 16. Global Oculoplastic Surgeons and Endocrinologists Gather at SNEC
- 17. Global Alliance for Eye Health – Take Action. Be Inspired. Connect.
- 18. New Hope for Diabetic Patients

- 18. Boosting Digital Workplace Learning

6 **Cover Story**

- 6. My Brain and Eye: Exploring Our Neural Network of Vision

14 **Spotlight**

- 14. Advancing Ophthalmology in the Asia-Pacific

19 **Caring For Our Community**

- 19. Helping Preschoolers Prevent Myopia

- 20. An Eye on Women's Health
- 21. A Story of Triumph Over Adversity

22 **All About Our Eyes**

- 22. Sight-Threatening Retinal Conditions: What You Need to Know

24 **Did You Know**

- 24. A Peek into Singapore's Ophthalmology History
- 26. A Day in the Life of a New Generation Nurse
- 27. Save Sight, Improve Lives



HONOURING OUR OPHTHALMOLOGISTS

Three eminent specialists are recognised for their profound achievements in clinical service, research and education. We extend our heartiest congratulations to Clinical Professor Ang Chong Lye, Professor Gemmy Cheung and Clinical Associate Professor Doric Wong.

A LIFE DEDICATED TO SERVICE

On 7 May 2023, Clinical Professor Ang Chong Lye was bestowed with the title of Emeritus Consultant at SNEC.

His long-standing commitment to ophthalmology in Singapore and internationally as well as his extensive educational contributions have made him a cornerstone figure in this field. He has nurtured fellows to become full-fledged specialists in leading institutions in the region. Professor Ang holds academic appointments at NUS and Duke-NUS Medical School, and also served in senior leadership positions as Director, SNEC; CEO, Singapore General Hospital (SGH); and Deputy Group CEO, SingHealth over the past 36 years.



"I am extremely delighted to be appointed as an Emeritus Consultant at SNEC. I have been in the SGH Campus for close to 50 years. We have steadily transformed the SGH Campus into a world-class facility. SNEC first started in 1990 and many of us had a hand in crafting the vision of "International Eminence in Ophthalmology". We have achieved remarkable clinical and academic milestones over the years. I have mentioned in the past to position SNEC as a significant node in ophthalmology in the Asia-Pacific and the world. We have accomplished much. This goal has been the continued work of outstanding faculty, passionate nursing and allied health staff and is ably supported by our operations and admin colleagues."

AN INSPIRATION TO WOMEN

Professor Gemmy Cheung, Head and Senior Consultant, Medical Retina Department, SNEC, and Head of Retina Research Group, SERI, was conferred the prestigious Arthur Lim Professorship in Ophthalmology on 8 March 2023. The professorship, established by SNEC, NUS and Duke-NUS, recognised her academic leadership and significant contributions to ophthalmology.

Professor Cheung specialises in advancing management outcomes

for retinal diseases and alleviating blindness from age-related macular degeneration (AMD). Aside from forging numerous international collaborations, she has established a platform for facilitating scientific and clinical exchanges and offered ample learning prospects to fellows, researchers and PhD students. Her efforts make her an exemplary figure for budding ophthalmologists, particularly women starting their professional journey.

"One of the richest legacies of Professor Arthur Lim is the thousands of ophthalmologists he has mentored throughout the region. Amongst them are past awardees of this distinguished professorship, Professor Donald Tan and Professor Wong Tien Yin. It is a great honour for me to follow in the footsteps of my predecessors."



RECOGNISING A MASTER ACADEMIC CLINICIAN



Clinical Associate Professor Doric Wong, Senior Consultant, Surgical Retina Department, SNEC, was honoured as one of the nine Master Academic Clinicians at the SingHealth Duke-NUS Academic Medical Centre on 23 February 2023. The award honours senior clinicians who have outstanding careers, strong leadership skills and exemplary standards of professionalism. Professor Wong was recognised for his clinical and research work in retinal and macular diseases.

As one of the leading ophthalmologists in his field in Singapore and Asia, Professor Wong was head of the SNEC Vitreo Retina Department from 2005 to 2016. He is an expert in managing AMD, diabetic retinopathy and complex retinal disorders. He has also trained many fellows and has received several awards for his outstanding mentorship. In addition, Professor Wong contributed to early-stage polypoidal choroidal vasculopathy research, a form of neovascular AMD commonly found in Asian populations.

"It is very rare that a person is excellent in all aspects. The best researchers are not necessarily the best surgeons, and the best surgeons may not necessarily be the best educators. In that aspect, we can all help each other because we work as a whole."

THE ARTHUR LIM PROFESSORSHIP: A TRIBUTE TO SINGAPORE'S OPHTHALMOLOGY PIONEER

The late Professor Arthur Lim was a pioneering and visionary leader of Ophthalmology in Singapore. Established in 2014, the Arthur Lim Professorship in Ophthalmology recognises and remembers his lifelong dedication and commitment to the field.

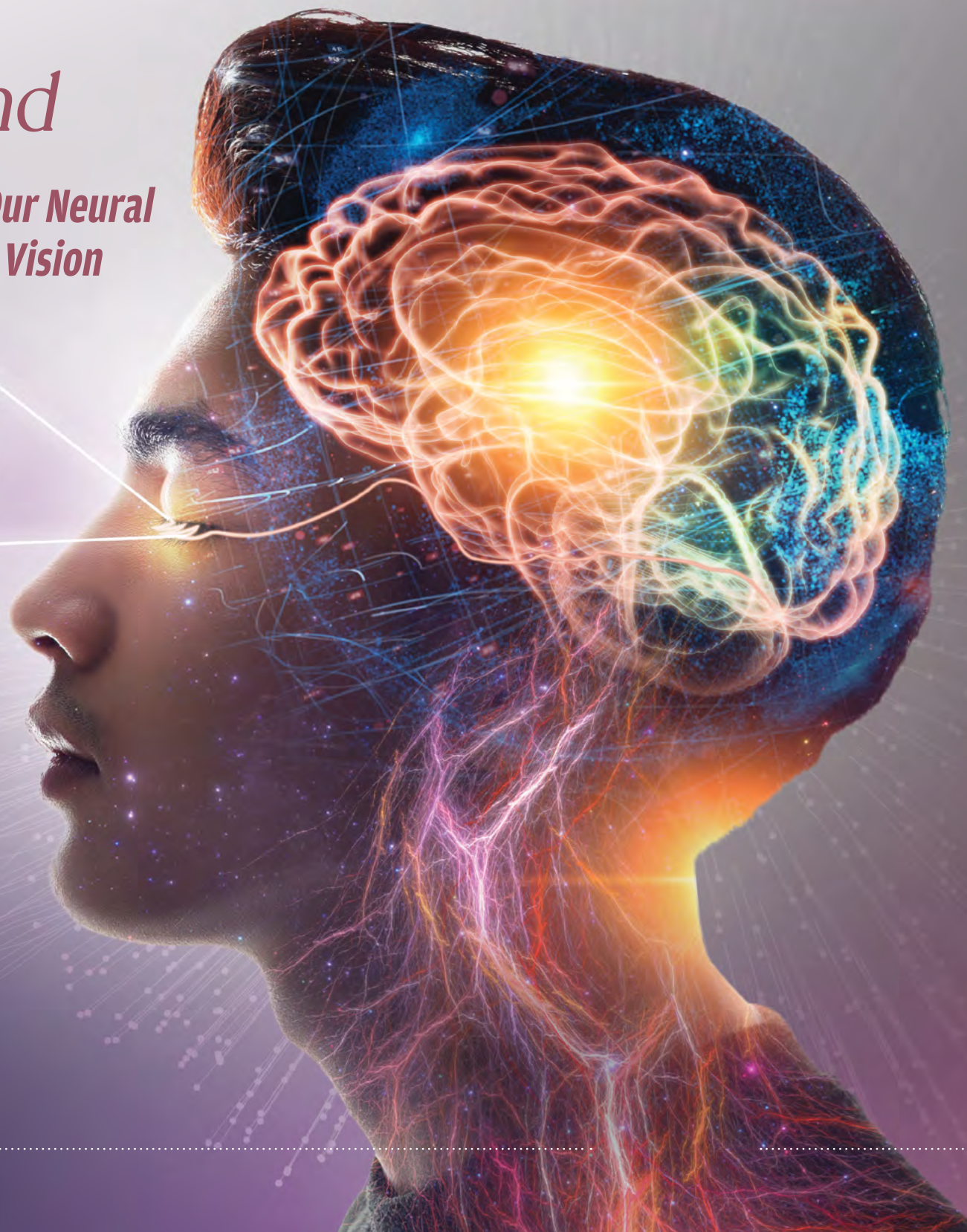
Professor Lim introduced critical tools such as microsurgical techniques and intraocular lens implant technology, training thousands of ophthalmologists, many of whom have become leaders in their profession in their homelands.

My Brain and Eye

Exploring Our Neural Network of Vision



Neuro-ophthalmology is a field of medicine that deals with visual problems caused by conditions of the brain and nervous system. Our experts at SNEC discuss this and more. SNEC is also using artificial intelligence (AI) technology to detect neuro-ophthalmological disorders.



In many instances, the neuro-ophthalmologist is like a detective. The doctor puts together the constellation of eye and neurological symptoms and signs to predict the nature and location of the problem within the brain before conducting the relevant investigations such as blood tests or brain scans. However, since neuro-ophthalmologists are usually only available in tertiary hospitals, these decisions can be difficult to make in primary care or emergency settings.

For instance, someone may go into the Accident & Emergency (A&E) department in the middle of the night, complaining of an extremely bad headache while lacking symptoms of visual impairment. The patient would not get to see an ophthalmologist at that time and may instead be sent for brain scans to rule out the small chance of stroke or brain haemorrhage.

The Neuro-Ophthalmology Department decided to address this shortcoming in clinical care systems by developing an artificial intelligence (AI) system that could screen for life-threatening conditions, not only in the eye but in the brain, by interpreting photographs of the optic nerve.

AI and deep learning algorithms have recently been increasingly applied in ophthalmology to detect various ophthalmic diseases, such as diabetic retinopathy and glaucoma. However, this is the first time this technology is being applied to use the eye as ‘a window into

the brain’. “To do this, we have used the optic nerves as a proxy to detect brain conditions,” said Professor Dan Milea, a senior consultant neuro-ophthalmologist.

To collect large numbers of retinal photographs to train the AI system, SNEC first created an international Consortium (BONSAI – Brain and Optic Nerve Study with Artificial Intelligence). It collaborated with renowned expert neuro-ophthalmologists from 24 centres in 15 countries on 3 continents who jointly contributed to the study. The AI system was trained and tested on this enormous data set and proved very effective in diagnosing life-threatening brain conditions.

SNEC’s deep learning AI software system Selena+ has shown that an AI system can look at images of the back of our eyes and accurately detect a specific type of optic nerve abnormality known as papilledema. Papilledema is the swelling of the optic nerve head due to pressure build-up in or around the brain and is linked to life or vision-threatening diseases of the brain, such as brain tumours. Led by Professor Milea, the paper was published in the prestigious New England Journal of Medicine in 2020.

Apart from being applied in the emergency setting, this system will also be useful for neurologists and neurosurgeons, who need an immediate, accurate and automated assessment of the optic nerve head without available ophthalmologists. It will assist greatly in the decision-making processes when ordering brain imaging.

Serving our patients who have unexplained visual loss, double vision, eyelid spasms

At SNEC, the Neuro-Ophthalmology Department sees patients with a wide spectrum of conditions including unexplained visual loss, double vision, droopy eyelids, and facial or eyelid spasms. Those with visual loss are often unable to see well despite having no obvious abnormality in their eye. They need a thorough neurological evaluation for a problem in the optic nerve or brain that might be resulting in visual loss. This could include problems with the optic nerve itself (either inherited or acquired as an adult) or conditions such as a stroke or tumour affecting parts of the brain involved in vision. Double vision is most commonly due to eye movement abnormalities or caused by similar problems in areas of the brain that control eye movement.

Patient journey and a multi-disciplinary approach to treatment

“The Neuro-Ophthalmology Department adopts a multi-disciplinary approach and works closely with neurologists, neurosurgeons, neuro-radiologists as well as other specialities such as endocrine physicians and Ear Nose and Throat (ENT) surgeons to ensure comprehensive systemic care is provided,” said Dr Loo Jing Liang, Head Neuro-Ophthalmology Dept, SNEC.

Some of the common neuro-ophthalmological disorders for which SNEC provides consultation include:

•• **1 Optic Neuritis (Sudden Visual Loss)**



Optic neuritis is a potentially blinding inflammatory condition of the optic nerve. It causes sudden visual loss, which can range from partial visual field defect to total blindness. The underlying causes may be related to neuromyelitis optica and multiple sclerosis.

•• **2 Ischaemic Optic Neuropathy (Stroke of the Eye)**



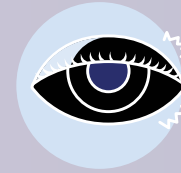
Ischaemic optic neuropathy is an acute condition where the optic nerve is damaged due to insufficient blood supply. It is also known as ‘stroke’ of the optic nerve and causes sudden, painless visual loss.

•• **3 Ocular Myasthenia Gravis (Droopy Eyelids and Double Vision)**



Myasthenia gravis occurs when nerve impulses from the nerve to the muscles are blocked, leading to muscle weakness. This condition can affect the eyelids and the muscles that control eye movement, causing droopy eyelids and double vision.

•• **4 Eyelid Myokymia, Hemifacial Spasm and Benign Essential Blepharospasm (Eyelid or Facial Twitching and Spasm)**



These conditions causing involuntary eyelid and/or facial twitching or spasms may be differentiated by a detailed neuro-ophthalmological examination. Botulinum toxin injections (Botox) may be used to treat some of these conditions.

•• **5 Conditions causing binocular double vision (Diplopia)**



Diplopia is a symptom whereby a patient sees two images of one object. If it occurs only when both eyes are open and disappears when either eye is occluded, it is known as binocular diplopia. The latter may be due to cranial nerve palsies and myasthenia gravis, etc.

•• **6 Conditions causing acute or chronic visual loss**



These conditions may include but are not limited to brain tumours, stroke, and raised intracranial pressure causing papilloedema and genetic optic neuropathies, etc.

Pop Quiz:

Q1 What neuro-ophthalmological conditions can Botox help with?

Turn to page 27 to find out!

Q2 What causes droopy eyelids?

Turn to page 27 to find out!

Key facts and figures about SNEC Neuro-Ophthalmology Department



Team of 5 specialists



Approximately 4,500 patients annually



Organises an annual essential skills in neuro-ophthalmology one-day masterclass for Ophthalmology residents, both locally and regionally; it has an extensive following, both locally and internationally, with a highly sought-after ‘live’ patient examination module



To date, 6 local fellows and 8 international fellows from the region have completed their Neuro-Ophthalmology fellowship in the department



Receives regular observers from around the region



Teaming Up with WORLD- RENOWNED EXPERTS

Two visiting experts shared their expertise with SNEC under the Health Manpower Development Plan.

In February 2023, SNEC hosted Professor David S Friedman as a visiting expert in glaucoma under the Health Manpower Development Plan (HMDP) by the Ministry of Health (MOH). Professor Friedman is the Alfred and Diane Kaneb Chair in Ophthalmology, Director of the Glaucoma Division as well as the Medical Director of Clinical Research at Massachusetts Eye and Ear Institute. During the 5-day programme, he covered much ground with lecture topics that ranged from angle closure detection and management to community and global ophthalmology, as well as how to conduct research and tips on improving public speaking.

Having collaborated on several multi-centre projects, Professor Friedman was impressed by how SNEC has always been able to

achieve the right balance of being competitive and collaborative. His observations and feedback during his visit have provided great insights that will guide SNEC in developing the most efficient and efficacious strategies to detect and manage glaucoma in the community. Such strategies include continually investing in implementation research to optimise screening, adapting, and improving the monitoring of patients' conditions and follow-up systems downstream from SNEC's increasingly successful screenings.

Ensuring it was not all work and no play, he also found time to partake in some social events such as the Glaucoma Association of Singapore (GLAS) dinner and the SNEC Annual Dinner and Dance.

From past to present:

Professor Friedman caught up with friends from SNEC and other hospitals over meals in February 2023.



Professor Friedman giving a lecture at SNEC's 25th anniversary international meeting in May 2015.

Strengthening Expertise in Inherited Retinal Disease in Singapore

SNEC also welcomed Professor Anthony Moore, a world-renowned expert in inherited eye and retinal diseases, as a Visiting Expert in Medical Retina and Paediatric Ophthalmology under HMDP.

Professor Moore is Professor at the University of California, San Francisco (UCSF) and Emeritus Professor at University College London (UCL). He was previously director of the Inherited Eye Disease service at Moorfields Eye Hospital, London. His research identified genes causing eye and retinal disease, and new treatments for inherited retinal diseases (IRDs), leading to over 400 articles, 2 books

“

It was a great pleasure to visit Singapore and learn how SNEC is building an impressive inherited retinal disease service supported by 'state-of-the-art' genetic sequencing techniques. Precise molecular diagnosis is the starting point for recruiting patients to clinical trials and ultimately for developing new treatments for rare retinal disorders. This initiative will greatly benefit patients in Singapore.”

and 50 book chapters. He was also UCL Institute of Ophthalmology's clinical lead for the first successful gene therapy clinical trial for an infantile-onset form of retinal dystrophy. At UCSF, he investigated gene therapy trials for three other inherited retinal diseases. IRDs, also known as retinal dystrophies, are usually hereditary and traditionally considered “untreatable”.

But with new research, the first gene therapy treatment for an IRD was approved in 2017. SNEC-SERI have recently invested in clinical and research efforts to better understand the regional scope of IRD. SNEC's dedicated IRD Clinic now offers specialised retinal imaging, electrophysiology, genetic testing, subspecialty expertise and genetic counselling for patients.



Professor Moore presented the latest findings on retinal disease at SNEC.



Advancing Eye Care: From Bench to Bedside

Fast-tracking innovative research projects for patients.

Achieving better healthcare begins with discovering new solutions in the lab. To accelerate the translation and deployment of research projects, SingHealth and Agency for Science, Technology and Research (A*STAR) have joined forces through the Healthcare Translation Partnership (HTP).

The HTP will provide \$8 million in funding for Medical Technology, Data Science & AI/Digital Health and Health Services Innovation projects. There are currently two ophthalmology projects under trial receiving support from HTP, which will help to speed up the process of bringing them to market.

The Terahertz High Definition Eye Analysis (THEA) is a clinical

tool that utilises Terahertz imaging techniques — usually used in industrial or surveillance settings — to provide a more efficient way of assessing the severity and progression of Ocular Surface Diseases (OSD).

This project is run by a clinical and research team from SNEC, SERI and A*STAR. Research team lead, Associate Professor Liu Yu-Chi, SNEC's Clinician Scientist, expects THEA to be commercially available in five years.

Another initiative is the establishment of the SERI-IHPC Joint Lab framework, which helped to birth the Intelligent Eye Triage system — an AI-powered tool to better triage eye patients

in primary care/polyclinics. The project is led by SNEC's Associate Professor Daniel Ting, with the help of experts from SERI and A*STAR's Institute of High Performance Computing (IHPC).

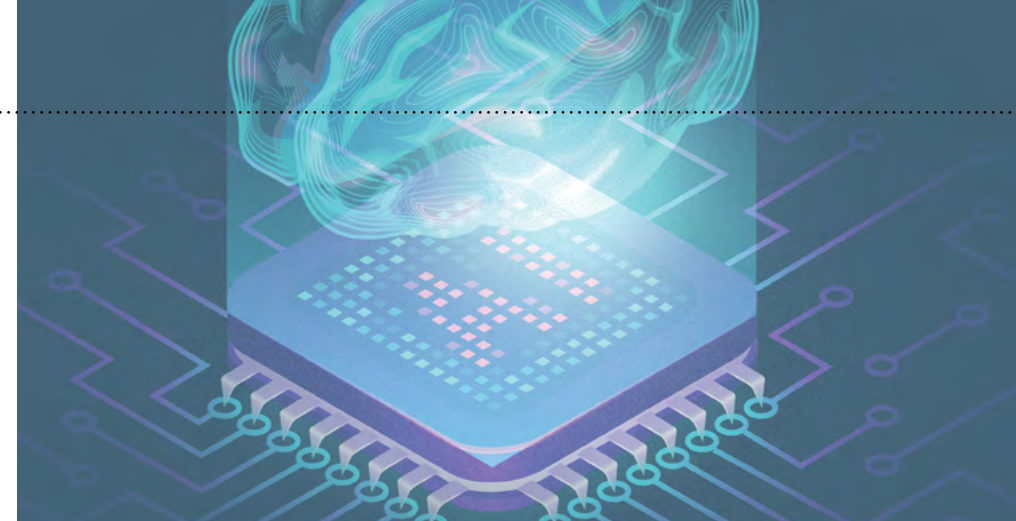
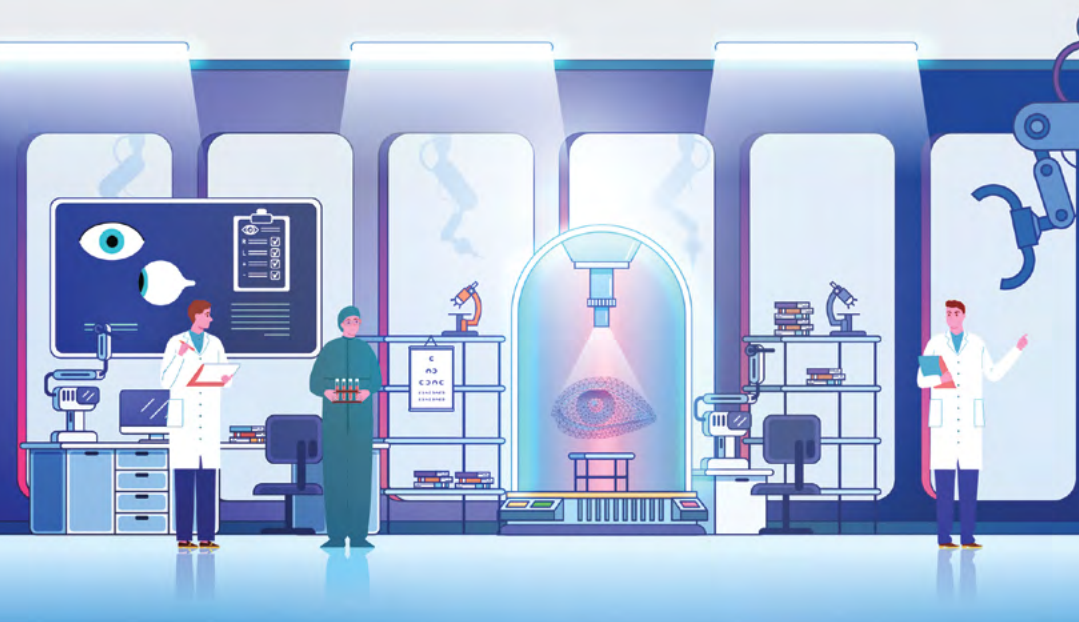
SingHealth Polyclinics-Outram has been piloting the Intelligent Eye Triage system since January 2022. The system uses machine learning to accurately assess and diagnose patients with eye symptoms. It can indicate the urgency level for a patient to be referred to a specialist.

Results thus far have proven encouraging. The accuracy of referrals to eye specialists has increased from 42% to 60%, meaning fewer unnecessary visits and improved clinical outcomes.

“

Research and innovation not only enable us to push the boundaries of medicine, they drive improvements through the development of novel medical devices, digital solutions for diagnosis and treatment, and health services innovations that optimise clinical operations and enhance value-driven care.”

Professor Ivy Ng
Group CEO, SingHealth



New Artificial Intelligence Tool Detects Risk of High Myopia

Identifying young children at risk of developing high myopia during their teenage years promotes appropriate myopia control intervention.

SNEC's Myopia Centre and SERI have developed a new AI tool that can determine a child's risk for developing high myopia (above -5.00 dioptres). It can contribute to the long-term goal of reducing high myopia rates among Singaporean children, thereby preventing vision-threatening complications associated with high myopia during adulthood.

The tool implements deep learning algorithms to examine a child's retinal image with clinical data such as age, race, gender, refractive error of eyes, and distance between the cornea and retina. It instantly predicts the likelihood of them developing high myopia later in their teenage years and boasts an accuracy rate of over 90%, helping clinicians spot high-risk children needing early intervention.

Over 60% of Singaporean children become myopic by Primary 6 and an estimated 80% of young adults are myopic, shared Professor Saw Seang Mei, Co-head of SERI's Myopia Research Group. “Many think that myopia is part of growing up and children inevitably develop myopia.”

As myopia rates among young children surge, especially during the COVID-19 pandemic, so are concerns that visual impairment from high myopia will pose severe public health problems in the future.

“While myopia is widespread in Singapore, high myopia is associated with potentially sight-threatening eye diseases later in life. These include glaucoma, cataract and myopic maculopathy,” said Associate Professor Marcus Ang, Advisor, SNEC Myopia Centre and Principal Investigator of the AI tool.

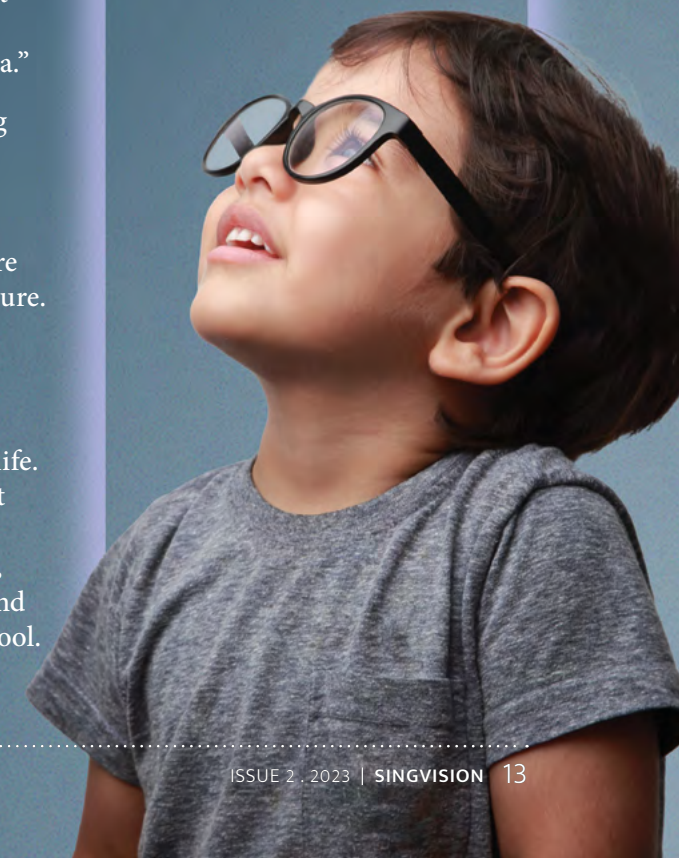
“

The next phase of the study is to test the usability of the AI algorithm in a real-world setting and utilise techniques to explain what the AI system is thinking and seeing. This will help improve confidence in using this AI technology among primary eye care providers, patients and parents.”

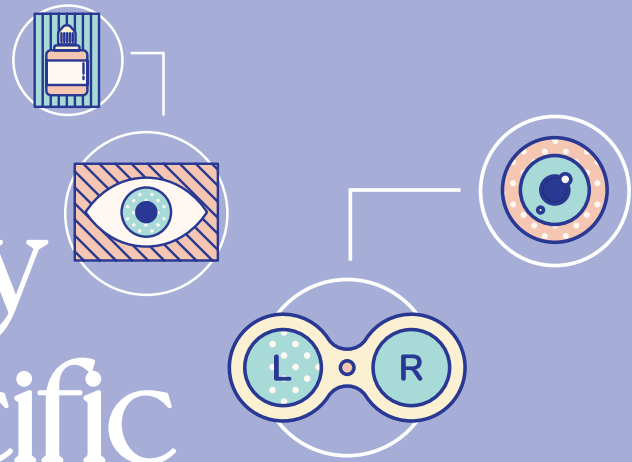
Associate Professor Daniel Ting

Chief Data and Digital Officer, SNEC

Head of the AI and Digital Innovations Research Group, SERI



Advancing Ophthalmology in the Asia-Pacific



SNEC partners APACRS for conference attended by 2,000 delegates.

The 35th Asia-Pacific Association of Cataract and Refractive Surgeons (APACRS) meeting held from 8 to 10 June saw more than 2,000 delegates from over 50 countries gathered at the Suntec Singapore Convention & Exhibition Centre. At the opening ceremony, Professor Jodhbir Mehta, Executive Director, SERI and Clinical Associate Professor Mohamad Rosman accepted the APACRS Certified Educator (ACE) award.

Themed “NEXUS - Connecting Everyone and Everything”, the three-day event held stimulating masterclasses, symposiums, lectures and exhibitions. SNEC’s Cornea & External Eye Disease Department co-hosted masterclasses on the cutting-edge technologies in corneal surgery and corneal endothelial transplantation. The Glaucoma Department shared new insights on angle-closure glaucoma and myopia-associated glaucoma at the

More than 2,000 delegates from over 50 countries gathered at the 35th APACRS meeting.



Associate Professor Marcus Ang, Head of Corneal and External Eye Disease Department, SNEC (left), shared his insights on new advances in corneal imaging with the panel.



Associate Professor Gavin Tan, Senior Consultant, Surgical Retina Department, SNEC, performed a cataract surgery at SNEC and this was transmitted to the conference 'live'.



The exhibition booths showcased the latest ophthalmic advancements and industry trends.

symposiums. Professionals from SNEC’s Nursing and Allied Health departments also shared their experiences in enhancing the overall patient experience.

Additionally, SNEC hosted many of the international delegates and showed them around its clinical facilities and SERI’s research clinic and labs. In a live-surgery segment of the conference, Associate Professor Gavin Tan, Senior Consultant, Surgical Retina Department performed cataract surgery using the latest technology and intra-ocular lens (IOL) implants.

Based in SNEC, APACRS was founded in 1987 by Professor Arthur Lim, who also founded SNEC. The annual conference has been actively promoted to facilitate the exchange of knowledge, training and research in cataract and refractive surgery in the Asia-Pacific region. SNEC’s faculty speaks at annual meetings held across the Asia-Pacific region each year. In 2021, SNEC and APACRS collaborated to organise the SNEC 30th–APACRS 33rd Anniversary Virtual Meeting during the COVID-19 pandemic.



Dr Jane Lim, Associate Consultant, SNEC, won the Best Paper of the Session in the Cataract Surgery Category.



Global Oculoplastic Surgeons and Endocrinologists Gather at SNEC

Guest of Honour

Dr Vivian Balakrishnan, Minister for Foreign Affairs (seated centre) with Associate Professor Seah Lay Leng, ITEDS President and Senior Consultant, SNEC (seated third from left), and Professor Aung Tin, CEO, SNEC (seated second from right) with distinguished faculty and guests.

Experts discuss new approaches to eye health.

The inaugural Asia-Pacific Orbital Disease and Thyroid Eye Disease Meeting on 25 to 26 May 2023 saw 200 international and local delegates gathered at SNEC. Themed “Orbiting the Multi-Faceted World of Thyroid and Orbital Diseases”, there were 12 stimulating sessions, featuring more than 20 international speakers. This was the first in-person conference by SNEC since the COVID-19 pandemic.

Dr Vivian Balakrishnan, Minister for Foreign Affairs and former Medical Director of SNEC, was the Guest of Honour. During the event, expert orbital surgeons shared their knowledge and experiences regarding the management of various orbital diseases and exciting research initiatives, and discussed new approaches to the orbit, which have increased and strengthened our options and surgical techniques.

Ophthalmologists and endocrinologists also shared their insights into risk factors, management and treatment of Thyroid Eye Disease. The conference was chaired by Clinical Associate Professor Seah Lay Leng, Senior Consultant, Oculoplastic Dept, SNEC, who is also President of the International Thyroid Eye Disease Society (ITEDS).

Renowned keynote speakers included Clinical Professor Peter Dolman from the University of British Columbia, who delivered the 2nd SNEC VisionSave Lecture on “The Future of Management of Graves’ Hyperthyroidism”. Meanwhile, Professor Lelio Baldedschi from the Catholic University of Louvain Saint Luc Academic Hospital, delivered the Richard Fan Lectureship and discussed “Improving the Safety of Orbital Surgery”.

New advancements have led to a better understanding of orbital diseases on a molecular basis, providing new possibilities for targeted therapies. The symposium allowed participants to have a more comprehensive understanding of the entire spectrum of orbital diseases, enabling us to better serve our patients. The event was co-organised by SNEC, College of Ophthalmologists, Academy of Medicine Singapore and supported by the International Thyroid Eye Disease Society.

Global Alliance for Eye Health TAKE ACTION. BE INSPIRED. CONNECT.

2030 IN SIGHT LIVE brings together leaders, innovators and changemakers to tackle the issues of eye health.

More than 350 delegates from over 50 countries assembled at SERI for the 2030 IN SIGHT LIVE Singapore summit on 25 and 26 June. Hosted in partnership with the International Agency for the Prevention of Blindness (IAPB), the event gathered experts and leaders from the eye health and development sectors to address the challenges of ensuring eye care for all. They also discussed strategies to integrate eye care into the wider health systems and devise solutions to activate demand from the ground up.

In his opening address, Professor Jodhbir Mehta, Executive Director of SERI and Deputy CEO (Research) of SNEC shed light on the roles of SERI and SNEC in translating innovations into real-world outcomes. He also spoke about the Singapore Integrated Diabetic Retinopathy Programme (SiDRP) and the role of Myopine eye drops in slowing the progression of myopia.

H.E. Ambassador Walton Aubrey Webson, co-chair of the UN Friends of Vision Group and the Permanent Representative of Antigua and Barbuda to the United Nations,

acknowledged the contributions of SERI and SNEC to the global eye sector. He shared, “We have an opportunity to raise awareness and advocate many fronts and domains to make sure eye health is universally understood and make it a core part of development.”

2030 IN SIGHT LIVE is the largest gathering with the aim of advancing accessible, available and affordable eye care to all by 2030. It was packed with work group meetings, plenary sessions and

masterclasses. Panel discussions also covered how artificial intelligence and deep learning can shape the future of eye health, along with associated concerns.

Professor Aung Tin, SNEC’s CEO, shared, “This event represents an extraordinary opportunity for collaboration as we gather as a global community to discuss some of the greatest challenges to universal access to eye care. I encourage everyone to transcend borders, cultures and disciplines for our common purpose.”





New Hope for Diabetic Patients

Affordable treatment for corneal nerve damage due to diabetes.

Diabetes is a chronic illness that affects millions worldwide. Its complications can cause cornea nerve damage to diabetic patients, which can lead to vision loss. But researchers have found an affordable drug that can regenerate damaged corneal nerves — fenofibrate.

A clinical trial involving 30 patients has found that fenofibrate helped them in three ways: providing nutrition to the nerves, reducing inflammation and cell clots, and lowering lipid levels — a known risk factor for diabetic neuropathy.

About 47% to 64% of patients suffer from corneal neuropathy. Most sufferers are asymptomatic and rely on medication that only focuses on alleviating the symptoms, or a costly alternative that requires frequent applications.

Fenofibrate is readily available and affordable. The drug is a result of a collaboration between SNEC, SGH and Duke-NUS Medical School.

Led by SNEC Clinician Scientist Associate Professor Liu Yu-Chi (in photo), larger trials for 200 patients are ongoing, with a potential commercial formula via eye drops available in three to five years.



Boosting Digital Workplace Learning

SNEC partners IAL to offer digital learning in ophthalmic healthcare through tailored courses and digital badges.

To enhance workplace digital learning, SNEC signed a Memorandum of Understanding (MoU) with the Institute of Adult Learning (IAL) on 11 January 2023. IAL will enhance the skills of local and regional ophthalmic healthcare professionals, with SNEC leading ophthalmic education in Asia. This will be done through bespoke continuous professional development courses, learning recognition and accreditation through digital badges that acknowledge industry-related skills and competencies, and cross-participation in activities and events.

Professor Aung Tin, Chief Executive Officer, SNEC shared, “SNEC has been continually improving our training delivery by creating digital content that can be curated for a diverse workforce within the eye care system. This collaboration will enhance our efforts in

digitally transforming eye care training. Moreover, the digital badges will improve the continuous learning model required to keep skills and competencies current and accredit learning pathways.”



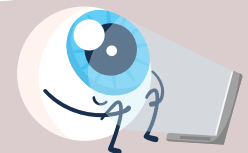
Helping Preschoolers Prevent Myopia

The inaugural Preschool Myopia Campaign teaches young children about eye health and the importance of outdoor play.

SNEC’s Myopia Centre, in collaboration with the Health Promotion Board, launched its first Preschool Myopia Campaign in May to share myopia-prevention tips. Twelve SNEC optometrists spoke with 140 children at five preschools (i.e. PCF Sparkletots, YMCA Child Development Centre, Kiddiwinkie Schoolhouse and Appleland Playhouse).

During the talks, the children learnt about the anatomy and functions of the eye, built an eyeball model and learnt about the hassle of having myopia through storytelling, games and quizzes. They received tips to combat myopia such as observing the proper distance and time limit when using handheld screens. They also shared their eyecare habits with each other and left with the key message: “Outdoor Play Keeps Myopia Away!”

As a reminder to strive for good eye care habits, our optometrists gave each child an animal-themed Eye Test Chart and Good Eyecare Habits leaflet to share with their family.





An Eye on Women's Health

Experts from SNEC and SingHealth institutions discuss common eye and health conditions that women may face after they turn 50.

"The Big 50" was tackled with grace and gusto on 4 March 2023, thanks to SNEC and various SingHealth institutions that organised the inaugural public webinar on women's health.

Titled "Healthy and Lovely in Your Golden Years – What to Expect in Your 50s and Beyond", the free webinar was held in celebration of International Women's Day where a panel of specialists discussed the causes and treatment for common eye and health conditions that women face after hitting their 50s.

SNEC eye specialists, Dr Daniel Chua, Consultant from Refractive Surgery Department, Dr Andrew Tsai, Consultant from Surgical Retina Department and Dr Tan Licia, Consultant from Oculoplastic Department shared about the causes of presbyopia, cataracts, vision loss from diabetic retinopathy, and droopy eyelids. Other specialists also discussed the symptoms, causes and treatment options for conditions such as menopause, osteoporosis, cardiovascular diseases and breast cancer.

Organised by SNEC in partnership with KK Women's and Children's Hospital, National Cancer Centre Singapore, and National Heart Centre Singapore, the event was well-received by 2,000 participants. Several commended the depth of information provided, the speakers' experience, and the seminar's utility as a platform for age-related eye and health conditions.

"The webinar was insightful. To age gracefully, one needs to anticipate the changes that are inevitable, and it is good to get more information. We often hear about glaucoma but how it really affects us and its causes are things that I'm not aware of," said Vivian Chong, a participant in her late 50s.



A Story of Triumph Over Adversity

Meet Mr Tan and Mdm Lim, our IPCA 2023 winners

On 22 May, we celebrated the amazing strength and resilience of 36 patients and caregivers at the 13th Singapore Health Inspirational Patient & Caregiver Awards (IPCA) organised by SingHealth. It was an incredibly uplifting occasion, graced by Mdm Rahayu Mahzam, Senior Parliamentary Secretary (SPS), MOH, and held in the Ngee Ann Kongsi Auditorium.

This year's IPCA recognised, in particular, two truly incredible individuals: a patient and a caregiver from SNEC who both demonstrated remarkable courage.



Mr Tan Choon Meng is a true fighter. Despite being diagnosed with cataracts in his right eye and struggling with poor vision in his left eye since 2015, he never gave up hope. Even after experiencing unemployment and financial hardship, he continued to seek new opportunities and kept his spirits up with the unwavering support of his wife and his companion pet dog. Mr Tan's tenacity and determination are truly outstanding.

Mdm Jennie Lim faced an equally daunting challenge as the parent of a child with Loey's-Dietz Syndrome. Her daughter, SNEC patient Ewe-Hsuen (in pink dress below), battled numerous health issues, including a 10-hour heart surgery at a young age, frequent fractures and severe vision loss.

Despite these obstacles, Ewe-Hsuen maintained an exceptional academic record — an impressive 4.0 GPA in polytechnic — and was a shining example of strength and resilience. Mdm Lim tirelessly navigated appointments and hospital visits, ensuring her daughter received the best care possible. Sadly, Ewe-Hsuen passed away at 17 in 2022.

Mdm Lim said, "It's been a year since her passing and I miss her very much, but I'm very thankful that we had Ewe-Hsuen with us for 17 good years. I'm also glad I got to spend the last eight years caring for her full-time as her Mummy."



"Each one of our patients and caregivers here today demonstrated a strong fighting spirit in the face of health challenges that have inspired their doctors, nurses and care teams," affirmed Mdm Rahayu.

We are immensely proud of Mr Tan and Mdm Lim and grateful for their exemplification of strength and resilience when facing adversity.



Sight-Threatening Retinal Conditions What You Need to Know

SNEC's specialists discuss how retinal-related conditions can affect vision and cause blindness while sharing the treatment options available for stopping or slowing such conditions.



Dr Andrew Tsai



Dr Kelvin Teo

The retina is a thin, transparent structure covering the eye's inner wall. The eye works like a camera and the retina can be likened to camera film. It is where images are first projected before they are transmitted through the optic nerve to the brain, enabling you to see. Sight-threatening retinal-related conditions such as AMD, diabetic retinopathy, and retinal vein occlusions can affect any part of the retina and, hence, your vision. Some can be serious enough to cause blindness.

Our specialists, Dr Kelvin Teo and Dr Andrew Tsai, consultants at SNEC's Medical and Surgical departments respectively, share some insights on sight-threatening retinal conditions and the treatment options available that could help stop or slow existing conditions, while preserving or improving your vision.

Common retinal diseases and conditions include:



Normal Vision

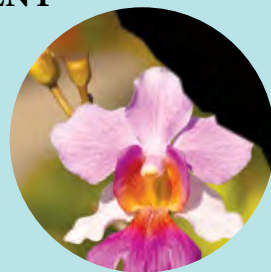
1 RETINAL TEAR

A retinal tear occurs when part of the retina separates from the eye's outer layers. Symptoms such as floaters and flashing lights may suddenly appear.

Untreated retinal tears can progress to retinal detachment which can be alleviated by laser photocoagulation.

2 RETINAL DETACHMENT

Retinal detachment is defined by the presence of fluid under the retina. This usually occurs when fluid passes through a retinal tear, causing the retina to lift away from the underlying tissue layers.



Retinal detachment can cause blindness if untreated. Treatment options include pneumatic retinopexy, scleral buckling and/or trans pars plana vitrectomy. Keeping a face-down posture may be needed after the surgery.

3 EPIRETINAL MEMBRANE

An epiretinal membrane is a thin membrane that forms over part of the retina known as the macula. The macula is the most sensitive part of the eye and is vital to processing detailed vision. The retinal tissue distorts as the membrane contracts.

Surgery may be required when an epiretinal membrane causes decreased vision or distorted vision also known as metamorphopsia. Trans pars plana vitrectomy and peeling of the epiretinal membrane may be needed in such cases.

4 MACULAR HOLE

A macular hole occurs when there is a full-thickness defect in the macula. Consequently, the central vision may distort or blur. Macular holes are treated through trans pars plana vitrectomy surgery with gas injection. Keeping a face-down posture may also be required after surgery.

5 DIABETIC RETINOPATHY

Diabetic retinopathy damages retinal blood vessels. Constant monitoring and screening are needed to detect progression to sight-threatening stages. If necessary, laser or injections of medication into the eye or intravitreal injection (IVT) can control the effects of the damaged blood vessels.



6 AGE-RELATED MACULAR DEGENERATION

AMD, which is chronic and irreversible, causes vision loss in the centre of the visual field (the macula) due to retinal damage. There are two types: wet and dry macular degeneration. Many people will first have the dry form, which progresses to the wet form in one or both eyes.



The wet form requires active treatment with injections into the eye (IVT). This treatment is long-standing to control the disease activity and maintain vision. Early treatment is vital to preserve vision and those at risk should monitor their own eyesight for early signs of the disease, such as distorted vision. It is also important to test each eye separately.

7 RETINITIS PIGMENTOSA

Retinitis pigmentosa is an inherited degenerative disease. It slowly affects the retina and causes loss of night and side vision. As an inherited disease, there is no current treatment for the condition, but several techniques and tools can assist with activities of daily living. Much research is currently focused on this condition, instilling hope for the development of effective treatments in the near future for this family of conditions.



Q&AS RELATED TO RETINA:

Q My eyes sometimes feel tired after a long day. They feel painful and I've experienced sudden instances of lights on several occasions. What might this be a symptom of? And will taking eye supplements boost retinal health?

A Sudden instances of lights may be termed "flashes" and an eye examination is required to rule out retinal tears or detachment. If a retinal detachment occurs, one will experience a visual field defect.

Some eye supplements such as the age-related eye disease studies 2 (AREDS 2) formulation may benefit a specific group of patients with AMD.

Q Is there such a thing as a maximum number of retinal tears before loss of sight occurs?

A Retinal tears usually do not result in loss of sight. Visual loss will occur only when a retinal tear progresses to retinal detachment.

Q What is the window period for seeking emergency treatment for retinal tears before the loss of sight?

A Those experiencing retinal tears should seek treatment as soon as possible. It is not possible to accurately predict when a retinal tear will progress to retinal detachment.



A PEEK into Singapore's Ophthalmology History

Explore the journey of Singapore's ophthalmology history and find out how two dilapidated blocks in SGH were transformed into a one-stop eye centre of international repute.

▲ The SNEC four-storey block was transformed from the SGH block in 1990.

Singapore's seeds of ophthalmology were first sowed in 1934: the first government eye department was established at the General Hospital, which was later renamed the Singapore General Hospital (SGH). The hospital's eye clinic had access to two operating theatres, which were used for major surgery and examinations under anaesthesia. The eye patients were mainly treated for cataract surgery, acute glaucoma and trauma.

Subsequently, ophthalmology in Singapore took root as new eye departments were established at Tan Tock Seng Hospital and the National University Hospital. However, it was when SNEC was set up in 1990 that marked the beginning of rapid progress in ophthalmology in Singapore.

The late Professor Arthur Lim was an eminent and internationally renowned eye surgeon who paved the way for the creation of a globally renowned eye centre. He mooted the concept of an eye centre as early as the 1980s, believing that Singapore could compete with major eye centres in the world.

Professor Lim shared his vision with local and private medical institutions. After many rounds of proposals, discussions and correspondence with senior officials, the Government decided to commit \$17 million to set up a national eye centre in 1989. The dilapidated surgical blocks A and B at SGH were earmarked for the SNEC. Within 10 months, the two blocks were extensively renovated and swiftly transformed into an ultra-modern ambulatory eye facility and the pioneer team attended to their first patient in 1990. Professor Lim was appointed SNEC's first Medical Director.

The growth of SNEC has been phenomenal. From the original team of nine staff, the Centre now has a staff strength of about 1,000. Indeed, SNEC has been recognised among the world's renowned eye centres. Moving forward, SNEC will continue to strive in its mission to provide Singaporeans with high-quality and cost-effective eye care. The Centre also serves as a focal point for ophthalmologists from various hospitals, the university and the private sector to work together as a cohesive unit in developing three core areas of clinical service, research and education.



▲ In 2001, this eight-storey Phase II extension was completed.



▲ SERI was founded by the late Professor Arthur Lim in 1997. It moved into its new premise at Academia in 2014.



DID YOU KNOW

“A Day in the Life of a New Generation Nurse”



Fifteen years is a long time to stay in any job, especially a challenging one like nursing. After

receiving her Diploma in Nursing, Penny Tng joined SNEC as an enrolled nurse in 2008. SNEC later urged her to further her studies, and she graduated as a registered nurse in 2021.

Penny is now pursuing a nursing degree at Edinburgh Napier University and the journey has been a fulfilling one.



“There are mornings where carnations and a thank-you card contrast the familiar hospital surroundings, and that brings a smile to my face before I am greeted by the new day’s tasks. No time to read now — work comes first.

As a multi-trained nurse, I am working as both an anaesthesia and scrub nurse. Each day, I assist the eye surgeon in the operating theatre. I start by confirming that my first patient at the intraoperative theatre is there for the correct procedure. Some of my junior colleagues then join me in surgical assistance.

I keep a close eye on them. While I want to give them opportunities to practise and learn, it is also my duty to ensure they comply with safety rules and execute tasks as planned. I also look out for everyone’s safety. At the end, I ensure that the patient’s wound is properly dressed.

Scrub nurse hat-off, anaesthesia nurse hat-on. In the next surgery, I assist the anaesthetist with IV cannulation and induction. During the intraoperative period, I help the scrub nurse ensure patient safety. Finally, I complete documentation during and at the end of surgery.

There were times I must adapt between systems and infection control protocol when deployed to different hospitals, sometimes within hours! After many surgical procedures, my shift ends. Balancing packed schedules, patients’ demands and family life is tough. But thanks to my colleagues and bosses who have been supportive and understanding, I stay motivated and strong in my day-to-day life.

Back to the carnations and cards. It keeps me going when patients show their appreciation for our work: I find satisfaction in being in the OT, standing side by side with eye surgeons and other colleagues who help restore vision to patients and feeling that I have contributed to society.

I’m proud to be a nurse.

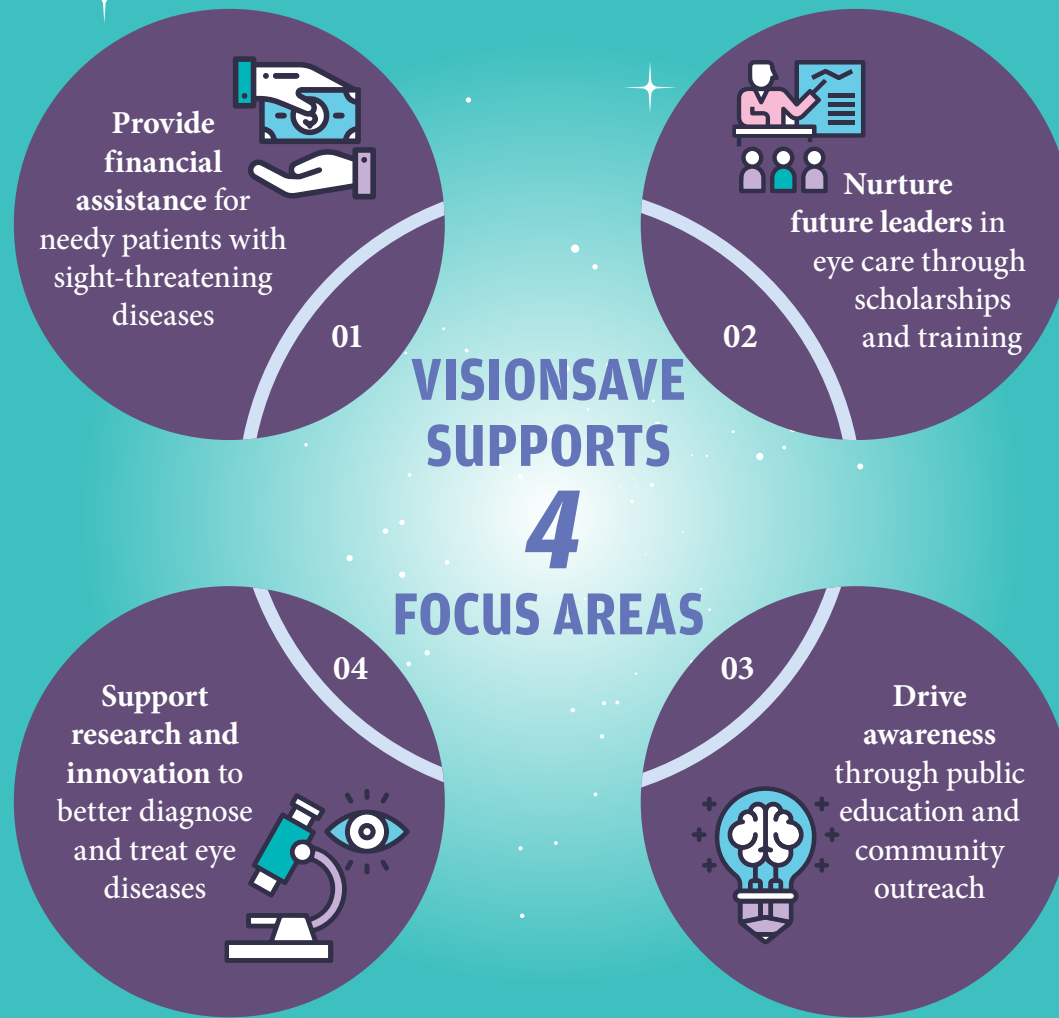


Scan this QR to watch Penny at work!

Save Sight, Improve Lives

VisionSave, with your support, can advance eye care.

VisionSave is a fundraising initiative of SNEC and SERI to holistically enhance eye care delivery with the ultimate goal of saving, restoring and protecting our patients’ vision. Your contribution goes a long way in improving the quality of life for needy patients and building the future of eye care.



Share our vision and support us. Learn more about VisionSave:



Scan to donate



VISIONSAVE

6322 7438 / 6322 4505

visionsave@sneec.com.sg

www.visionsave.sg/donate

Pop Quiz Answer:

A1

Botox isn’t just used to perfect our looks — surprisingly, it can also be an effective treatment for certain involuntary muscle contractions! This anti-wrinkle injectable can address conditions such as eyelid myokymia, hemifacial spasm and benign essential blepharospasm. Who knew?

A2

Believe it or not, droopy eyelids aren’t caused by sagging skin — rather a nerve issue that leads to muscle weakness! This unique condition can affect the eyelid muscles and even impact eye movements.

SNEC BRANCHES *and* AFFILIATED CLINICS

Central

- 1 **Singapore National Eye Centre**
11 Third Hospital Avenue
Singapore 168751
Tel: 6227 7255
- 2 **SNEC Eye Clinic @ NHCS
National Heart Centre Singapore**
5 Hospital Drive, Level 4, 4C
Singapore 169609
Tel: 6227 7255
- 3 **SNEC Retina Centre
Diabetes & Metabolism
Centre (DMC), Singapore
General Hospital**
17 Third Hospital Avenue
#02-00 Singapore 168752
Tel: 6227 7255
- 4 **KK Eye Centre KK Women's
and Children's Hospital**
100 Bukit Timah Road
Level 1, Children's Tower
Singapore 229899
Tel: 6394 1930 / 6394 1931
- 5 **SNEC Community Eye Clinic
@ HPB Building**
3 Second Hospital Avenue
#03-04, Health Promotion
Board Building
Singapore 168937
Tel: 6227 7255

North East

- 6 **SNEC Eye Clinic @ SKH
Sengkang General Hospital**
Medical Centre, Level 8
110 Sengkang East Way
Singapore 544886
Tel: 6227 7255
- 7 **SNEC Community Eye Clinic
@ Punggol Polyclinic**
Blk 681 Punggol Drive
Oasis Terraces, #04-12
Singapore 820681
Tel: 6227 7255

East

- 8 **SNEC Eye Clinic @ Bedok**
Blk 212 Bedok North Street 1
#03-147 Singapore 460212
Tel: 6227 7255
- 9 **Myopia Centre**
Blk 212 Bedok North Street 1
#03-147 Singapore 460212
(Located at SNEC Eye Clinic
@ Bedok)
Tel: 6227 7255
- 10 **SNEC Eye Clinic @ CGH
Changi General Hospital**
2 Simei Street 3,
Medical Centre, Level 1
Singapore 529889
Tel: 6850 3333



Follow us on



Consultation by appointment: 6227 7266

GP Hotline: 6322 9399

✉ appointments@sneec.com.sg

📍 www.sneec.com.sg