Acknowledgement
of Traditional Owners
The QUT School of Optometry and Vision Science acknowledges the Turrbal and Yugara, as the First Nations owners of the lands where QUT now stands.

We pay respect to their Elders, lores, customs and creation spirits. We recognise that these lands have always been places of teaching, research and learning.

QUT acknowledges the important role Aboriginal and Torres Strait Islander people play within the QUT community.
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Message from Head of School

PROFESSOR MICHAEL COLLINS
The School of Optometry and Vision Science can be extremely proud of another wonderful year of achievements by our students, our researchers and our service to the university and the wider community. The 2022 year began with many challenges including ongoing Covid restrictions and the February floods that impacted both staff and students alike. The responses to these challenges reflect the impressive resilience of our staff and students and their ongoing kindness and support for one another.

During 2022, the school underwent its scheduled reaccreditation assessment with the Optometry Council of Australia and New Zealand (OCANZ). This reaccreditation process ensures that optometry students meet the required practising competency standards when applying for registration with AHPRA through the Optometry Board of Australia, on completion of their studies. The rigorous reaccreditation process involved provision of detailed documentation regarding the school, its curriculum, its staff and clinical training, university processes, along with in-depth interviews by an OCANZ expert panel with our staff, students and various stakeholders. The school was very proud to achieve its reaccreditation without any imposed conditions until 2030, reflecting the high quality of our staff, our students and the optometry program.

In 2022, the academic and professional staff again ensured delivery of an excellent and diverse teaching program throughout the year. Our optometry clinic continued to provide outstanding learning opportunities for our students and a high quality of care for the thousands of patients who attend each year. The clinic is jointly managed by Tina Huynh and our newly appointed clinic co-director, Courtenay Lind, who both do a fabulous job in maintaining excellent clinical training in an efficient and friendly atmosphere. We also rely heavily on the team of part-time expert clinical supervisors who teach our students the intricacies of real-world patient care. Our students and patients greatly appreciate the extensive clinical knowledge and detailed feedback that the highly experienced clinical supervisors provide them every week in the clinic. We are also indebted to the wide group of optometry, ophthalmology and health care practices that welcome our students for work-integrated learning opportunities.
This type of real-world experience is so critical for the broader education of our students.

It was a significant year for staff promotions this year, with Scott Read being promoted to Professor. This promotion was very well deserved and recognises Scott’s important contribution to research and teaching in the school over his distinguished career at QUT. Scott’s courses in Ocular Anatomy and Ocular Diseases are highly appreciated by the students and his research, particularly in the field of myopia, is widely acknowledged as being at the forefront of this rapidly expanding international field.

The School and Centre for Vision and Eye Research had another year of excellent performance with grant income (over $4M) and a record number of high-quality publications (114 published and in-press). We also had 3 PhD students graduate during the year; Pradipta Bhattacharya, Ilya Zahari and Zach Quince, all of whom contributed exciting new knowledge to their respective scientific fields.

At the end of 2022 I finished my role as Acting Head of the School after 20 months in the position and returned to my research and teaching. It was a great privilege to act in this position and I want to thank each of the academic and professional staff in the school for their continued support over this period. In particular, I want to acknowledge the staff of the Contact Lens and Visual Optics laboratory who supported me along this journey and stepped up during my frequent absences, to maintain the high standards of our laboratory.

The School has had another year of outstanding achievements in 2022 and we can all take great pride in these collective successes. Katrina Schmid has been appointed as the new Acting Head of School and I am very confident that she will continue to lead the School to further success in 2023 with our exceptional group of staff and students. I wish you every success in the future.

Professor Michael Collins
Acting Head of School
Lecturer
Dr Prakash Adhikari

Professor
David Atchison

Professor
Sharon Bentley
(Centre Director, CVER & Faculty Deputy Dean)

Associate Professor
Alex Black
(Course Coordinator, Master of Optometry)

Senior Lecturer
Dr Andrew Carkeet
(Academic Lead Postgraduate Research)

Professor
Michael Collins
(Acting Head of School)

Senior Lecturer
Dr Katie Edwards
(School Research Ethics Advisor)
Senior Lecturer  
**Dr Shelley Hopkins**  
(Academic Lead, Indigenous Health)

Lecturer  
**Dr Emily Pieterse**

Professor  
**Scott Read**

Associate Professor  
**Katrina Schmid**  
(Academic Lead Education; Course Coordinator Bachelor of Vision Science)

Associate Professor  
**Stephen Vincent**  
(Academic Lead, Research)

Professor  
**Joanne Wood**

Professor  
**Andrew J. Zele**
Honorary Appointments

Emeritus Professor Ken Bowman AM
Emeritus Professor Leo Carney DSc (QUT)
Emeritus Professor Nathan Efron AC
Professor Mark Radford
Professor Christine Wildsoet
this included 2 bonus ranks as part of QUT’s new Regional, Rural and Remote (RRR) adjustment scheme. Data shows that health practitioners with a rural background are more likely to practice in rural locations. The bulk of students, (70-80%) were school leavers, while 20-30% of students had completed some university study. We also welcomed 6 international students from Hong Kong, India, Singapore and Vietnam.

In February 2022 Brisbane experienced a major flooding event and this delayed the start of the teaching semester. Many staff of Optometry and Vision Science were also personally affected. I’d like to thank all of the staff of Optometry and Vision Science for their adaptability and resilience during this difficult period, and for ensuring that our students were well supported and informed during this time.

Our on-campus optometry clinic provided more than 5,000 patient consultations during the year. We were extremely grateful to our many 2022 partner optometry and ophthalmology practices who continued to provide enriching placement opportunities for our students, including regional practice experiences.

Master of Optometry students, as well as higher degree research students had opportunities to participate in field trips to Cherbourg’s Ration Shed Museum (pictured) and support clinical optometry activities at community-controlled
health services across Queensland and the Northern Territory. Students also put their ‘teaching’ hats on at an Institute of Urban Indigenous Health trainee day and showed high school students how to take retinal photos, measure vision and assess depth perception.

The QUT Giving Day saw $21k raised for the ‘Transforming Indigenous eyecare project’. Sunglasses and prescription spectacles have been provided through these funds for Aboriginal and Torres Strait Islander children seen at school-based vision screenings undertaken in 2022.

Two of our Master of Optometry students Bianco Romeo and Song Jin Loh participated in the Optometry Australia 2022 Student Leadership Program. Both students had been part of the Vision Science Peer Program (a volunteer program where the student peer leaders run programs to assist their fellow students) and the leadership skills gained in that program strengthened their applications. The Optometry Student Awards night recognises the achievements of our students.

During 2022 Optometry and Vision Science staff continued to further their own learning, after reflecting on the advanced clinical and/or professional skills they required. Dr Andrew Carkeet completed the Australian College of Optometry, Advanced Certificate in Glaucoma, and Ms Courtenay Lind the Australian College of Optometry, Certificate in Public Health and Leadership in Eye Care. Dr Emily Pieterse was made a Fellow of the American Academy of Optometry. It takes considerable effort to complete additional qualifications and we acknowledge their hard work and dedication.

In 2022 our program underwent reaccreditation with the Optometry Council of Australia and New Zealand. The optometry program was awarded the maximum 8 years reaccreditation, without conditions, till 31 December 2030. We thank the OCANZ team for reviewing our courses, for their positive feedback and suggestions for improvements that we will take on board to ensure that the QUT optometry program remains the very best we can deliver.

This year our optometry program starts an extensive review process as part of the QUT internal reaccreditation, with proposed course changes to commence in 2025. We will take this opportunity to assess how our program fits with QUT’s ongoing vision to be “The university for the real world”, and to provide transformative education. This will be achieved by embedding health and well-being, inclusion and social justice, digital literacy, and sustainability into the optometry program.

Associate Professor Katrina Schmid
Academic Lead, Education
Bachelor of Vision Science

Graduates

Dhakal, Sindy
Dinh, Vy
Do, Brigit
Greenham, Emily
Gupta, Rishab
Hamilton, Amy
Harvey, Liam
Ho, Leo
Hogan, Alexis
Hopkinson, Abbie
Huynh, Long
Iakimov-Lam, Minh-Khue
James, Lauren
Jang, Soo
Javanmardi, Naeem
Jocumsen, Amy
Jong, Jessie
Kadel, Andrea
Kim, Hyun Jung
Kong Lok-Heng, Leona
Kumar, Pawan
Le, Nhu

Ace, Connor With Distinction
Aggarwal, Urvi
Asfha, Yousif
Barnes, Benjamin
Byrnes, Tiana
Charters, Lucy
Chen, Yu-Jen
Chen, Yu-Ting
Choi, Hyoungeun
Dang, Thi
Devereaux, Peter

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<td>Litte, Shaun</td>
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<td>Tran, Minh</td>
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<td>Tseng, Sylvia Tzu-Fang</td>
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<td>Wong, Lok Kwun</td>
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Master of Optometry

Graduates

Ahmed, Rida
Anderson, Julia
Atkinson, Jamie
Bakshi, Jai
Baldwin, Michael
Bliss, Vyasa
Branjerdporn, Nathan
Bulow, Zack
Chaki, Hanna
Chin, Garson
Chu, Ray
Cunningham, Alice
Dai, Rebecca
Daly, Cody
Devereaux, James
Duong, Jennifer
Eskander, Jessica
Fong, Huiyi
Gondo, Katsuhiko
Gunning, Emily
Ha, Matthew
Hong, Jenny
Huynh, Thien
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<td>Ibrahim, Ahmed</td>
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<td>Jin, Jasmine</td>
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<td>Jones, Jessica</td>
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<td>Kathirgamanathan, Ashvika</td>
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<td>Kennedy, Lauren</td>
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<td>Kim, Mimi</td>
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<td>Kim, Subin</td>
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<td>Kumar, Rhea</td>
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<td>Lam, Wesley</td>
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<td>Lin, Shu-Chi</td>
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<td>Ojha, Govinda</td>
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<td>Ooi, Peng Jia</td>
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<td>Pham, Ngoc-Anh</td>
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<td>Phan, Aaron</td>
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<td>Phan, Hang-My Julie Dona</td>
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<td>Romeo, Bianca</td>
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<td>Tu, Jervis</td>
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<td>Walker, Sophie</td>
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<td>Wijesuriya, Surini</td>
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<td>Xiang, Theresa</td>
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<td>Yang, Yutong</td>
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<td>Yare, Jessica</td>
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<td>Yeh, Justin</td>
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<td>Zhou, Wei Liang</td>
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The Master of Optometry Student Research Presentation Award is sponsored by Optometry Queensland and Northern Territory (OQNT) each academic year. For 2022 the award was presented to the team pictured above for the project titled ‘Ambient Lighting and Optical Blur on Dynamic Balance’.

Master of Optometry Student Research Projects
As part of the Master of Optometry program all students undertake a 12-month research project.

Below is a full list of the 2022 projects:

**Michael Collins:** Conjunctival Ultraviolet Autofluorescence (CUVAF) and Associated Anatomical Features
**Co-supervisor:** Alyra Shaw
**Students:** Nik Aji, Eliot Cook, Emma Dyce, Connie Li, Oscar Miu, Mimi Nguyen

**Katie Edwards:** Effect of Xiidra on Corneal Dendritic Cell Dynamics & Morphology
**Co-supervisor:** Luisa Holguin Colorado
**Students:** Anika Alam, Ahmed Chouchane, Janet Dang, Tina Huynh, Lin Lee, Jack Magee, Ali Selman

**Emily Pieterse:** Agreement between the Myopia Master and Other Optical Biometers
**Co-supervisor:** Rohan Hughes
**Students:** Jessica Coster, Millur Gao, Rina Kim, Thien Nguyen, Mirae Yun

**Scott Read:** Objective Measures of Near Work Behaviours in Different Visual Environments
**Co-supervisors:** David Alonso-Caneiro, Hosein Hoseini-Yazdi

**Prakash Adhikari:** Contrast Sensitivity in Central and Peripheral Retinal Diseases
**Co-supervisors:** Andrew Zele, Beatrix Feigl
**Students:** Han-Ling Huang, Andrew Mikhaiel, Yikun Niu, Anna Tran, Yao Wang, Zichun Wang

**Alex Black:** Ambient Lighting and Optical Blur on Dynamic Balance
**Co-supervisor:** Joanne Wood
**Students:** Christina Bormann, Sabrina Feng, Dannielle Goan, Ava Ko, Song Jin Loh, Ally Stevens

**Andrew Carkeet:** Symmetry of Lenticular Astigmatism in Paired Eyes
**Co-supervisor:** Asik Pradhan
**Students:** Erika Baulch, Emily Cai, Janelle Choong, Anna Do, Janvi Sandhu, Ngoc Minh Anh Thai
Students: Michael Lin, Jess Pham, Rafael Inigo Sy, Alysha Tran, Yiming Xu, Rina Zainudin

Katrina Schmid: Development of a Method to Assess Risk of Digital Eye Strain
Students: Elly Maruyama, Jasmine Phan, Kimberly Siong, Jessica Tran, Fiona Truong, Anna Vu, Dominic Vu

Stephen Vincent: Scleral Lens Performance with Landing Zone Toricity
Students: Julian Alexander, Yabkal Belaineh Aweke, Zibonele Bhebhe, David Cho, Steven Lay, Isaac Ryan

Joanne Wood: Night Driving Difficulties, Dark Adaptation and Other Visual Measures
Co-supervisors: Alex Black, Emily Henry
Students: Zhaopeng Fang, Reza Ibraheemi, Mark Lin, Michael Penklis, Albin Shauryamackal, Aaron Tam, John Xu
President: Hailey Tong
Vice-Presidents: Jennifer Duong, Vyasa Bliss
Secretary: Sophie Walker
Treasurer: Wesley Lam
Academic Executive: Nathan Branjerdporn
Eyeball Executives: Matthew Ha, Jessica Jones
Fundraising Executive: Zack Bulow
Media Executive: Dianne Shim
Social Executive: Thien Huynh
Sports Executive: Nathan Loy
4th Year Representatives: Millur Gao
4th Year Academic Representative: Connie Li
4th Year Eyeball Representative: Ally Stevens
4th Year Fundraising Representative: Oscar Miu
4th Year Social Representative: Nichol Aji
In 2022, QOSS continued to strive to enrich QUT Optometry students with all aspects of university life. With the tremendous efforts of our team and support from our sponsors, we were able to provide academic support, networking opportunities, raise $4693.18 to support incredible charities (Guide Dogs Qld, Brien Holden Foundation, Deadly Vision) and deliver bigger and better events than ever before!

Students were able to connect and socialise through our annual dodgeball event, trivia night, board games night, Boat Party, Sports Day, workshop evenings, and Eyeball. We encapsulated the optometry spirit with our ‘One or Two’ merch collection making it easier than ever to spot our fellow optometry colleagues.

2022 was a fantastic year and we hope QOSS continues to grow and support students into the upcoming year.

QOSS Executive
The following achievements and awards were presented throughout the 2022 Academic Year.

- **CooperVision Australia Contact Lens Prize** (MOptom student with highest achievement in first year contact lens studies)  
  *Eliot Cook*

- **Johnson & Johnson Vision Care Award** (MOptom student with highest achievement in second year contact lens studies)  
  *Peng Jia Ooi*

- **Optometry Queensland and Northern Territory Highest Academic and Clinical Achievement in Final Year MOptom Award**  
  *Vyasa Bliss*

- **School of Optometry and Vision Science Brian Brown Research Award** (MOptom student with the highest combined GPA in the units ‘Research Methods in Optometry and Vision Science’ and ‘Research Project’)  
  *John Xu* (pictured)
• **Optometry Queensland and Northern Territory Highest Academic Achievement in First Year BVisSci Award**
  Joanna Lanza (pictured)

• **mivision Media Communication Award**
  (BVisSci student in the unit ‘Binocular Vision’ who designs the most innovative and engaging media communication tool that can be used in Optometry Practice)
  Vivian Lu (pictured)
Twenty-two optometry students from around Australia participated in Optometry Australia’s 2022 Student Leadership Program. To be selected students must express a strong passion to become leaders who contribute to shaping the future of optometry.

Congratulations to the QUT 2022 participants:

- Bianca Romeo
- Song Jin Loh

School of Optometry and Vision Science Peter Swann Award for Achievement in Eye Diseases

(BVisSci third year student with the highest academic achievement in the units Diseases of the Eye units 5 and 6)

Leona (Lok-Heng) Kong (pictured)
The QUT Optometry clinic had another fantastic year with 5091 occasions of services.

Tina Huynh returned from maternity leave in June 2022. A huge thank you to Daniel Vu who was Acting Clinic Coordinator while Tina was on leave and a big welcome to Courtenay Lind who joined the team in July 2022, co-sharing the clinic coordinator position.

Optometry students participated in the Clinic’s Outreach programs - a total of 6 visits to Cherbourg with CRAICCHS and NCACCH. We formed new partnerships with surrounding Early Learning Centres.
and students had the opportunity to participate in the first vision screening at POD Newmarket. We formed a partnership with Mission Australia – Circles of Care, to provide school-based screenings at local primary schools in the Inala region and then arranged follow-up support at QUT Health Clinics. Success of these programs and partnerships has resulted in additional schools/early learning centres being added for 2023. This is a fantastic opportunity for students to expand in paediatric care. We continued our outreach services to migrant and refugee students at Milperra State High School and follow-ups at QUT Health Clinics.

We continued our partnership with the RBWH Glaucoma Collaborative Care Clinic, being a referral pathway for glaucoma patients at the RBWH. This has been a good learning opportunity for students in collaborative care.

To bolster student learning experiences, new instruments including a Topcon Digital Camera slit lamp, Topcon console stands and chairs, and COBRA Fundus Camera were purchased.

The Clinic is proud of its involvement in research, with 9 PhD/Master of Optometry research projects conducted in the clinic during 2022.

Lastly, the clinic staff congratulates the class of 2022, completing their Master of Optometry through dedication, endurance, and adaptability throughout the 2 years of uncertainty of the pandemic. This was undoubtedly the highlight of the year for the clinic in 2022.
We acknowledge our dedicated sessional teaching staff who provide exceptional learning experiences for our students.

Mitchell Anjou
Sandra Au
Aniruddha Banerjee
Emily Banks
Barsha Barsha
Laura Bentley
Celia Bloxsom
Shuvagata Bose

Jeffrey Cobb
Luisa Holguin Colorado
Sarah Coudrey
Damien Fisher
David Foresto
Subodh Gnyawali
Cheryn Goh
Jocelyn-Kate Henderson
Emily Henry
Mark Hinds
Kirrily Hoole
Yan Hsing
Rohan Hughes
Robert Jenkinson
Rachael Kwok
Simon Lan
Courtenay Lind
Simon Little
Kirsty Lowe
Hamish McNeill
Kylie McNeill

Marissa Megaloconomos
Terry Nguyen
Mark Overton
Kate Pecar
Leah Pettit
Asik Pradhan
Pryntha Rajasingam
Archayeeta Rakshit
Kristopher Rallah-Baker
Andrew Robinson
Leisa Schmid
Alyra Shaw
Ada Tang
Samir Uprety
Dinesh Venugopal
Elizabeth Vieritz
Daniel Vu
Ann Webber
Lesley Williams
Kevin Yow Yeh
Ilyanoon Zahari
Awards Promotions and Recognition

• Professor Scott Read (pictured top left), Academic Promotion to Professor.

• Dr Shelley Hopkins (pictured top right) - Faculty of Health Recognition Program: Outstanding Contributions to Indigenous Australian Engagement, Success and Empowerment.

• Dr Damien Fisher awarded 2021 Outstanding Doctoral Thesis Award for his thesis entitled “The influence of scleral lens parameters and fitting characteristics on corneal oedema under open and closed eye conditions” supervised by A/Prof Stephen Vincent and Prof Michael Collins.

• Dr Swee Chai Teoh, awarded 2021, Faculty of Health Executive Dean’s Commendation for Outstanding Doctoral Thesis Award for her thesis entitled “The eye responses to defocus and diffuse blur” supervised by Prof Michael Collins and A/Prof Scott Read.

• Ms Courtenay Lind, awarded 2022, Australian College of Optometry, Certificate in Public Health and Leadership in Eye Care.

• Dr Andrew Carkeet, awarded, Advanced Certificate in Glaucoma from Australian College of Optometry.
• Emeritus Professor Leo Carney awarded Honorary Life Membership of the Cornea and Contact Lens Society of Australia.

• Dr Emily Pieterse, awarded – Fellow of the American Academy of Optometry.

• Professor Joanne Wood awarded Oberdorfer Award in Low Vision Research, 2022, Association for Research in Vision and Ophthalmology (ARVO) Foundation for Eye Research.
The Centre for Vision and Eye Research (CVER) was established as a QUT Tier 2 research centre in 2020. Our multidisciplinary team draws on the expertise of scientists and clinicians from a range of backgrounds including optometry and vision science, engineering, biomedical sciences, and psychology to transform the way the world sees.

We focus on developing new technologies to correct and enhance vision, advancing devices to detect eye disease and treat vision impairment, creating novel methods of ocular tissue repair and reducing the impact of vision impairment on everyday function across the lifespan, to deliver tangible benefits to society, inclusive of people experiencing inequities.

Outputs from CVER researchers in 2022 were exceptional, with over 100 articles published in scholarly journals and 40 conference presentations. We welcomed the return of face-to-face conferences following COVID-19 related travel restrictions and embraced the opportunity to reconnect with colleagues and collaborators from around the world. CVER research was showcased internationally, with strong representation at the Association for Vision and Research in Ophthalmology annual meeting (Denver), the International Myopia Conference (Rotterdam), and the International Cornea and Contact Lens Congress (Sydney).

In 2022, CVER researchers were acknowledged for their sustained research efforts. Professor Joanne Wood was recognised for her contributions to low vision research, receiving the prestigious Oberdorfer Award from the Association for Research in Vision and Ophthalmology. Emeritus Professor Leo Carney was awarded life membership of the Cornea and Contact Lens Society of Australia for his contributions to research, teaching, and leadership within the field throughout his distinguished career. Dr Emily Pieterse achieved Fellowship of the American Academy of Optometry in recognition of her ongoing contributions in the field of myopia.

Within QUT, PhD graduates Dr Damien Fisher received the Faculty of Health Outstanding Doctoral Thesis award, and Dr Swee Chai Teoh was awarded the Faculty of Health Executive Dean’s Commendation.
Early and mid-career researchers Dr Prakash Adhikari, Dr David Alonso-Caneiro, Dr Andrew Carkeet, Dr Luisa Holguin-Colorado, Dr Shelley Hopkins, Dr Hosein Hoseini-Yazdi, Dr Rohan Hughes, Dr Emily Pieterse and Dr Alyra Shaw were the recipients of the 2022 CVER Small Grant awards. PhD candidates Jason Kugelman and Barsha Lal were recognised for the best student presentations as part of the CVER Seminar Series.

We continued our successful collaborations with global industry partners and national regulatory bodies. CVER researchers were awarded more than $4 million in 2022, including funding from Australian Competitive Grant Schemes along with government and industry partnerships. Of note, Professor Joanne Wood’s research on older drivers and automated vehicles contributed to the iMOVE Cooperative Research Centre, a consortium of industry, government and research partners working to improve the mobility of people and freight.

As part of QUT’s annual Giving Day, over $20,000 was generously donated to the CVER project “Transforming Indigenous Eyecare Project” (pictured). This project aims to design and develop educational materials to promote children’s eye health and facilitate outreach vision testing and provide glasses and sunglasses for Aboriginal and Torres Strait Islander children. CVER researchers also continue to contribute to the Leaders in Indigenous Optometry Educators Network, leading an initiative in collaboration with all optometry and vision science programs across Australia and Aotearoa/New Zealand, aiming to attract and support First Nations students and nurture First Nations optometric clinicians and researchers.

**Professor Sharon Bentley**  
**Associate Professor Stephen Vincent**  
**Directors, Centre for Vision and Eye Research**

Congratulations to the entire CVER team for continuing to transform the way the world sees through collaborative ground-breaking research.
Our research focuses on technological advances in the treatment and management of vision problems; the diagnosis, assessment and treatment of eye and vision disorders; and the functional impacts of vision impairment. During 2022 our CVER researchers published over 100 articles in scholarly journals, delivered more than 40 virtual and face to face conference presentations, and were awarded over $4 million in research funding.

**OUR OUTPUT AND IMPACT**

Our research publications have continued to increase over the past five years. Field-Weighted Citation Impact (FWCI) is a measure of research impact. A FWCI of one indicates that the number of citations for a paper equals the global average of publications in the field of Optometry and Vision Science. The 2022 FWCI for papers from the Centre for Vision and Eye Research is 1.71, which indicates that its publications are cited 71% more often than the global average in the field.

**FIGURE: THE NUMBER OF SCHOLARLY OUTPUTS AND FIELD-WEIGHTED CITATION IMPACT FOR THE CENTRE FOR VISION AND EYE RESEARCH, 2017-2022, AS CALCULATED IN SCIVAL BASED ON SCOPUS DATA UP TO 14 FEBRUARY 2023.**
OUR RESEARCH STRENGTHS

- Advanced methods for imaging the eye
- Anterior eye assessment and treatment
- Children’s vision
- Contact lenses
- Indigenous eye health
- Melanopsin photoreception and visual science
- Myopia and its prevention and control
- Novel methods for the early detection and management of eye disease
- Ocular biomarkers of systemic disease
- Ocular cell biology
- Optics of the eye and imaging
- Vision and driving
- Vision and everyday function

FIGURE: MAP OF COLLABORATING INSTITUTIONS FROM 2018 AS CALCULATED IN SCIVAL, PRODUCED IN GOOGLE MY MAPS BASED ON SCOPUS DATA UP TO 14 FEBRUARY 2023.
that changes in axial length and choroidal thickness during accommodation are highly correlated, even well into the eye’s periphery. Myopic eyes had greater ciliary muscles thickness and length changes for the same accommodation response, suggesting that the physical and mechanical structure differs from that of emmetropes.

In consideration of the fact that near work is a risk factor for myopia, we studied accommodation errors at near in myopia and the effect, over a one-year period of wearing progressive near addition lenses on these errors. Progressive lenses reduced the lags (under focusing) of accommodation initially, but the effect wore off and accommodation errors returned to baseline. This is a likely reason for why progressive lenses have limited myopia control effect and we suggest that if this is the chosen myopia treatment that the near add be increased by 0.50D per year from +1.50D until a maximum +2.50D add is obtained.

In studying accommodation errors, we also showed using multiple methods and calculations that simple autorefractor measures overestimate the lags. We
found that methods utilising aberrations and analysis of the visual image clarity give reduced retinal blur than suggested by clinical measures. It should be noted that with all methods the lags of accommodation were greater in myopic than emmetropic participants.

Ocular modelling work has continued, with an ocular ageing model in diabetes and investigation of the issues with inferring retinal shape from peripheral eye length measurements. Related to this, collaboration continued with a Chinese group, with an investigation of the change in retinal shape in children over four years and how this relates to the development of myopia.

We found that myopic control contact lenses do not always give the expected patterns of peripheral refraction; in the case of one lens type this is because of warping on the eye.

A major review has been completed of work in vision simulations using adaptive optics. After a twenty-year gap, a new edition of Optics of the Human Eye is due for publication in early 2023.
THEORETICAL AND PRACTICAL VISION GROUP

The Theoretical and Practical Vision Group has had another successful year. Our core strengths are leveraging mathematical models to improve clinical techniques in Vision Science.

Group leader Dr Andrew Carkeet has developed new numerical methods for determining astigmatism of cornea and crystalline lens surfaces, for conventional phakometry techniques and methods using OCT cross-section images of the eye. Asik Pradhan has been using these methods in his PhD studies on lens shape in myopia. He presented his findings to the Association for Research in Vision and Ophthalmology (ARVO) in 2022 and is scheduled for further presentations in 2023. Barsha Lal submitted her thesis on diurnal changes retinal and choroidal blood flow and has been awarded her PhD. In 2022, she received a travel award to ARVO, and her work was nominated for an outstanding poster award. Her ground-breaking work has now produced three peer-reviewed papers in high-ranking journals, with more to follow.

Andrew Christiansen submitted his MPhil thesis for examination. This work is the first to document the seasonality and perceived causes of ocular allergies in a regional practice. He has presented his findings at two major international meetings.
Final year students Anabelle Seddon, Hanna Chaki, Jessica Spink, Matthew Ha, Hang-My Phan and Surini Wijesuriya had their 4th year project research nominated for the American Academy of Optometry’s prestigious Neumuller award. This work shows how aniseikonia affects visual acuity and has been accepted for publication in Clinical and Experimental Optometry.

**CONTACT LENSES AND VISUAL OPTICS**

The Contact Lens and Visual Optics laboratory had another successful year in 2022, with a range of exceptional outcomes for our staff and HDR students. Thirty-nine refereed papers were published by members of the laboratory, along with 31 conference presentations. David Alonso-Caneiro and Stephen Vincent each had significant impacts, co-authoring 22 and 17 published papers (respectively) during the year.

Zach Quince was awarded his PhD for his thesis titled “Optical coherence elastography for the measurement of anterior segment biomechanical properties”. His work was completed under the supervision of David Alonso Caneiro, Scott Read and Michael Collins.
The laboratory received over $1M in funding from a diverse range of companies and funding bodies including an NHMRC Ideas Grant, Prohibition X (Singapore), Johnson and Johnson Vision Care (USA), Luna (Israel), Dopavision (Germany), Cylite (Australia), Clerio Vision (USA), Azura Ophthalmics (Israel) and the Children’s Hospital Foundation (Qld).

VISION AND EVERYDAY FUNCTION

In 2022, the research team, led by Professor Joanne Wood and Associate Professor Alex Black, continued to work on a range of government, industry, and university-funded projects. They had 15 papers published or accepted on topics including vision impairment and driving, vision and falls safety, night-time driving and children’s vision and delivered presentations at a range of national and international conferences, with international travel for the first time since COVID to key conferences in Denver, Gothenburg, and Detroit.

The team also continued to develop their national and international profile in a range of areas including driving safety in older adults (collaborations with Professor Kaarin Anstey, UNSW, Australia, and Professor Cynthia Owsley, UAB, US), night-time driving and road lighting (collaboration with Professor Stephan Volker, TU Berlin, Germany), night driving ability and safety (collaborations with Professor Allison McKendrick, UoM, Australia and Professor Cynthia Owsley, UAB, USA), pedestrian and cycling safety at night (collaboration with Professor Fiona
Throughout 2022, the Anterior Eye Laboratory has continued research into cellular level changes at the ocular surface, in both ocular and systemic disease, using in-vivo confocal microscopy. 2022 was an exciting year for PhD students in the Anterior Eye Lab with Dr Pradipta Bhattacharya (“The corneal epithelium in health and disease”) and Dr Ilya Zahari (“Effects of chemotherapy on the ocular surface and its relationship to peripheral neuropathy”) both being awarded their...
PhD. Pradipta is now a postdoctoral fellow in the Walker Lab at University of Houston and Ilya is a lecturer at International Islamic University Malaysia. In September, Associate Professor Karina Schmid, Dr Katie Edwards and Dr Luisa Colorado presented their research at the International Cornea and Contact Lens Congress in Sydney. We also welcomed three new PhD students to the lab, Mark Hoffmann, Prajna Vidyasagar and Ishwarya Suresh Kumar.

L-R: ASSOCIATE PROFESSOR KATRINA SCHMID AND DR KATIE EDWARDS AT THE INTERNATIONAL CORNEA AND CONTACT LENS CONGRESS, SYDNEY

OCULAR CELL BIOLOGY

The primary activity of the Ocular Cell Biology (OCB) research group during 2022 has been to serve as the Queensland hub of BIENCO Vision; an Australian consortium of scientists, clinicians and tissue bankers, developing bioengineered tissue substitutes for the treatment of corneal blindness (https://biencovision.com.au/). Throughout 2022, the OCB has been responsible for cultivating and distributing human corneal cells to consortium partners throughout Australia. Moreover, the OCB has served a critical role in developing a business plan and R&D strategy for establishing BIENCO Vision as a manufacturer of corneal tissue for transplant into patients within the Asia-Pacific region. An application for funding to support this commercial enterprise is currently under consideration by the Australian Government’s Department of Health and Aged Care.
functions of the human melanopsin pathway. The team is co-led by ARC Future Fellow Professor Andrew J. Zele and A/Professor Beatrix Feigl (School of Biomedical Sciences and Queensland Eye Institute).

Beatrix is Associate Editor of the journal “Acta Ophthalmologica” (est. 1923). Andrew is a member of the Australian Research Council (ARC) Medical Research Advisory Group. Dr Prakash Adhikari is a member of the Faculty of Health Equity Committee.

In a major technological advance, Thomas W. Nugent (PhD Candidate) and Andrew J. Zele developed a new visual display having 5 primary lights. This instrument produces a larger colour gamut than televisions with 3 primaries, and can independently control the melanopsin, rod, and three cone photoreceptor classes on a fine spatial scale to support new fundamental basic and clinical research methods (https://doi.org/10.1167/jov.22.12.20). With melanopsin cells projecting to over a dozen brain regions, including those for mood and arousal, we determined in a study with Dr Subodh Gnyawali, that active covert attention can be modulated
by visual information mediated via ipRGCs; the signature feature of the melanopsin response during attention and decision making was a biphasic task evoked pupil dilation (https://doi.org/10.1111/ejn.15659).

Using our 5-primary methodology with Samir Uprety (PhD Candidate), we discovered that melanopsin regulates rod and cone mediated visual contrast sensitivity; we challenged the orthodoxy with our unequivocal demonstration that rods mediate robust visual responses during daytime (https://doi.org/10.1016/j.isci.2022.104529).

ARC Future Fellow Professor Andrew Zele co-authored a book with colleagues from Nevada, Oregon, Oxford and Stanford that is titled “Melanopsin vision: Sensation and perception through intrinsically photosensitive retinal ganglion cells” (Cambridge University Press. Online ISBN: 9781009029865).

We acknowledge the Australian Research Council (ARC), Michael J. Fox foundation, and our lighting and ophthalmic industry partners in the USA, EU, and
Japan. Our TGA regulated phase-II clinical trial on photoreceptor-directed light therapy in Parkinson’s disease led by Principal Investigator A/Prof Beatrix Feigl has successfully achieved the second-year milestones, including recruitment targets and participant completions of the 6-week trial. Dr Prakash Adhikari is successfully leading an industry project on melanopsin mediated pupil function (European Union).

Although the melanopsin pathway has been hidden from view for so long, we can now unravel how vision and non-visual processes depend on it.
Centre for Vision and Eye Research

Staff

Laura Bentley
Sharon Bentley
Alex Black
Shuva Bose
Leo Carney
Andrew Carkeet
Drew Carter
Michael Collins
Damian Cuda
Alice Cunningham
Janet Danaher
Samantha Dando
Brett Davis
Ignacio Viedma Escalona
Francisco Yoel Garcia Marin
Katie Edwards
Nathan Efron
Laurence Fairbairn

Beatrix Feigl
Damien Fisher
Catherine Foster
Kate Gifford
Katsuhiko Gondo
Damien Harkin
Emily Henry
Luisa Holguin Colorado
Kirrily Hoole
Shelley Hopkins
Hosein Hoseini-Yazdi
Rohan Hughes
Catherine Kennon
Jason Kugelman
Barsha Lal
Hamish McNeill
Thomas Nugent
Kate Pecar

Emily Pieterse
Scott Read
Bianca Romeo
Katrina Schmid
Alyra Shaw
Samir Uprety
Stephen Vincent
Ann Webber
Ursula White
Christine Wildsoet
Anthony Wingard
Joanne Wood
Naohide Yamamoto
Fan Yi
Stanislovas Zacharovas
Andrew Zele
Grants

NAME: Collins MJ
TITLE: Myopia
FUNDING SOURCE: Johnson and Johnson Vision Care (USA)
DURATION OF FUNDING: 2022-2023
TOTAL FUNDS: $732,704

NAME: Collins MJ, McNeill H.
TITLE: Evaluation of the validity of subjective refraction determined by the self-administered GoEyes mobile application as compared to a standard of care clinician-led subjective manifest refraction
FUNDING SOURCE: 6over6 Vision Ltd (Israel)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $137,307

NAME: Adhikari P, Feigl B, Zele AJ
TITLE: Pupil light response as a proxy for investigating intrinsic melanopsin activity
FUNDING SOURCE: Dopavision GmbH (Germany)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $68,674

NAME: Adhikari P, Feigl B, Zele AJ
TITLE: Investigating tolerance of deviation of position and optimising stimulus parameters of ONH stimulation by the melanopsin-mediated pupil light response
FUNDING SOURCE: Dopavision GmbH (Germany)
DURATION OF FUNDING: 2022 – 2023
TOTAL FUNDS: $126,692

NAME: Collins MJ, Read S, Hoseini Yazdi H
TITLE: The effect of brief interruptions of light stimulation of the optic nerve head with gaming content upon choroidal thickness changes
FUNDING SOURCE: Dopavision GmbH (Germany)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $124,326
NAMES: Collins MJ, Read SA, HoseiniYazdi H
TITLE: The effect of 10 minutes of daily stimulation of melanopsin expressing axons of ipRGCs at the optic nerve head upon choroidal thickness as a function of time
FUNDING SOURCE: Dopavision GmbH (Germany)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $178,621

NAMES: Collins MJ, Shaw AJ, Read SA
TITLE: Cylite’s HP-OCT Capella topographer and aberrometer instruments
FUNDING SOURCE: Cylite Pty Ltd
DURATION OF FUNDING: 2022
TOTAL FUNDS: $193,170

NAMES: Collins MJ, Shaw A
TITLE: Investigation of zonular insufficiency using a novel device
FUNDING SOURCE: Cylite Pty Ltd
DURATION OF FUNDING: 2022
TOTAL FUNDS: $86,032

NAMES: Collins MJ, Yi F, Davis B
TITLE: The effect of Clerio Vision optical designs on short-term axial length of the eye
FUNDING SOURCE: Clerio Vision, Inc. (USA)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $109,545

NAMES: Collins MJ, Yi F, Davis B
TITLE: The effect of Clerio Vision optical designs on short-term axial length of the eye, visual acuity and accommodation
FUNDING SOURCE: Clerio Vision, Inc. (USA)
DURATION OF FUNDING: 2022
TOTAL FUNDS: $141,044

NAME: Pieterse E
TITLE: Efficacy of low dose atropine in controlling syndromic myopias: A scoping study
FUNDING SOURCE: QUT Women in Research Grant
DURATION OF FUNDING: 2022-2024 (18 months)
TOTAL FUNDS: $9,944
\textbf{NAMES:} Pieterse E, Hughes R  
\textbf{TITLE:} Myopia Management Projects  
\textbf{FUNDING SOURCE:} QUT Centre for Vision and Eye Research Small Grant  
\textbf{DURATION OF FUNDING:} 2022  
\textbf{TOTAL FUNDS:} $15,000

\textbf{NAME:} Pieterse E  
\textbf{TITLE:} The impact of environmental risk factors for myopia in the success of myopia control treatments  
\textbf{FUNDING SOURCE:} Reality Labs Research at Meta Platforms Technologies, LLC  
\textbf{DURATION OF FUNDING:} 2022-2025 (3 years)  
\textbf{TOTAL FUNDS:} USD $85,008

\textbf{NAMES:} Shaw A, Hoseini-Yazdi H, Alonso-Caneiro D  
\textbf{TITLE:} Imaging of the human eye  
\textbf{FUNDING SOURCE:} QUT Centre for Vision and Eye Research Small Grant  
\textbf{DURATION OF FUNDING:} 2022  
\textbf{TOTAL FUNDS:} $15,000
**Names:** Vincent SJ, Alonso-Caneiro D  
**Title:** Science and Technology Seedling Award  
**Funding Source:** CooperVision  
**Duration of Funding:** 2022  
**Total Funds:** $100,000 USD

**Title:** Unspoken, unheard, unmet: Improving access to preventative health care through better conversations about care.  
**Funding Source:** MRFF Dementia, Ageing and Aged Care Application  
**Duration of Funding:** 2022-2027  
**Total Funds:** $2,014,394.33

**Names:** Wood JM, Black AA  
**Title:** Vision and night driving  
**Funding Source:** Alcon Laboratories (Australia) Pty Ltd  
**Duration of Funding:** 2022-2023  
**Total Funds:** $544,000

**Names:** Wood JM, Rakotonirainy A, Anstey K, Glaser S, Black AA  
**Title:** Older drivers: Advanced driving assistance technologies and automated vehicles  
**Funding Source:** IMOVE CRC - Office of Road Safety (DITRDC)  
**Duration of Funding:** 2022-2023 (2 years)  
**Total Funds:** $653,000

**Names:** Xiaomeng L, Wood JM, Black AA  
**Title:** Project investigating train conspicuity at regional level crossings: Literature review and data analysis  
**Funding Source:** Regional Level Crossings for the Office of the National Rail Safety Regulator  
**Duration of Funding:** 2022  
**Total Funds:** $29,081


• Cachero C, Chaparro A, Wood JM. (2022). Exploring the technological needs of older adults: Advances in design, functionality, user experience, and age-related cognitive and sensory aids to facilitate adoption. Frontiers in Computer Science; 4:1043652.


• Efron N. (2022). On the importance of adhering to instructions to authors, Clinical & Experimental Optometry; 10.1080/08164622.2022.2098695.


• Efron N. (2022). The Australian flag, optometry (and me), Clinical & Experimental Optometry; 105(7): 671-673.


• Eramudugolla R, Laird M, Black AA, Cameron ID, Wood JM, Anstey KJ. (2022). Inability of the Mini-Mental State Exam (MMSE) and high-contrast visual acuity to identify unsafe drivers. Accident Analysis & Prevention; 168: 106595.

• Professor Joanne Wood: internationally acclaimed authority on vision and driving. Clinical & Experimental Optometry; 10.1080/08164622.2022.2134764.


• Wood JM, Black AA, Tyrrell RA. (2022). Increasing the conspicuity of cyclists at night by using bicycle lights and clothing to highlight their biological motion. Transportation Research Part F; 90: 326-332.


Patents

SOURCE: World Intellectual Property Organization
TITLE: Device, method and system for biologically balanced lighting

Books


Presentations


- Atchison DA, Kaphle D, Suheimat M, Schmid KL. Accommodation-induced changes in ciliary body length and thickness, peripheral choroidal thickness and peripheral axial length. ARVO Annual Meeting, Denver, May 2022.


• Colorado L, Pritchard N, Keir N, Edwards K. Trigeminal nerve sensitization and contact lens symptoms. 18th International Cornea and Contact Lens Congress, Sydney, October 2022.


• Fisher D, Vincent SJ. Scleral lens physiology and mechanical changes. 18th International Cornea and Contact Lens Congress, Sydney, October 2022.


• Lal B, Alonso-Caneiro D, Read S, Carkeet A. Longitudinal changes in choroidal optical coherence tomography angiography indices among young adults and children over one year. ARVO Annual Meeting, Denver, May 2022


• Read SA. Increased choroidal thinning associated with accommodation and retinal OFF-pathway overstimulation. 7th Annual Symposium of Myopia Society Japan, October 2022.


• Scott TM, Ting E, Vincent SJ, Lee GA. Long-term outcomes of trans-scleral diode laser cycloablation (cyclodiode) for refractory glaucoma. 54th Annual Scientific Congress of the Royal Australian and New Zealand Congress of Ophthalmologists, Brisbane, October 2022.


• Vincent SJ. Higher-order myopia control with orthokeratology. West China International Myopia Control and Eye Care Symposium, Chengdu, China (Virtual), 2022.

• Vincent SJ. Rapid resolution of scleral lens induced corneal oedema assessed using Scheimpflug imaging. 18th International Cornea and Contact Lens Congress, Sydney, October 2022.


• Woodman-Pieterse E, Hughes RPJ, Read SA, Dai R, Huynh T, Ouyang T, Tran B. Change in axial length during accommodation with myopia control soft contact lenses. International Myopia Conference, Rotterdam, the Netherlands, 2022.


Presentations

Continuing education and community presentations


- Harkin DG. Blended learning in Histopathology @QUT. HTI-EDC Workshop, The Hong Kong Polytechnic University, Hong Kong, 2022.

- Harkin DG. Like for like - Challenges and shifting goals in corneal bioengineering. Department of Biomedical Engineering, The Ohio State University, OH, USA 2022.

- Hopkins S. Aboriginal and Torres Strait Islander Children’s Vision. Australian Vision Convention, Gold Coast, 2022.


• Hopkins S. Paediatric Optometry Journal Club event at QUT Health Clinics, June 15 (accredited for 1.5 interactive CPD hours). Topic: Introduction to HTS2, 2022.

• Read SA. The role of the choroid in human myopia development. University of Melbourne, Department of Optometry and Vision Sciences, Seminar Series, September 2022.

• Wood JM. The challenges of interpreting visual standards for driving. Australian Vision Convention, Gold Coast, April 2022.

NAME: Dr Lal Barsha  
QUALIFICATION: Doctorate by Research  
PROJECT: Optical Coherence Tomography Angiography Assessment of Retinal and Choroidal Vasculature: Diurnal and Longitudinal Changes and Refractive Error  
SUPERVISOR: Dr Andrew Carkeet, Prof Scott Read and Dr David Alonso Caneiro

NAME: Dr Pradipta Bhattacharya  
QUALIFICATION: Doctorate by Research  
PROJECT: The Corneal Epithelium In Health And Disease  
SUPERVISORS: Assoc Prof Katrina Schmid, Dr Katie Edwards and Prof Damien Harkin

NAME: Dr Zachery Quince  
QUALIFICATION: Doctorate by Research  
PROJECT: Optical Coherence Elastography for the Measurement of Anterior Segment Biomechanical Properties  
SUPERVISORS: Dr David Alonso Caneiro, Prof Michael Collins and Dr Scott Read

NAME: Dr Ilyanoon Zahari  
QUALIFICATION: Doctorate by Research  
PROJECT: Effect of Chemotherapy on the Ocular Surface and Its Relationship to Peripheral Neuropathy  
SUPERVISORS: Dr Katie Edwards, Assoc Prof Katrina Schmid and Dr Ricardo Andrade
Current Higher Degree Research Students

NAME: Aniruddha Banerjee  
PROJECT: Contributions of ipRGC, rod and cone pathways to alertness  
SUPERVISORS: Zele AJ, Adhikari P, Feigl B

NAME: Emily Banks  
PROJECT: Development, validation, and implementation of a visual acuity chart for First Nations children  
SUPERVISORS: Hopkins S, Bentley SA, Wood J

NAME: Francisco Yoel Garcia Marin  
PROJECT: Deep learning methods applied to anterior eye optical coherence tomography images  
SUPERVISORS: Alonso Caneiro D, Collins MJ, Read SA

NAME: Mahdi Heravian Shandiz  
PROJECT: Developing deep learning image analysis methods for mobile eye tracking  
SUPERVISORS: Alonso Caneiro D, Collins MJ, Read SA

NAME: Lirong Esther Ho  
PROJECT: Role of macular pigment in pathological myopia  
SUPERVISORS: Read SA, Alonso-Caneiro D, Neelam K, Chew Y, Chi L

NAME: Mark Hoffmann  
PROJECT: The ocular surface in whiplash-associated disorder  
SUPERVISORS: Edwards K, Holguin Colorado L

NAME: Catherine Kennon  
PROJECT: Developing and validating a night-time driving hazard perception test: application of data-driven principles  
SUPERVISORS: Wood JM, Black AA, Lacherez P, McKendrick A
NAME: Jason Michael Kugelman  
PROJECT: Deep generative models to enhance ophthalmic image analysis  
SUPERVISORS: Alonso Caneiro D, Collins MJ

NAME: Thomas Nugent  
PROJECT: Five-primary display to measure the visual functions of intrinsically photosensitive retinal ganglion cells  
SUPERVISORS: Zele A, Feigl B, Fookes C

NAME: Kate Pecar  
PROJECT: A pedagogical analysis of Aboriginal and Torres Strait Islander Health Curricula in Optometry Programs  

NAME: Asik Pradhan  
PROJECT: Lens shape and accommodation: normal and myopic children under low concentration atropine  
SUPERVISORS: Carkeet A, Atchison D, Hughes R, Pieterse E

NAME: Archayeeta Rakshit  
PROJECT: Investigations of higher order processing deficits in amblyopia  
SUPERVISORS: Schmid K, Atchison D, Webber A, Majhi D

NAME: Samir Uprety  
PROJECT: Melanopsin photoreceptor interactions with rods and cones in human vision  
SUPERVISORS: Adhikari P, Feigl B, Zele AJ

NAME: Dinesh Venugopal  
PROJECT: Development of a Low Luminance Vision-Related Performance-Based Measure  
SUPERVISORS: Bentley SA, Black AA, Wood JM

NAME: Ignacio Andres Viedma Escalona  
PROJECT: Automatic layer segmentation in retinal OCT imaging using deep learning methods  
SUPERVISORS: Alonso Caneiro D, Collins MJ, Read SA
Thank you to the following organisations for your ongoing support of Optometry and Vision Science here at QUT.