Monday, 20. February 2023

Cornea and Ocular Surface
08:00 - 10:00 Opening & Session 1

Keratoconus: Biology and management

Session Motto: Konquering Keratoconus

Chair: Jim Kokkinakis, AU
Chair: Arkasubhra Ghosh, IN

Disease Models in Keratoconus 08:00 - 08:24
Speaker: Yutao Liu, US

Genetic determinants of keratoconus susceptibility: current status and clinical applicability 08:24 - 08:48
Speaker: Yelena Bykhovskaya, US

Keratoconus and Inflammation 08:48 - 09:12
Speaker: Arkasubhra Ghosh, IN

Exploring the role of rare genetic variation in keratoconus 09:12 - 09:36
Oral Presenter: Kathryn Burdon, AU

Retinal Cell Biology
08:00 - 10:00 Session 2

Ocular Pigmentation and Vision

Session Motto: Motto: Lets us the pigmentation pathway to rescue, prevent, or treat tied to the RPE. The pigmentation of the retinal pigment epithelium (RPE) is critical to vision, retinal health, and is protective during aging. In this session, we will showcase and highlight the effects of RPE pigmentation on retinal development and how the pathway can be driven through a G-protein coupled receptor, GPR143. GPR143 signaling can be manipulated to rescue normal retinal development in the absence of RPE pigmentation. A similar strategy can be used to prevent or treat a leading cause of blindness, age-related macular degeneration (AMD). We discovered the ligand for GPR143, L-DOPA, and L-DOPA can be used effectively to rescue retinal development and protect from AMD.

Chair: Brian S. McKay, US

GPR143: The Lynchpin Connecting RPE Pigmentation to Vision 08:00 - 08:24
Speaker: Brian S. McKay, US

Albinism Genetics Points to a Central Role of L-DOPA in Normal Visual System Development 08:24 - 08:48
Speaker: Murray Brilliant, US

Impact of Pigmentation on Foveal Morphology 08:48 - 09:12
Speaker: Joseph Carroll, US

Proof of Concept for Levodopa Treatment in Rescuing Retinal Morphology and Visual Function in a Mouse Model of Human Albinism 09:12 - 09:36
Speaker: Helena Lee, GB

Levodopa to delay, treat, or prevent neovascular AMD 09:36 - 10:00
Speaker: Robert Snyder, US

Retinal Cell Biology
08:00 - 10:00 Session 3

Human stem cell derived retinal tissues for therapeutic development

Session Motto: Coming full circle

Chair: Natalia Vergara,
Chair: Val Canto-Soler, US

Application of retinal organoids to drug development: lessons learned 08:00 - 08:24
Speaker: Natalia Vergara,

Engineered Human Pluripotent Stem Cells and their Application toward Cell and Tissue Reprogramming 08:24 - 08:48
Speaker: Karl Wahlin, US

Optogenetic transformation of retinal organoids to restore visual function 08:48 - 09:12
Speaker: Marcela Garita, FR

A phase I/IIA trial to test safety and feasibility of an autologous IPS cell-derived retinal pigment epithelium patch in age-related macular degeneration patients 09:12 - 09:36
Speaker: Ruchi Sharma, US

RPE-Choroid
08:00 - 10:00 Session 4

Cellular Interplays in Degeneration of RPE

Session Motto:

Chair: Florian Sennlaub, FR

Plin2 positive mononuclear phagocytes in retinal and vascular degeneration 08:00 - 08:24
Speaker: Xavier Guillonneau, FR

Failures in intracellular waste processing contribute to the progression of age related macular degeneration 08:24 - 08:48
Speaker: Kirstan Vessey, AU

Chronic Senescence and Senotherapy 08:48 - 09:12
Speaker: Jian Liu, GB

The interplay between liver X receptors and aging effects AMD-like pathology development and RPE-choroid health. 09:12 - 09:36
Speaker: Mayur Choudhary, US

MiRNA-494-3p in Extracellular Vesicles Mediates Innate Inflammatory Interplay between RPE Cells with Macrophages by Regulating Biogenesis and Functional Phenotypes of Mitochondria 09:36 - 10:00
Speaker: Junji Hamuro, JP

Lens
08:00 - 10:00 Session 5

Systems level approaches to lens development and pathology

Session Motto: Applying omics data for understanding eye development, homeostasis and disease.

Chair: Salil Lachke, US
Chair: Michael L. Robinson, US

Multiomic Analysis Reveals Novel Requirements For Lens Cell Differentiation 08:00 - 08:24
Speaker: Marc Kantorow, US

Transcriptomic analysis of fiber cell differentiation in lens epithelial explants lacking Fgfrs 08:24 - 08:48
Speaker: Michael L. Robinson, US

iSyTE: A Systems Tool for Gene Discovery in Lens Biology and Cataract 08:48 - 09:12
Speaker: Salil Lachke, US

Metabolic imaging of lens and eye physiology with imaging mass spectrometry 09:12 - 09:36
Speaker: Gus Grey, NZ

miRNAs in the Newborn Mouse Lens: Abundance, Differential Expression and Potential Regulatory Networks with mRNAs and lncRNAs 09:36 - 10:00
Oral Presenter: Anil Upreti, US

Ophthalmic Genetics/Genomics
08:00 - 10:00 Session 6

Glaucoma GWAS

Session Motto: Translating Glaucoma Gene Discoveries into patient care

Chair: David Mackey, AU
Chair: Janey Wiggs, US

Primary open angle glaucoma GWAS and polygenic risk scores 08:00 - 08:24
Speaker: Janey Wiggs, US

How will we validate polygenic risk scores in POAG 08:24 - 08:48
Speaker: David Mackey, AU

Communicating and reporting polygenic risk scores for glaucoma 08:48 - 09:12
Speaker: Emmanuelle Souzeau, AU

Angle closure glaucoma risk factors 09:12 - 09:36
Speaker: Qingjiong Zhang, CN

What's next after in the lab after GWAS? Large scale functional profiling of POAG-implicated genes 09:36 - 09:48
Speaker: Alex Hewitt, AU

A Comprehensive Genome Wide Association to Functional Study Reveals the Role of *CNTNAP5* in Glaucomatous Neurodegeneration in Primary Angle Closure Glaucoma 09:48 - 10:00
Oral Presenter: Sudipta Chakraborty, IN

Glaucoma
08:00 - 10:00 Session 7

Exfoliation Glaucoma – a Multifactorial Disease

Session Motto:

Chair: John Fingert, US
Chair: Rachel Kuchtey, US

Genetic background confers murine susceptibility to ocular tissue elastosis 08:00 - 08:24
Speaker: Dan Stamer, US

Search for Specific LOXL1 Risk Alleles with BiT-STARR-seq 08:24 - 08:48
Speaker: John Fingert, US

Utah Project on Exfoliation Syndrome (UPEXS) 08:48 - 09:12
Speaker: Barbara Wirostko, US

Microfibrilopathy: in search of factors in exfoliation syndrome in addition to LOXL1 09:12 - 09:36
Speaker: Rachel Kuchtey, US

Role of Lysyl Oxidase Like-1 in Reactive Astrocytosis 09:36 - 10:00
Oral Presenter: Simon Kaja, US

Ocular Imaging & Psychophysics
08:00 - 10:00 Session 8

Advances and Applications in OCT Imaging

Session Motto: Advances and Applications in OCT Imaging This session focuses on the new advances in OCT technology and its applications in fundamental biomedical research as well as in clinical practice in the field of ophthalmology. Recent research and development directions in OCT imaging technology such as high resolution OCT for structural and functional imaging with phase detection and advanced computational techniques including digital wavefront correction and artificial intelligence applications will be highlighted. Clinical applications, sensitive biomarkers for disease diagnosis and monitoring disease progression will be also discussed. Papers are solicited on the following and related topics: • OCT systems, theory, image processing techniques in OCT • Spectral/Fourier domain, swept source OCT and full-field OCT • OCT for structural and functional imaging • High-resolution OCT for cellular imaging • Digital wavefront correction • Novel contrast mechanisms • Ophthalmic applications and biomarkers • OCT in small animal imaging • AI in OCT image processing

Chair: Maciej Wojtkowski, PL
Chair: Zhuolin Liu, US

Disease Modeling in Retinal Organoids and Cell Cultures Imaged Live with Dynamic Full Field OCT 08:00 - 08:24
Speaker: Kate Grieve, FR

Adaptive optics OCT in clinical settings: Benefits and Challenges 08:24 - 08:48
Speaker: Michel Pircher, AT

Cellular-level retinal imaging with 3.4 MHz adaptive optics -optical coherence tomography 08:48 - 09:12
Speaker: Zhuolin Liu, US

Full-field OCT high-resolution in-vivo retinal imaging over a wide field-of-view 09:12 - 09:36
Speaker: Pedro Mecê, FR

Spatio-Temporal OCT - on how OCT can benefit from partial spatial coherence 09:36 - 10:00
Speaker: Maciej Wojtkowski, PL

Cross-Discipline
08:00 - 10:00 Session 9

Biomechanics of the Eye: Anterior

Session Motto:

Chair: Kirill Larin, US
Chair: Ross Ethier, US

Phase-Decorrelation Optical Coherence Tomography for Assessment of the Cornea and Ocular Lens 08:00 - 08:24
Speaker: Brecken Blackburn, US

The primary cilium mediates autophagy activation in response to mechanical forces in outflow pathway cells 08:24 - 08:48
Speaker: Paloma Liton, US

The Effects of Negative Periocular Pressure on Anterior and Posterior Segment Biomechanics 08:48 - 09:12
Speaker: Ross Ethier, US

Optical Coherence Elastography of the Anterior Segment of the Eye 09:12 - 09:36
Speaker: Kirill Larin, US

Wave-based ultrasonic optical coherence elastography can detect subclinical keratoconus in human patients 09:36 - 10:00
Speaker: Fernando Zvietcovich Zegarra, PE

Ocular Pharmacology, Therapeutics & Drug Delivery
08:00 - 10:00 Session 10

Drug Development and Therapies for wet AMD

Session Motto: The wet form of AMD is the leading cause of severe vision loss in people over age 60. The “Drug development and therapies for wet AMD” session consist of talks that address key development in disease mechanisms, novel therapeutic target identification, biomarker discovery and phenotypic characterization of wet AMD. The session organizers and the invited speakers are all well-known experts in their respective fields.

Chair: Xiaomeng Wang, SG
Chair: Mei Chen, GB

Single-cell Transcriptome of Wet AMD Patient-derived Endothelial Cells in Angiogenic Sprouting 08:00 - 08:24
Speaker: Vanessa Wazny, SG

Developing Stem Cell based Therapy for Photoreceptor Degeneration 08:24 - 08:48
Speaker: Hwee Goon Tay, SG

A potential new small molecule inhibitor of retinal vascular disease 08:48 - 09:12
Speaker: Levon Khachigian, AU

Targeting the complement pathway for the management of subretinal fibrosis 09:12 - 09:36
Speaker: Mei Chen, GB

The angiopathic role of LRG1 in eye disease and its potential as a therapeutic target 09:36 - 10:00
Speaker: John Greenwood, GB

Visual Neuroscience
08:00 - 10:00 Session 11

Invertebrate vision

Session Motto: At a first glance, insect vision is completely different to human vision. Indeed, the compound eye provides a fundamentally different optical solution to image formation. However, as we will highlight in this symposium, in several aspects insect visual processing is surprisingly similar to visual processing in mammals. This includes the neural mechanisms underlying contrast detection and motion processing. However, we will also highlight that even if the small insect brain might suggest that visual processing should be more simplistic, in many cases, insects outperform humans.

Chair: Karin Nordström, AU
Chair: Yuri Ogawa, AU

Stable Vision in Dynamically Changing Environments 08:00 - 08:24
Speaker: Marion Silies, DE

Motion vision in miniature brains 08:24 - 08:48
Speaker: Emily Baird, SE

Neural Mechanisms Underlying Motion Vision in a Small Brain 08:48 - 09:12
Speaker: Karin Nordström, AU

Vision and visually guided behaviour at the limits of size and photons 09:12 - 09:36
Speaker: Ajay Narendra, AU

Hoverfly Target Selective Descending Neurons Respond to Reconstructed Target Pursuits 09:36 - 10:00
Oral Presenter: Yuri Ogawa, AU

Ocular Immunology
08:00 - 10:00 Session

Ocular inflammation and immunity

Session Motto: In this session, the interplay between ocular immunity and inflammation will be discussed, as well as consider recent advances in novel therapies to treat ocular inflammation.

Chair: Holly Chinnery, AU
Chair: Laura Downie, AU

Modulation of corneal inflammation and nerve regeneration by intraepithelial dendritic cells. 08:00 - 08:24
Speaker: Holly Chinnery, AU

The Effect of Seasonal Environmental Variations on Human Corneal Immune Cells: An i*n vivo* Confocal Microscopy Study 08:24 - 08:48
Speaker: Laura Downie, AU

Preclinical Evaluation of Lubricin/PRG4 for the Treatment of Allergic Conjunctivitis 08:48 - 09:00
Oral Presenter: Sana Iqbal, US

Vitamin A Supplementation Attenuates Retinal Vascular Disease by Boosting the Number and Function of Tregs 09:00 - 09:12
Oral Presenter: Devy Deliyanti, AU

Targeting Systemic Hypertension to Preserve Outer Blood-retinal Barrier in Retinopathy 09:12 - 09:24
Oral Presenter: Helen Jiao, AU

A Novel Small Molecule DHODH Inhibitor for the Intraocular Treatment of Uveitis - Of Rats and Men 09:24 - 09:36
Oral Presenter: Stephan Thurau, DE

Retinal Degeneration
08:00 - 10:00
Retinal and RPE metabolic homeostasis in health and disease situations
Session Motto: Metabolic interplay between the neural retina and the RPE
Chair: Muna Naash, US
Chair: Muayyad Al-Ubaidi, US

Irreversible Structural Changes in the RPE Resulted from Dietary Riboflavin Deficiency 08:00 - 08:24
Speaker: Muayyad Al-Ubaidi, US

Role of Photoreceptors in AMD Pathogenesis 08:24 - 08:48
Speaker: Claudio Punzo, US

RPE Dysfunction Contributes to Photoreceptor/Vision Loss in PRPH2-Related Diseases 08:48 - 09:12
Speaker: Larissa Ikelle, US

Ciliary Neurotrophic Factor-mediated Neuroprotection Involves Enhanced Glycolysis and Anabolic Activities in Degenerating Mouse Retinas 09:12 - 09:36
Oral Presenter: Xianjie Yang, US

Exhibition
09:00 - 17:00 Others
Exhibition

Coffee Break
10:00 - 10:30 Others
Coffee Break

Opening Ceremony
10:30 - 12:00 Opening & Session 1
Opening Ceremony

Welcome to ISER 2023 10:30 - 11:00
Speaker: Frank J. Lovicu, AU
Speaker: Olaf Strauß, DE
Speaker: Alan Stitt, GB

Laudatio 11:00 - 11:10
Speaker: Aparna Lakkaraju, US

Lecture by Award Winner 11:10 - 11:55
Speaker: David S. Williams, US

Cornea and Ocular Surface
13:00 - 15:00 Opening & Session 1

Inflammation and infection of the cornea and ocular surface

Session Motto: Homeostasis of the anterior eye

Chair: Nicole Carnt, AU
Chair: Jodhbir S. Mehta, SG
Chair: Shizuya Saika, JP

Role of fibrinolytic factors in corneal fibroblasts during corneal inflammation and infection 13:00 - 13:24
Speaker: Koji Sugioka, JP

Infectious keratitis in Asia – causes and concerns 13:24 - 13:48
Speaker: Fiona Stapleton, AU

The Role of Endosymbionts in *Acanthamoeba k*eratitis 13:48 - 14:12
Speaker: Fiona Henriquez, GB

Development of Novel Hybrid Human Defensins and Cathelicidin for Infectious Keratitis 14:12 - 14:36
Speaker: Darren Ting, GB

The Activity of Polyhomoarginine against *Acanthamoeba castellanii* 14:36 - 14:48
Oral Presenter: Hari Kumar Peguda, AU

Modulation of Inflammation in Corneal Stroma by TRP Cation Channel Family Members 14:48 - 15:00
Speaker: Yuka Okada, JP

Retinal Cell Biology
13:00 - 15:00 Session 2

Retinal metabolic pathways in health and disease

Session Motto: Retina is one of the most energy intensive cell types in the human body and therefore maintaining proper metabolic environment within the cell is of primary importance. Metabolic changes have been reported in several retinal diseases including retinal degeneration, age-related macular degeneration (AMD) etc. In this session speakers would address the effects of metabolic distress on disease phenotype, unravel the pathophysiological mechanism leading to this and metabolic interventions that can rescue the disease phenotype.

Chair: Sayantan Datta, US

Role of mitophagy and metabolism in determining RPE structure and function in AMD 13:00 - 13:24
Speaker: Sayantan Datta, US

Metabolic Control of RPE Homeostasis and Dysfunction 13:24 - 13:48
Speaker: Magali Saint-Geniez, US

Photoreceptor Aerobic Glycolysis in AMD Pathogenesis 13:48 - 14:12
Speaker: Shun-Yun Cheng, US

Visual Neuroscience
13:00 - 15:00 Session 3

Vertebrate Photoreceptor Diversity

Session Motto: Studying the amazing diversity of vertebrate photoreceptor types across a wide range of species promises biological insights not readily obtained by exclusively focusing on conventional mammalian model systems.

Chair: Joseph Corbo, US
Chair: Rachael Elaine Warrington, US

Lamprey photoreceptors 13:00 - 13:24
Speaker: Rachael Elaine Warrington, US

Visual Opsin Diversity in Sharks 13:24 - 13:48
Speaker: Nathan S. Hart, AU

Molecular diversity of avian photoreceptors 13:48 - 14:12
Speaker: Joseph Corbo, US

Photoreceptor Adaptation and Diversity in Teleost Fishes 14:12 - 14:36
Speaker: Fabio Cortesi, AU

Amphibian Arrestin 1 Forms Dimers Using a Novel Interaction Interface 14:36 - 15:00
Oral Presenter: Cassandra Barnes, US

RPE-Choroid
13:00 - 15:00 Session 4

Interaction of immune cells with the RPE and choroid

Session Motto: This session will highlight key signaling mechanisms between immune cells (mononuclear phagocytes and lymphocytes) and the RPE-choroid interface, which may contribute to several retinal degenerative diseases.

Chair: Nilisha Fernando, US
Chair: Matthew Rutar, AU

Interactions of choroidal gamma delta T cells with the RPE and subretinal microglia 13:00 - 13:24
Speaker: Jiyang Cai, US

The consequences of sterile inflammatory pathway activation for retinal disease 13:24 - 13:48
Speaker: Sarah Doyle, IE

RPE - Microglia Interaction and their Potential Contribution to AMD Development 13:48 - 14:12
Speaker: Alexa Klettner, DE

Engagement of neutrophil extracellular traps (NETs) by neutrophil subsets in choroidal neovascularisation 14:12 - 14:36
Speaker: Matthew Rutar, AU

Subretinal Immune Gene Dysregulation during Ageing and Choroidal Neovascularisation: Implications for Neovascular Age-related Macular Degeneration 14:36 - 15:00
Oral Presenter: Josephine Wong, AU

Lens
13:00 - 15:00 Session 5

Lens cell biology and biomechanics

Session Motto: The eye lens in focus: cell architecture and biomechanical properties

Chair: Catherine Cheng, US
Chair: Velia Fowler, US

Canonical and non-canonical EphA2 signaling in the lens 13:00 - 13:24
Speaker: Catherine Cheng, US

Transgelin Regulates the Acquisition of the Myofibroblast Phenotype During Lens Fibrosis 13:24 - 13:48
Speaker: Grace Marie Emin, US

Depth and strain-dependent structural responses of mouse lens fiber cells during whole lens shape changes 13:48 - 14:12
Speaker: Velia Fowler, US

Reduction of lens stiffness by acyl compounds 14:12 - 14:36
Speaker: Ram Nagaraj, US

CDK1 regulated nuclear envelope reorganization and breakdown during lens differentiation 14:36 - 15:00
Speaker: Elizabeth Whitcomb, US

Ophthalmic Genetics/Genomics
13:00 - 15:00 Session 6

Global Eye Genetics Consortium - Genetic Studies of the Pacific Rim

Session Motto: Global Eye Genetics Consortium (www.gegc.org) was first established in 2014 as Asian Eye Genetics Consortium to accelerate eye genetic study in the region. GEGC now expands from Asia to Middle East, Africa and Central & South America with over 200 active members of ophthalmologists and geneticists from 30 counties to share information and to collaboratively work to study genetic eye diseases. In this session, five speakers from institutes around the Pacific Rim (New Zealand, Australia, Japan, USA and Puerto Rico) will present their latest progress on genetic studies and clinical trials in each country.

Chair: Takeshi Iwata, JP
Chair: Gyan John Prakash, US

Genetic Characterisation of Inherited Eye Disease in Aotearoa/New Zealand 13:00 - 13:24
Speaker: Andrea Vincent, NZ

Experience with IRD clinical trials in Australia 13:24 - 13:48
Speaker: John Grigg, AU

The whole exome and genome analysis for inherited retinal diseases in Japanese population 13:48 - 14:12
Speaker: Akiko Suga, JP

Genomics of inherited retinal degenerations (IRDs) in three diverse populations 14:12 - 14:36
Speaker: Radha Ayyagari, US

Glaucoma
13:00 - 15:00 Session 7

The Role of Cerebrospinal Fluid Pressure in Ocular Health and Disease

Session Motto: This session will look at the effects of altered Cerebrospinal Fluid Pressure (CSF) pressure upon the optic nerve and retinal vessels with emphasis upon Glaucoma, space associated neuro-ocular syndrome (SANS) and Idiopathic Intracranial Hypertension (IIH). The group of presenters will speak on methods for examining altered CSF pressure and ocular effects, physical modelling investigation of forces generated across the optic nerve head, CSF pressure pulsation effects upon the retinal vessels and the use of these to measure CSF pressure non-invasively along with tilt table experiments to mimic SANS. More specific work regarding the interaction between CSF pressure, microgravity and SANS will be presented. SANS develops in 50% of astronauts in space for more than 6 months with optic nerve swelling, enlarged CSF space and generally elevated CSF pressure. NASA recognizes that SANS is one of the top 3 health problems requiring solution in preparation for manned flights to Mars. The presenters have expertise in: CSF pressure and gradient effects upon the optic nerve and SANS Primate models of CSF pressure monitoring with optic nerve and vascular effects CSF induced retinal vessel pulsation and non-invasive CSF pressure techniques Modelling of CSF and IOP induced force effects upon the optic nerve NASA Space physiology experience with SANS

Chair: William Morgan, AU
Chair: Crawford Downs, US

Translaminar Pressure and Gradient Dynamics: Implications for ONH Health and Disease 13:00 - 13:24
Speaker: Crawford Downs, US

Intracranial pressure dynamics and their influence on aqueous humor dynamics in rats 13:24 - 13:48
Speaker: Christopher Passaglia, US

Cerebrospinal Fluid Pressure and Venous Resistance Effects upon Retinal Arterial and Venous Pulse Wave Amplitude, Timing and Pulse Wave Velocities 13:48 - 14:12
Speaker: Anmar Rahman, AU

Ocular Health during Spaceflight: The Gravity of the Mission 14:12 - 14:36
Speaker: Steven Laurie, US

Cerebrospinal fluid pressure estimation using retinal venous pulse wave measures with flow discontinuity theory: clinical results/tilt table effects 14:36 - 15:00
Speaker: William Morgan, AU

Ocular Imaging & Psychophysics
13:00 - 15:00 Session 8

Artificial Intelligence in Ophthalmology: From Algorithm to Product and Deployment

Session Motto: Artificial intelligence wouldn't replace physicians, but the physicians equipped by artificial intelligence will replace those who don't.

Chair: Mingguang He, AU
Chair: Jason Sun, AU

AI Algorithm for Ophthalmology from Limited to Unlimited 13:00 - 13:24
Speaker: Zongyuan Ge, AU

When the Rubber Hits the Road: Stories from Real-world Health AI Commercial Deployment 13:24 - 13:48
Speaker: Jason Sun, AU

Update on AI and digital innovation in the United States 13:48 - 14:12
Speaker: Robert Chang, US

Ocular Pharmacology, Therapeutics & Drug Delivery
13:00 - 15:00 Session 10

Immunology therapies for ocular pathology (thyroid eye disease, uveitis)

Session Motto: Immunology and the eye

Chair: Sophia Zagora, AU
Chair: Anthony Sammel, AU
Chair: Richard Symes, AU

What is uveitis? 13:00 - 13:24
Speaker: Sophia Zagora, AU

Systemic therapies for non infective uveitis 13:24 - 13:48
Speaker: Elisa Cornish, AU

Systemic associations and available treatments for Uveitis and Scleritis 13:48 - 14:12
Speaker: Anthony Sammel, AU

Thyroid Eye Disease- what is it and how do we treat it 14:12 - 14:36
Speaker: Tani Brown, AU

Epidemiology of Eye Disease & Global Eye Health
13:00 - 15:00 Session 11

Global Perspectives on Angle-Closure Disease

Session Motto: "The Angle on Angle Closure"

Chair: Robert Casson, AU

Angle Closure Glaucoma: a Global Perspective 13:00 - 13:24
Speaker: Rupert Bourne, GB

Trends in angle-closure epidemiology in the age of phaco 13:24 - 13:48
Speaker: Tin Aung, SG

The EAGLE study and its impact 13:48 - 14:12
Speaker: Lance Liu, AU

Retinal Degeneration
13:00 - 15:00 Session

Astrocytes, microglia, and neuroinflammation in retinal degenerative diseases

Session Motto: While it is well accepted that retinal and optic nerve glia play an essential role in maintaining homeostasis, glial activation and the development of neuroinflammation is emerging as a common feature of retinal degeneration associated with glaucoma, retinitis pigmentosa, age-related macular degeneration, and diabetic retinopathy. This session will highlight recent advances in this field with a focus on key regulators of neuroinflammation, astrocyte-microglia interplay, and the functional relationship between glial cells and neurons.

Chair: Meredith Gregory-Ksander, US
Chair: Tatjana Jakobs, US

Microglia as modifiers of retinal degenerative disease progression 13:00 - 13:24
Speaker: Daniel Saban, US

Pathways regulating microglia responses and microglia-mediated retinal ganglion cell elimination 13:24 - 13:48
Speaker: Monica Vetter, US

Neuroprotective Activities of Reactive Astrocytes in Glaucoma 13:48 - 14:12

Speaker: Song Li, US

Role of Cystatin C and Cathepsin B in Retinal Inflammation 14:12 - 14:36
Speaker: Jena Steinle, US

Characterisation of the microRNA Profile of Mononuclear Phagocytes in Retinal Degeneration 14:36 - 14:48
Oral Presenter: Riemke Aggio-Bruce, AU

Astrocyte-derived factors for neuroprotection in glaucoma 14:48 - 15:00
Speaker: Tatjana Jakobs, US

Retinal Degeneration
13:00 - 15:00

Neuronal fate determination in the retina

Session Motto: In this session, we will explore how cells in the developing retina decide which type of neuron they will become.

Chair: Joseph Brzezinski, US

Coordinating Neurogenesis and Choroidal Blood Vessel Formation with an Integrated Signaling Circuit in the Zebrafish Dorsal Retina 13:00 - 13:24
Speaker: Kara Cerveny, US

Shh Activity Levels Matter during Mouse Ocular Morphogenesis and Retinal Specification 13:24 - 13:48
Speaker: Nadean Brown, US

Onecut1 occupies a critical node in the gene regulatory network that drives cone photoreceptor formation 13:48 - 14:12
Speaker: Mark Emerson, US

Mechanistic logic underlying retinal bipolar cell subtype development 14:12 - 14:36
Speaker: Robert Chow, CA

Regulation of Otx2 expression during retinal development 14:36 - 15:00
Speaker: Joseph Brzezinski, US

Coffee Break
15:00 - 15:30 Others

Coffee Break / Meet the Experts

Cornea and Ocular Surface
15:30 - 17:30 Opening & Session 1

Corneal immunology and transplantation

Session Motto: Recent advances in corneal immunology; from omics to animal models.

Chair: Holly Chinnery, AU
Chair: Sethu Swaminathan, IN

Immune checkpoints and immune privilege in corneal inflammation after transplantation 15:30 - 15:54
Speaker: Junko Hori, JP

Corneal immunology in Keratoconus 15:54 - 16:18
Speaker: Sethu Swaminathan, IN

Omics of contact lens associated keratitis 16:18 - 16:42
Speaker: Nicole Carnt, AU

Intravital multiphoton microscopy of dendritic cells in mouse models of corneal transplantation and dry eye disease 16:42 - 17:06
Speaker: Yashar Razavi, AU

Corneal Sub-epithelial Microneuromas and Axonal Swelling: Biomarkers for Painful Diabetic Neuropathy? 17:06 - 17:30
Oral Presenter: Luisa H. Colorado, AU

Retinal Cell Biology
15:30 - 17:30 Session 2

Regulation of Müller glia-dependent neuronal regeneration in the damaged retina

Session Motto: Unlike mammals, zebrafish possess the remarkable ability to regenerate neurons and restore vision following retinal damage. The source of the regenerated neurons are Müller glia, which reprogram and divide asymmetrically to produce neuronal progenitor cells that continue to proliferate and differentiate into retinal neurons. This regeneration response is regulated by microglia, the resident immune cells of the retina, through an inflammatory response. This session will focus on the mechanisms utilized by the Müller glia and microglia to productively regenerate retinal neurons in a variety of different damage models. A variety of different approaches, including single-cell RNA-Seq, will be used to define how these cell types are molecularly changing in response to retinal damage. This session will also explore cellular and molecular differences following either acute or chronic damage, which often fails to exhibit a significant Müller glia-dependent regeneration response. In addition, the session will describe how these studies can be extrapolated into stimulating a regeneration response in the damaged mammalian retina using the mouse model.

Chair: David Hyde, US
Chair: Diana M. Mitchell, US

Quiescent Müller glia heterogeneity influences regenerative response following photoreceptor ablation in the zebrafish retina 15:30 - 15:54
Speaker: Patricia Jusuf, AU

Molecules and mechanisms that regulate the regeneration of photoreceptors from Müller glia 15:54 - 16:18
Speaker: Peter Hitchcock, US

Effects of inflammatory signaling from microglia on Müller glial regenerative response in the zebrafish retina 16:18 - 16:42
Speaker: Diana M. Mitchell, US

Transcriptomic and epigenomic approaches reveal mechanisms that regulate zebrafish Müller glia reprogramming and neuronal regeneration 16:42 - 17:06
Speaker: David Hyde, US

Muller Glia Reprogramming in the Human Fetal Retina 17:06 - 17:30
Oral Presenter: Juliette Wohlschlegel, US

Visual Neuroscience
15:30 - 17:30 Session 3

Novel mammalian photoreception

Session Motto:

Chair: Morven Cameron, AU
Chair: Richard Lang, US

Atypical opsins inside and outside the eye 15:30 - 15:54
Speaker: Richard Lang, US

Opsins in the cornea respond to damage. 15:54 - 16:18
Speaker: Ethan Buhr, US

Photobiomodulation: Sensing Light for Cellular Protection 16:18 - 16:42
Speaker: Krisztina Valter, AU

Structure and function of Mammalian OPN3 16:42 - 17:06
Speaker: Elliot Gerrard, AU

Unilateral Chemogenetic Activation of ipRGCs Drives Suppression of the Dark-adapted Electroretinogram in the Contralateral Eye 17:06 - 17:18
Oral Presenter: Sushmitha Raja, AU

Melanopsin-mediated Amplification of Cone Signals in the Visual Cortex 17:18 - 17:30
Oral Presenter: Samir Uprety, AU

RPE-Choroid
15:30 - 17:30 Session 4

Oxidative stress in the retina and RPE

Session Motto: "Don't stress oxidatively"

Chair: Joshua Dunaief, US

Systems pharmacology links GPCRs with retinal degenerative disorders 15:30 - 15:54
Speaker: Krzysztof Palczewski, US

Deuterated Polyunsaturated Fatty Acids (D-PUFA) as a Novel Approach to Preventing or Treating Retinal Degeneration 15:54 - 16:18
Speaker: Mikhail Shchepinov, US

Oxidation resistant DHA protects against retinal degeneration in preclinical models 16:18 - 16:42
Speaker: Joshua Dunaief, US

Methyl-CpG-Binding Protein 2 Regulates Metabolic Profile of Retinal Pigment Epithelium in Stargardt Disease 16:42 - 17:06
Speaker: Arpita Dave, US

Mitochondrial Transfer as a Novel Modality of Retinal Pigment Epithelium Cellular Crosstalk and Role in Age-related Macular Degeneration Pathogenesis 17:06 - 17:30
Oral Presenter: Erik Butcher, US

Lens
15:30 - 17:30 Session 5

Lens accommodation, aging and the onset of presbyopia

Session Motto: Innovation that leads to better sight

Chair: Ehsan Vaghefi, NZ
Chair: Bianca Maceo Heilman, US

Magnetic Resonance Imaging of Lens Water Content: A Comparison across Different Species of Accommodating and 15:30 - 15:54

Non-accommodating Lenses
Speaker: Wilson Pan, NZ

Imaging the crystalline lens and its changes with accommodation and age 15:54 - 16:18
Speaker: Bianca Maceo Heilman, US

An *in vivo* MRI Study on the Relevance of the Lens Microcirculation System in the Onset of Presbyopia 16:18 - 16:42
Speaker: Alyssa Lie, NZ

Crystalline lens optics, geometry and function 16:42 - 17:06
Speaker: Susana Marcos, US

Visual Outcomes after Cataract Surgery: Various Presbyopia-correcting Multifocal Intraocular Lenses(IOLs) and Monofocal IOLs in Korea: A Multicenter Study 17:06 - 17:30
Oral Presenter: Yeo Kyoung Won, KR

Ophthalmic Genetics/Genomics
15:30 - 17:30 Session 6

Anterior Eye Gene Therapy

Session Motto: Anterior Eye gene therapy

Chair: Rajiv R. Mohan, US
Chair: Matt Hirsch, US

Adeno-associated Vector-mediated Gene Therapy for the Treatment of Uveitis 15:30 - 15:54
Speaker: Brian Gilger, US

An Innovative Dual-gene Therapy Approach to Dissipate Pre-existing Corneal Fibrosis 15:54 - 16:18
Speaker: Nishant Sinha, US

Prevention of High Risk Corneal Transplant Rejection via AAV-mediated Immunomodulation 16:18 - 16:42
Speaker: Matt Hirsch, US

Gene therapy to treat corneal scarring 16:42 - 17:06
Speaker: Rajiv R. Mohan, US

Glaucoma
15:30 - 17:30 Session 7

Artificial Intelligence in Glaucoma

Session Motto: We will define artificial intelligence (AI) and machine learning, introduce common AI platforms in glaucoma, demonstrate modern and future applications of AI in glaucoma, and finally explorer future uses of AI to address public health challenges.

Chair: Siamak Yousefi, US
Chair: Mingguang He, AU

Evolution of Artificial Intelligence in Glaucoma 15:30 - 15:54
Speaker: Siamak Yousefi, US

Artificial Intelligence Based Screening in Ophthalmology - From Algorithm to Real-world Practice 15:54 - 16:18
Speaker: Mingguang He, AU

Patterns of Visual Functional Loss in Patients with 16:18 - 16:42

Glaucoma

Speaker: Tobias Elze, US

Fully Automatic Estimation of the Minimal Cross-section of the Waist of the Nerve Fiber Layer in the ONH and Specificity 16:42 - 17:06

Oral Presenter: Per Söderberg, SE

Ocular Imaging & Psychophysics
15:30 - 17:30 Session 8

OCT Angiography

Session Motto: OCT angiography is a rapidly emerging field in biomedical engineering, clinical research, routine clinical practice and clinical trials. This session will bring you right up to date on the latest in OCTA technology and application in basic and clinical eye research.

Chair: Fred Chen, AU
Chair: Yali Jia, US

Optical coherence tomography angiography in pediatric retina: clinical and preclinical applications 15:30 - 15:54

Speaker: Peter Campbell, US

Towards standardising retinal optical coherence tomography angiography 15:54 - 16:18

Speaker: Danuta Sampson, GB

Application of OCTA in cardiometabolic and neurovascular diseases 16:18 - 16:42

Speaker: Fred Chen, AU

Results of direct OCTA to histology comparisons in human donor and porcine eyes 16:42 - 17:06

Speaker: Martin Hein, AU

Functional Performance Related to ON and OFF Pathways and OCT-Angiography Measures in Early Diabetes 17:06 - 17:30

Oral Presenter: Vanessa T. S. Tang, AU

Cross-Discipline
15:30 - 17:30 Session 9

Signal Transduction Pathways Involved in Ocular Development & Pathogenesis and Beyond

Session Motto: Understanding the front line of signaling transduction in the eye.

Chair: David Li, CN
Chair: Michael Karin, US
Chair: Hong Yan, CN

Mitochondrial Stress and Inflammation 15:30 - 15:54

Speaker: Michael Karin, US

Roles of cGAS-STING Pathway in Ocular Development and Pathogenesis 15:54 - 16:18

Speaker: David Li, CN

Enhancement of connexin channel function by cAMP-PKA signaling alleviates oxidative stress and cataract formation 16:18 - 16:42

Speaker: Jean X. Jiang, US

HSP90β Plays A Fundamental Role in Preventing Cataractogenesis 16:42 - 17:06

Speaker: Jia-Ling Fu, CN

Ocular Pharmacology, Therapeutics & Drug Delivery
15:30 - 17:30 Session 10

Emerging Concepts in Therapy of Atrophic AMD

Session Motto: Breaking down and capturing the key concepts and state-of-the-art in treatment of AMD now and in the future.

Chair: Ashwath Jayagopal, US
Chair: Debasish Sinha, US

The Spleen Drives Pathogenic Inflammation in Age-related Macular Degeneration 15:30 - 15:54
Speaker: Florian Sennlaub, FR

Targeting mTORC1 signaling axis in dry AMD by activating βA3/A1-crystallin 15:54 - 16:18
Speaker: Debasish Sinha, US

Exploring the contribution of ARMS2 and HTRA1 genetic risk factors in age-related macular degeneration 16:18 - 16:42
Speaker: Takeshi Iwata, JP

Therapy of AMD: An Industry Perspective 16:42 - 17:06
Speaker: Ashwath Jayagopal, US

Nano-ocular drops for delivering a statin to posterior eye using SLN delivery system: For Early and Late form of dry-AMD 17:06 - 17:30
Speaker: Veluchamy Amutha Barathi, SG

Cornea and Ocular Surface
15:30 - 17:30 Session 11

New developments in corneal/ocular surface microbiome and antimicrobial resistance

Session Motto:

Chair: Robert Shanks, US
Chair: Susmit Suvas, US
Chair: Jerome Ozkan, AU

Microbiome regulation 15:30 - 15:54
Speaker: Suzanne Fleiszig, US

The Alteration of the Microbiome in Meibum and the Ocular Surface with Aging and Meibomian Gland Dysfunction 15:54 - 16:18
Speaker: Tomo Suzuki, JP

The Effect of Face Mask Wear on the Ocular Surface, Eyelid Margin and Contact Lens Microbiome 16:18 - 16:42
Speaker: Jerome Ozkan, AU

Identification of *Pseudomonas aeruginosa* as a Live Intracellular Microorganism in *Acanthamoeba* Isolated from a Keratitis Patient's Domestic Tap Water 16:42 - 17:06
Oral Presenter: Binod Rayamajhee, AU

Mechanisms of Quaternary Ammonium Compound Resistance in *Acanthamoeba castellanii* Trophozoites 17:06 - 17:30
Oral Presenter: Ronnie Mooney, GB

Retinal Degeneration
15:30 - 17:30

Model systems for studying retinal degeneration

Session Motto: In this session we will exemplify the diversity of models and applications that stem cells bring to study of retinal degeneration. We will explore how three-dimensional retinal organoids can be used to model retinal degeneration and to screen for novel treatments; how pluripotent stem cells can be used as a source of photoreceptors for future therapy; how stem cell- derived retinal pigment epithelium cells can be used in conjunction with gene therapy for assessment of future treatments for gene therapy; and how patient stem cells are valuable tools to model complex disease such as age-related macular degeneration.

Chair: Alice Pebay, AU
Chair: Grace Lidgerwood, AU

Organoids to model retinal degeneration 15:30 - 15:54
Speaker: Olivier Goureau, FR

The use of stem-cell derived retinal organoids to develop advanced therapies 15:54 - 16:18
Speaker: Anai Gonzalez-Cordero, AU

Modelling Geographic Atrophy Using a Large-scale iPSC Approach 16:18 - 16:42
Speaker: Grace Lidgerwood, AU

Human Stem Cell Retinal Organoids for Disease Modelling in Retinal Ciliopathies 16:42 - 16:54
Oral Presenter: To Ha Loi, AU

Establishing a Dominant Optic Atrophy Disease Model Using Human Pluripotent Stem Cell-derived Retinal Ganglion Cells 16:54 - 17:06
Oral Presenter: Katherine Pohl, US

Development of a Diabetic Co-culture Model of the Outer Blood-retinal Barrier for the Screening of Novel Drug Formulations 17:06 - 17:18
Oral Presenter: Victoria Kearns, GB

Poster Session
17:30 - 19:00 Others

Poster Session

1 **Role of the Motor Protein MYO1C in Visual Function and Hearing** 17:30 - 17:30
Poster Presenter: Glenn Lobo, US

2 **Retinal Cell Differentiation and Maturation Is Controlled by Glycolytic Flux** 17:30 - 17:30
Poster Presenter: Joseph Hanna, CA

4 **Biomarker Profile in Aqueous Humor in Patients with Retinal Vein Occlusion with Macular Edema - Post Treatment with Anti-VEGF only versus Steroid and Anti-VEGF Combination** 17:30 - 17:30
Poster Presenter: Thirumalesh Mochi Basavaraj, IN

5 **FZD5 Variants Contribute to Dysfunctional WNT Signalling and Pathogenesis of Microphthalmia and Coloboma** 17:30 - 17:30
Poster Presenter: Steven Eamegdool, AU

6	**Development of a Small Molecule Protocol for the Differentiation of Human Pluripotent Stem Cells (hPSCs) to Photoreceptor Precursor Cells** *Poster Presenter*: Davinia Beaver, AU	17:30 - 17:30
7	**Extending the Postmortem Viability of Human Donor Retinas for *ex vivo* Electroretinogram** *Poster Presenter*: Silke Becker, US	17:30 - 17:30
8	**Robust Small Molecule Differentiation of hESCs to RPE Cells in a 2D Feeder-Free System** *Poster Presenter*: Ioannis Limnios, AU	17:30 - 17:30
9	**Stress Resilience-enhancing Drugs Preserve Tissue Structure and Function in Degenerating Retina via Selective Phosphodiesterase Inhibition** *Poster Presenter*: Jennings Luu, US	17:30 - 17:30
10	**Blue Light-filtering Spectacle Lenses for Visual Performance, Sleep and Macular Health in Adults** *Poster Presenter*: Sumeer Singh, AU	17:30 - 17:30
11	**Algorithm Development for Angiogenesis Quantification in the Mouse Oxygen-induced Retinopathy Model** *Poster Presenter*: Maria Vähätupa, FI	17:30 - 17:30
12	**The Causal Impact of Metabolites in Age-related Macular Degeneration** *Poster Presenter*: Samaneh Farashi, AU	17:30 - 17:30
13	**Identification of a Mitochondrial Genetic Risk Factor for Macular Telangiectasia Type 2** *Poster Presenter*: Liam Scott, AU	17:30 - 17:30
14	**Disentangling the Bottleneck in the Sensory-motor Pathway in the Fly** *Poster Presenter*: Katja Sporar Klinge, AU	17:30 - 17:30
15	**Accurate Measurement of Adenosine and Dopamine Release in the Mammalian Eye** *Poster Presenter*: Phillip Liang, AU	17:30 - 17:30
16	**Tablet Technology Identifies Vision Loss in Mild-moderate Acute Stroke Patients** *Poster Presenter*: Chamini Wijesundera, AU	17:30 - 17:30
17	**Sterol Modulations Uncouple Light Activation of Phospholipase C from TRP/TRPL Gating** *Poster Presenter*: Rita Gutorov, IL	17:30 - 17:30
18	**Multifocal Electroretinography in People with Episodic Migraine** *Poster Presenter*: Bao Nguyen, AU	17:30 - 17:30
19	**Oestradiol and Oestrone Concentrations in Tear Fluid Compared to Serum in Women during the Follicular Phase** *Poster Presenter*: Blanka Golebiowski, AU	17:30 - 17:30
20	***Streptococcus pneumoniae* IgA1 Protease Is Not Required for Virulence in the Mouse Model of Keratitis**	17:30 - 17:30

	Poster Presenter: Mary Carr, US	
21	**Hyaluronan Prevents Age-related Meibomian Gland Dysfunction** *Poster Presenter*: Vivien Coulson- Thomas, US	17:30 - 17:30
22	**NLRP3 c.61G>C lowers NLRP3 inflammasome activation threshold in patients with Keratitis Fugax Hereditaria** *Poster Presenter*: Sabita Kawan, FI	17:30 - 17:30
23	**Characterization of CXCR4 Expressing Cells in Uninfected and Herpes Simplex Virus-1 Infected Corneas** *Poster Presenter*: Pratima Suvas, US	17:30 - 17:30
24	**Combined Stressors (UV-A Light and Estrogen) Induce Pro-FECD-like Characteristics in G2/M Arrested Cells** *Poster Presenter*: Mohit Parekh, US	17:30 - 17:30
25	**Comparison of Substance P Expression Pattern in Corneal Trigeminal Neurons after Ocular Surface Inflammation and Nerve Transection** *Poster Presenter*: Yong-Soo Byon, KR	17:30 - 17:30
26	**Tear film hTERT in dry eye disease** *Poster Presenter*: Sultan Alotaibi, AU	17:30 - 17:30
27	**Elevated Angiogenic Inflammation and Activation of TGF-b1, NFkB and IkBKB-pathways in *Slurp1X-/-* Corneas** *Poster Presenter*: Sudha Swamynathan, US	17:30 - 17:30
28	**Interaction between Plasminogen Activation System and Fibronectin in the Control of Alpha-smooth Muscle Actin Expression in Corneal Fibroblasts** *Poster Presenter*: Mai Yunoki, JP	17:30 - 17:30
29	**The New Therapeutic Strategy for Neurotrophic Keratopathy by Rho Kinase Inhibitor** *Poster Presenter*: Yukihisa Takada, JP	17:30 - 17:30
30	**Suppression of Cornea Development by *Tgfbr*1 Gene Deletion in Mouse** *Poster Presenter*: Shingo Yasuda, JP	17:30 - 17:30
31	**Surgical Mask Wearing Increases Blink Rate but Not Ocular Symptoms during Reading Tasks** *Poster Presenter*: Jiaying Chen, AU	17:30 - 17:30
32	**Oestradiol, Testosterone and Androstenedione Detected in Human Meibomian Gland Epithelial Cells Using Ultrasensitive UPLC-MS** *Poster Presenter*: Minh Anh Thu Phan, AU	17:30 - 17:30
33	**Role of Tenascin X in the Corneal Stromal Wound Healing Process in Mice** *Poster Presenter*: Takayoshi Sumioka, JP	17:30 - 17:30
34	**Corneal Parenchyma Sectioning and Ocular Fibroblast Culture in Lumican Null Mice Reduces αSMA mRNA Expression** *Poster Presenter*: Eimi Suzuki, JP	17:30 - 17:30

35	**Comparison of the Human Aqueous Humor and Tear Fluid Proteomes** *Poster Presenter*: Shruti Sharma, US	17:30 - 17:30
36	**In vitro Characterization of Immortalized Human Meibomian Gland Epithelial Cell Growth on Type I Collagen Gel** *Poster Presenter*: Suhyun Kweon, AU	17:30 - 17:30
37	**The GGLEAM Study: Examining Glaucoma Attributes in the Ohio Amish** *Poster Presenter*: Andrea R. Waksmunski, US	17:30 - 17:30
38	**VE-cadherin Expression Is Altered by Fibronectin in Schlemm's Canal Cells** *Poster Presenter*: Philip Mzyk, US	17:30 - 17:30
39	**FYN Regulates Aqueous Humor Outflow and IOP through the Phosphorylation of VE-cadherin** *Poster Presenter*: Krish Kizhatil, US	17:30 - 17:30
40	**Targeted Gene Editing of Tie2 (TEK) in Schlemm's Canal as a Mouse Model of Ocular Hypertension** *Poster Presenter*: Alejandra Bosco, US	17:30 - 17:30
41	**Long-term Intraocular Pressure Fluctuation and Epiretinal Membrane in Patients with Glaucoma or Glaucoma Suspect** *Poster Presenter*: Kyoung In Jung, KR	17:30 - 17:30
42	**Corrected Practical Recommendations for Measuring Rates of Visual Field Change in Glaucoma** *Poster Presenter*: Andrew Carkeet, AU	17:30 - 17:30
43	**Cytokines Associated with Onset of a Hypertensive Phase and Surgical Failure after Ahmed Glaucoma Valve Implantation** *Poster Presenter*: Chan Kee Park, KR	17:30 - 17:30
44	**Retinal Neurodegeneration in Intraocular Pressure Fluctuation Rat Model** *Poster Presenter*: Jeong-Sun Han, KR	17:30 - 17:30
45	**Ophthalmic Telehealth: Visual Field Testing** *Poster Presenter*: Algis Vingrys, AU	17:30 - 17:30
46	**Development of a Metabolic Chamber for Effluent Collection during Whole Eye Perfusions** *Poster Presenter*: Michael L. De Ieso, US	17:30 - 17:30
47	**Baicalein Lowers Intraocular Pressure by Interfering with Transforming Growth Factor Beta 1 (TGFb1)-induced Signaling Cascades in the Trabecular Meshwork** *Poster Presenter*: Chi-Wai Do, HK	17:30 - 17:30
48	**Pathogenesis of Chronic Glaucoma: A Two-stage Disease** *Poster Presenter*: Syed Hasnain, US	17:30 - 17:30
49	**Ophthalmic Telehealth: Long-term Monitoring of Glaucoma Patients** *Poster Presenter*: Selwyn Prea, AU	17:30 - 17:30

50	**Neuroprotection genes identified by scRNA-seq of regenerating RGCs** *Poster Presenter*: Yang Hu, US	17:30 - 17:30
51	**Nutrient Wide Association Study and Network Analysis to Identify Dietary and Nutritional Risk Factors for Diabetic Retinopathy** *Poster Presenter*: Jiahao Liu, AU	17:30 - 17:30
52	**Distinct and Overlapping Metabolites Associated with Visual Impairment and Cognitive Impairment** *Poster Presenter*: Wenyi Hu, AU	17:30 - 17:30
53	**One-year Myopia Incidence in School-age Children during COVID-19: Zhuozhou Childhood Eye Health Survey** *Poster Presenter*: Mayinuer Yusufu, AU	17:30 - 17:30
54	**Patterns and Determinants of Incident Cataract Surgery Uptake in China from 2011 to 2015 Using a Nationally-representative Longitudinal Database** *Poster Presenter*: Catherine Jan, AU	17:30 - 17:30
55	**Comparison of microRNA Expression in Glucocorticoid Induced Cataract with Senile Posterior Subcapsular Cataract and Normal Subjects** *Poster Presenter*: Yu Jeong Kim, KR	17:30 - 17:30
56	**Analysis of Refractive Changes after Cataract Surgery according to the Haptic Shape of Intraocular Lenses** *Poster Presenter*: Sangkyung Choi, KR	17:30 - 17:30
58	**αA-Crystallin Modulates cGAS/STING Pathway to Regulate the Immune Microenvironment of the Ocular Lens** *Poster Presenter*: Shuyu Zheng, CN	17:30 - 17:30
59	**Using Visual Search to Identify Visual Field Loss** *Poster Presenter*: Rekha Srinivasan, AU	17:30 - 17:30
60	**Feasibility and Clinical Utility of Hand-held Optical Coherence Tomography in Children with Retinoblastoma** *Poster Presenter*: Zhanhan Tu, GB	17:30 - 17:30
61	**Systemic Hypertension Influences Peripapillary RNFL Thickness in Diabetic Patients Without Diabetic Retinopathy** *Poster Presenter*: Leopold Schmetterer, SG	17:30 - 17:30
62	**Short Term Effect of Defocus Incorporated Multiple Segments (DIMS) Lens on Choroidal Thickness of Children** *Poster Presenter*: Rachel Ka Man Chun, HK	17:30 - 17:30
63	**Examining the Reliability and Clinical Relevance of Hyperreflective Outer Retinal Band Integrity Measurements on OCT** *Poster Presenter*: Rene Cheung, AU	17:30 - 17:30
64	**Assessment of Anterior Lens Surface Shape: IOLMaster 700 and Phakometry** *Poster Presenter*: Asik Pradhan, AU	17:30 - 17:30

65	**Hyperreflective Foci in a Rat Model of Choroidal Neovascularization** *Poster Presenter*: Teresa Mammone, AU	17:30 - 17:30
66	**TRAK1-mediated Mitochondrial Dynamics Is Important for RPE Phagocytosis** *Poster Presenter*: Nan Hultgren, US	17:30 - 17:30
67	**Hydrogel Platform for Modeling Retinal Pigment Epithelium Interaction with Neural Retina** *Poster Presenter*: Sanna Korpela, FI	17:30 - 17:30
68	**Exploring the Dynamics of Dry AMD through Clinical and Histological Characterization of the Aging RPE** *Poster Presenter*: Ysé Borella, FR	17:30 - 17:30
70	**Impaired Polyunsaturated Fatty Acid (PUFA) Synthesis Disrupts RPE Phagocytosis** *Poster Presenter*: Emily Tom, US	17:30 - 17:30
71	**A Pig Model of Post-traumatic Maculopathy: Functional and Morphologic Evaluation** *Poster Presenter*: Juan Amaral, US	17:30 - 17:30
72	**Vesicant-induced Retinal Damage in Mice Exposed to Arsenicals** *Poster Presenter*: Marina Gorbatyuk, US	17:30 - 17:30
73	**Natural History and Disease Modelling in PROM1 Inherited Retinal Dystrophy** *Poster Presenter*: William Yates, AU	17:30 - 17:30
74	**Microfluidic Cell Processing for Autologous Photoreceptor Replacement Therapies** *Poster Presenter*: Nicholas Stone, US	17:30 - 17:30
75	**BLamD in the OCT Era – Revisiting the Sarks Histopathological Grading System for AMD** *Poster Presenter*: Mitchell Lee, AU	17:30 - 17:30
76	**Towards a Population Pharmacokinetic/Pharmacodynamic Model of Anti-VEGF Therapy in Patients with Age-related Macular Degeneration** *Poster Presenter*: Eva Maria del Amo, FI	17:30 - 17:30
77	**Abnormal Activation of Rab Proteins Leads to Endosomal Expansion and Junctional Defects in the Retinal Pigment Epithelium** *Poster Presenter*: Sydney Williams, US	17:30 - 17:30
78	**Inhibiting Contractility in an *in vitro* Model of Proliferative Vitreoretinopathy** *Poster Presenter*: Rachael Elaine Warrington, US	17:30 - 17:30
79	**Targeting Intercellular Adhesion Molecule–1 (ICAM-1)–mediated Effects in the Management of Diabetic Retinopathy** *Poster Presenter*: Tanuja Vaidya, IN	17:30 - 17:30
80	**Glucose Protects Cultured Retinal Cells from Oxidative**	17:30 - 17:30

	Injury via Pentose Phosphate Pathway and Maintenance of Reduced Glutathione *Poster Presenter*: John Wood, AU	
81	**Orally Delivered Connexin43 Hemichannel Blocker Prevents Vascular Breakdown and Inflammasome Activation in a Mouse Model of Diabetic Retinopathy** *Poster Presenter*: Odunayo Mugisho, NZ	17:30 - 17:30
82	**Preserving Post-ischaemic Retinal Function and Structure with the Novel Nitroxide Antioxidant, DCTEIO** *Poster Presenter*: Nigel Barnett, AU	17:30 - 17:30
83	**Seeing Is Believing: PI3K/Akt/AMPK Pathway Activation May Attenuate Vision Loss in Inherited Retinal Diseases** *Poster Presenter*: Alicia Brunet, AU	17:30 - 17:30
95	**Intraocular Cytokine Changes in Patients with Polypoidal Choroidal Vasculopathy Treated with Ranibizumab** *Poster Presenter*: Iksoo Byon, KR	17:30 - 17:30

Others

19:30 - 21:30 Others

WISER Dinner

Tuesday, 21. February 2023

Others
07:00 - 08:00 Others

BrightFocus Breakfast (by invitation only)

Cornea and Ocular Surface
08:00 - 10:00 Opening & Session 1

Nerves: from passive sensory perception to master inflammatory regulators in the ocular surface

Session Motto: Calor, rubor, tumor, dolor: e pluribus unum

Chair: Giulio Ferrari, IT
Chair: Juana Gallar, ES

Sensing the ocular surface in health and disease: from peripheral nerve endings to the brain cortex 08:00 - 08:24
Speaker: Juana Gallar, ES

Two-faced effects of corneal nerves in ocular surface diseases 08:24 - 08:48
Speaker: Giulio Ferrari, IT

Th1 Skewing of the Ocular Surface Immune Response Favors Corneal Nerve Damage 08:48 - 09:12
Speaker: Jeremias Galletti, AR

Neuropeptide mediated modulation of corneal HSV-1 infection 09:12 - 09:36
Speaker: Susmit Suvas, US

Role of corneal nerves in ocular surface immunoregulation 09:36 - 09:48
Speaker: Shyam Sunder Tummanapalli, AU

Corneal Trigeminal and Retinal Light Reflexes 09:48 - 10:00
Oral Presenter: Anna Matynia, US

Retinal Cell Biology
08:00 - 10:00 Session 2

Animal Models for Retinal Regeneration

Session Motto: Endogenous Cell Sources for retina repair and regeneration

Chair: Katia Del Rio-Tsonis, US

Converting RPE-derived Scarring to Retinal Regeneration 08:00 - 08:24

Interplay between Retinal Regeneration and Inflammation 08:24 - 08:48
Speaker: Muriel Perron, FR

Unraveling Chick Retinal Pigment Epithelium Plasticity 08:48 - 09:12
Speaker: Jared Tangeman, US

Nanoparticle-enabled targeting of microglia enhances the pro-regenerative effects of immunosuppression in the zebrafish retina 09:12 - 09:36
Speaker: Jeff Mumm, US

Retinitis Pigmentosa Caused by Mutations in the *FAM161A* Gene: Steps on the Path to Gene Augmentation 09:36 - 09:48

Therapy

Oral Presenter: Eyal Banin, IL

Rhesus Macaques with Drusen Share Susceptibility Genes with Humans with Age-related Macular Degeneration 09:48 - 10:00

Oral Presenter: Glenn Yiu, US

Visual Neuroscience
08:00 - 10:00 Session 3

Amacrine cell signaling in the inner retina

Session Motto: Understanding how amacrine cells contribute to visual signal processing in the mammalian retina

Chair: Jeffrey Diamond, US
Chair: Morven Cameron, AU

Visual conditions influence AII amacrine cell receptive field properties 08:00 - 08:24

Speaker: Jeffrey Diamond, US

Dendritic Mechanisms of Direction Selectivity in Starburst Amacrine Cells 08:24 - 08:48

Speaker: Wei Wei, US

Signal Processing by Amacrine Cell Dendrites 08:48 - 09:12

Speaker: Z. Jimmy Zhou, US

Photoreceptor drivers of dopamine release in the mammalian retina 09:12 - 09:36

Speaker: Morven Cameron, AU

General discussion 09:36 - 10:00

RPE-Choroid
08:00 - 10:00 Session 4

RPE /Choriocapillaris interactions: Biology and disease pathogenesis

Session Motto:

Chair: Amani Fawzi, US
Chair: Fumi Gomi, JP

Characterisation of Fibrosis Inducers and In Vivo Imaging of Active Fibrosis Using Collagen-Hybridizing Peptides (CHPs) During Choroidal Neovascularisation (CNV) 08:00 - 08:24

Speaker: Peter Westenskow, CH

Lipid Metabolism of Retinal Pigment Epithelium and Biogenesis of a Variety of Drusen 08:24 - 08:48

Speaker: Tsutomu Yasukawa, JP

Interaction between RPE and choriocapillaris in a pachychoroid~ a long-term observational study of central serous chorioretinopathy 08:48 - 09:12

Speaker: Fumi Gomi, JP

Deglycosylation Increases the Aggregation and Angiogenic Properties of Mutant Tissue Inhibitor of Metalloproteinase 3 Protein: Implications for Sorsby Fundus Dystrophy 09:12 - 09:36

Oral Presenter: Bela Anand-Apte, US

Lens
08:00 - 10:00 Session 5

Eye evolution

Session Motto: Evolving eyes: Fundamental insights into ocular form and function

Chair: Tiffany Cook, US
Chair: Kristen Koenig, US

A New View on Vision 08:00 - 08:24
Speaker: Dan-Eric Nilsson, SE

Homeotic hotspot in the hominid genome with eye and brain phenotypes 08:24 - 08:48
Speaker: Tom Glaser, US

Building Complexity: Early Neurogenesis in the Cephalopod Retina 08:48 - 09:12
Speaker: Kristen Koenig, US

Circadian Regulators Protect the Aging Eye Against Retinal Degeneration 09:12 - 09:36
Speaker: Vikki Weake, US

Fibroblast Growth Factor differentially regulates Rho/Rac activity to drive fiber cell elongation in the mammalian lens 09:36 - 10:00
Speaker: Yuki Sugiyama, JP

Ophthalmic Genetics/Genomics
08:00 - 10:00 Session 6

Non-coding RNA and Function in Eye Disease

Session Motto: Non-coding RNAs – to regulate or not Gene expression can be regulated in a number of ways and non coding RNAs (ncRNAs) play a key role in this process. There are several types of ncRNAs but establishing which of these are the most important is complicated by their relative abundance, size and number in the genome. This session will explore the role of ncRNAs in retinal disease and highlight advances in this rapidly changing field with the aim of not only better understanding the role played by ncRNAs on gene function but also their impact on disease causation/aetiology as well as providing a potential route for therapeutic intervention.

Chair: Paul Baird, AU
Chair: Manuela Bartoli, US

Overview and function of non-coding RNAs 08:00 - 08:24

Long non coding RNAs in RPE: New Players in Differentiation and Inflammation 08:24 - 08:48
Speaker: T. Michael Redmond, US

MIcroRNA and ischemic retinopathies: beyond gene expression 08:48 - 09:12
Speaker: Manuela Bartoli, US

MicroRNAs in Diabetic Retinopathy and Other Retinal Diseases: 11 Years On 09:12 - 09:36
Speaker: Kátia Gonçalves dos Santos, BR

First Report of RNA Editing in Human Retina – A Process Central to Photoreceptor Health and a Risk Factor for Both AMD and Rarer Macular Degeneration 09:36 - 10:00
Oral Presenter: Brendan Ansell, AU

Glaucoma
08:00 - 10:00 Session 7

Mitochondria and Glaucoma

Session Motto: Current research suggests that a vulnerability to mitochondrial abnormalities exists in glaucoma patients; both systemically and locally with in the retina/optic nerve. This session will explore emerging concepts on mitochondrial biology and glaucoma with data from animal and cell models, and human patient cohorts and clinical trials.

Chair: Pete Williams, SE
Chair: Jonathan Crowston, SG

Ageing lifestyle and neurorecovery 08:00 - 08:24
Speaker: Jonathan Crowston, SG

Large Scale Transcriptomic Analysis of iPSC-dervied Retinal Ganglion Cells for the Study of POAG 08:24 - 08:48
Speaker: Alice Pebay, AU

Functional improvement with nicotinamide in glaucoma 08:48 - 09:12
Speaker: Flora Hui, AU

The Transfer of Exogenous, Intact Mitochondria into Oxidatively Stressed Retinal Ganglion Cells Helps Improve their Function 09:12 - 09:36
Oral Presenter: Vrathasha Vrathasha, US

Ocular Imaging & Psychophysics
08:00 - 10:00 Session 8

Applications and Advances in Adaptive Optics Imaging

Session Motto: AO: Relentlessly advancing

Chair: Andrew Metha, AU
Chair: Ethan Rossi, US

Measuring the shape of red blood cells in capillaries of the human retina 08:00 - 08:24
Speaker: Phillip Bedggood, AU

Disruption of the RPE mosaic revealed using AO 08:24 - 08:48
Speaker: Johnny Tam, US

AOSLO contrast and the distribution of scattered light in the focal plane 08:48 - 09:12
Speaker: Jeremy Rogers, US

Imaging inflammation in the living human eye with adaptive optics scanning light ophthalmoscopy 09:12 - 09:36
Speaker: Ethan Rossi, US

Use of a Model Eye Phantom to Facilitate Adaptive Optics Scanning Light Ophthalmoscopy (AOSLO) Imaging in a Multi-center Clinical Trial 09:36 - 09:48
Oral Presenter: Joseph Kreis, US

Cross-Discipline
08:00 - 10:00 Session 9

Sensing, mechanistic and functional roles of TRP channels in ocular tissues

Session Motto: As many as thirty TRP channels have so far been identified with wide distribution and conservation in most organisms, tissues, and cell-types. Being polymodal, TRP channels are activated and regulated by a multiple of stimuli that includes chemical ligands (endogenous and exogenous), heat, cold, mechanical stress, osmotic pressure, vibration, pH, electrical stimuli. TRPs are cation channels, which via their differential permeability to Ca2+, can influence numerous downstream signaling pathways that in turn regulate cellular functions that are as diverse as ion transport and homeostasis, fluid secretion, inflammation, pressure & thermoregulation, vision, taste, sense, and smell. TRP channels have been shown to express in different tissues of the eye and have been functionally linked to lens ion transports and homeostasis, aqueous humor secretion and outflow, and the functions of the retina, cornea and conjunctiva, as well as involvement in eye development and ocular inflammation. Thus, malfunction, mutations, over/under expression of TRPs would be expected to play roles in the major eye diseases, such as cataract, glaucoma, dry eye syndrome, diabetic retinopathy, retinoblastoma and uveal melanoma. Based on these emerging body of work on TRP channels on the eye, our motto is to capture the essence of the current state of knowledge on the sensing, mechanistic and functional roles of TRP channels in ocular tissues.

Chair: Mohammad Shahidullah, US
Chair: Chi-Wai Do, HK

Roles of trigeminal nerve TRPV4 in limbal stem cell maintenance 08:00 - 08:24
Speaker: Shizuya Saika, JP

Nociception and Pain in Humans Lacking Functional TRPV1 08:24 - 08:48
Speaker: Baruch Minke, IL

Role of TRPV4 and TRPV1 in Lens Ion Transport. 08:48 - 09:12
Speaker: Mohammad Shahidullah, US

TRPV1 and TRPV4 Channel-mediated Dual Feedback Regulation of Water Transport Maintains the Optical Power of the Bovine Lens 09:12 - 09:36
Speaker: Yadi Chen, NZ

The Role of TRPA1 in Planarian Photoreception 09:36 - 10:00
Speaker: Samantha Hack, US

Ocular Pharmacology, Therapeutics & Drug Delivery
08:00 - 10:00 Session 10

Leveraging Innovations for Drug Discovery and Development, Device Development and Drug Delivery in Ophthalmology

Session Motto:

Chair: Barbara Wirostko, US

Towards Ultrasound-activated Perfluorocarbon Nanodroplets for Treatment of Primary Open Angle Glaucoma 08:00 - 08:24
Speaker: Ronald Silverman, US

Unique drug-polymer conjugate technology platform to enable drug delivery in ophthalmology 08:24 - 08:48
Speaker: Vanessa Waddell, AU

SABER® Depot: A Biodegradable Platform for Long-Acting Injectables with Applications for Ocular Delivery 08:48 - 09:12
Speaker: Jim Matriano, US

Epidemiology of Eye Disease & Global Eye Health
08:00 - 10:00 Session 11

Considerations and Approaches to Recruiting Underserved and Special Populations in International Glaucoma Research

Session Motto: In this session, we will discuss the opportunities and challenges of recruiting study participants from special, marginalized populations and strategies to consider for successful research participation. We will discuss recruitment to glaucoma studies in community and clinical settings, highlighting work in Jamaica, Nigeria, and in Urban settings in the United States. Session presenters conduct multidisciplinary, translational research aiming to identify and integrate genetic, socioeconomic, and clinical determinants related to POAG. Presenters will convey the importance of participant-engaged glaucoma research through their own experiences. Each presentation will address the challenges faced in the recruitment of a specific special population and the strategies applied to overcome these challenges. In and around Cleveland, Ohio, we have prioritized the application of community-participatory strategies to engage with special populations that allows for our studies to be informed and conducted through a culturally relevant and health equity lenses from recruitment to translation/dissemination. Our studies also seek to assess perceptions, barriers and values around vision care and how those factors play a role in patient and population-level glaucoma/POAG risk. In Kingston, Jamaica, we are establishing a comprehensive study of glaucoma to 1) assess the feasibility of an epidemiologic study that would transform ophthalmology care, 2) understand influencers and barriers to obtaining vision care, and 3) use learned knowledge to inform best practice for clinical settings, patient education and policy awareness. Through collaboration with the University of Ibadan in Nigeria, we seek to expand the representation of African genetic and phenotypic data in genetic discovery studies and develop polygenic risk scores to classify those at highest risk of POAG. These efforts will allow for better understanding of the burden of glaucoma among people of African descent.

Chair: Jessica Cooke Bailey, US
Chair: Mike Hauser, US

Promoting Diversity in Glaucoma Research: Community, Clinic, Collaboration in Cleveland 08:00 - 08:24
Speaker: Jessica Cooke Bailey, US

Insight and observations to establishing the Jamaica eye study 08:24 - 08:48
Speaker: Camara Brown, JM

Genetics of Glaucoma in African Descent Populations 08:48 - 09:12
Speaker: Mike Hauser, US

The Eyes of Africa study: Uniqueness of methodology and clinical presentation of glaucoma in Africa 09:12 - 09:36
Speaker: Olusola Olawoye, NG

Presence and Severity of Migraine Is Associated with Development of Primary Open Angle Glaucoma: A Population-based Longitudinal Cohort Study 09:36 - 10:00
Oral Presenter: Younhea Jung, KR

Ocular Immunology
08:00 - 10:00 Session

Uveitis in the Clinical setting: Clinical Challenges in the age of genomic sequencing, multimodal imaging and biologics

Session Motto: Recent exciting developments in the management of ocular inflammatory disease include next generation genomic sequencing, multimodal imaging, biologic disease modifying agents and more. But how do these impact the clinical management of the patient sitting in front of us? Tune in to find out.

Chair: Lyndell Lim, AU
Chair: Rupesh Agrawal, SG

Diagnosing PVRL: What happens when the cytology of a 08:00 - 08:24

good vitreal sample is still negative - what else is there?
Speaker: Roderick O'Day, AU

Deep genome sequencing in suspected infectious uveitis – holy grail or false promises? 08:24 - 08:48
Speaker: Thuy Doan, US

So my patient with persistent, sight threatening, non infectious uveitis needs a steroid sparing agent…which one should I use first? 08:48 - 09:12
Speaker: Lyndell Lim, AU

My patient with uveitis has a positive IGRA – do I treat for TB, or not? 09:12 - 09:36

Monocyte Chemoattractant Protein 1 (MCP-1) Elevation in Uveitis and Glaucoma: Is the Inciting Factor Inflammation or Intraocular Pressure? 09:36 - 10:00
Oral Presenter: Meihui Wu, SG

Retinal Degeneration
08:00 - 10:00

Genomics and functional genomics: Informing IRD genetics and therapies

Session Motto: Integration of genomics and functional genomics facilitates novel therapy development and investigation in the IRDs.

Chair: Robyn Jamieson, AU
Chair: Elfride De Baere, BE

Genomic Landscape Integration With Functional and Therapy Studies in the IRDs 08:00 - 08:24
Speaker: Robyn Jamieson, AU

Molecular genetics, disease prevalence and hereditary dynamics of IRDs through bioinformatics and population-scale genomics 08:24 - 08:48
Speaker: Carlo Rivolta, CH

Multi-omics Profiling, *in vitro* and *in vivo* Approaches to Interpret Non-coding Variation in Inherited Retinal Diseases 08:48 - 09:12
Speaker: Elfride De Baere, BE

Insights into retinal biology from and gene therapy for *NMNAT1*-associated retinal degeneration 09:12 - 09:36
Speaker: Eric Pierce, US

Integrating genetics, functional genomics and systems biology to shed light on retinal diseases 09:36 - 10:00
Speaker: Ayellet Segre, US

Exhibition
09:00 - 17:00 Others

Exhibition

Coffee Break
10:00 - 10:30 Others

Coffee Break

Ceremony
10:30 - 12:00 Opening & Session 1

Prize Ceremony and Lecture

Introduction 10:30 - 10:40
Speaker: Olaf Strauß, DE
Speaker: Claire Mitchell, US

Laudatio 10:40 - 10:50
Speaker: Goldis Malek, US

Lecture by Award Winner 10:50 - 11:35
Speaker: Rajendra Apte, US

Others
12:00 - 13:00 Session 8

ISER General Business Meeting (members only)

Cornea and Ocular Surface
13:00 - 15:00 Opening & Session 1

Ocular Drug and Gene Delivery

Session Motto: Future and challenges of ocular therapeutics

Chair: Alex Hui, AU
Chair: Furqan Maulvi, IN

Ocular Pharmacokinetics and Drug Delivery: Challenges and Solutions 13:00 - 13:24
Speaker: Bhavin Vyas, IN

Drug-eluting Contact Lenses: Advances and Future Challenges 13:24 - 13:48
Speaker: Furqan Maulvi, IN

Delivery of RNA to the human retina with the help of lipid nanoparticles 13:48 - 14:12
Speaker: Shaoxue Zeng, AU

Commercialized Ocular Drug Delivery Devices 14:12 - 14:36
Speaker: Alex Hui, AU

Topical Decorin Reduces Corneal Inflammation and Imparts Neuroprotection in a Mouse Model of Benzalkonium Chloride (BAK)-induced Corneal Neuropathy 14:36 - 15:00
Oral Presenter: Mengliang Wu, AU

Retinal Cell Biology
13:00 - 15:00 Session 2

Focus on cilia

Session Motto: Focus on cilia will bring together studies of proteins involved in cilia formation and maintenance that are affected by a broad range of genetic disorders, collectively known as ciliopathies.

Chair: Dusanka Deretic, US
Chair: Ted Wensel, US

Well-ordered interaction networks of small GTPases in rhodopsin trafficking to primary cilia 13:00 - 13:24
Speaker: Dusanka Deretic, US

Nanoscale Imaging of Cilium-associated Structures in Rods 13:24 - 13:48
Speaker: Theodore Wensel, US

Cytoskeletal regulatory elements critical for photoreceptor outer segment formation, maintenance, and mitochondrial localization 13:48 - 14:12
Speaker: Alecia Gross, US

Is rhodopsin really needed for disk morphogenesis 14:12 - 14:36
Speaker: David S. Williams, US

Novel approaches to study protein renewal in photoreceptor cells 14:36 - 15:00
Speaker: Yoshikazu Imanishi, US

Visual Neuroscience
13:00 - 15:00 Session 3

Retinal ganglion cells: Development, signaling and pathways

Session Motto: Cell-type and computational diversity

Chair: Greg D. Field, US
Chair: Olivier Marre, FR

A2 amacrine cell mediated signaling pathways in healthy and diseased mammalian retinas 13:00 - 13:24
Speaker: Sam M. Wu, US

Diversity of Retinal Ganglion Cell Populations in Humans and Non-human Primates 13:24 - 13:48
Speaker: Ulrike Grünert, AU

Concerted signaling by populations of retinal ganglion cells 13:48 - 14:12
Speaker: Greg D. Field, US

Context-dependent selectivity to natural images in the retina 14:12 - 14:36
Speaker: Olivier Marre, FR

Survey of Displaced Amacrine Cells in Human and Non-human Primate Retinas 14:36 - 15:00
Oral Presenter: Alyssa Kristina Baldicano, AU

RPE-Choroid
13:00 - 15:00 Session 4

Intracellular Communication

Session Motto: The intracellular communication session covers key areas of research addressing the coordination of fundamental biological processes in choroidal and retinal pigment epithelial cells. The session focuses on the role of inter-organellar communication in regulating complex metabolic, transport and signalling pathways as well as mechanistic insight gained from disease models.

Chair: Emily Eden, GB
Chair: Luminita Paraoan, GB

Loss of interorganelle communication in RPE models of lysosomal storage disease 13:00 - 13:24
Speaker: Emily Eden, GB

Mitochondria communication and positioning in the RPE 13:24 - 13:48
Speaker: Tom Burgoyne, GB

Modulation of apoptosis in choroidal melanoma involves communication through ER-plasma membrane contacts 13:48 - 14:12
Speaker: Luminita Paraoan, GB

MiR-211/Ezrin network regulates autophagy in the RPE by targeting AKT/TSC/mTOR signaling pathway 14:12 - 14:36
Speaker: Ivan Conte, IT

RPE complexity: how mutations of ubiquitous proteins lead to tissue-specific defects. 14:36 - 15:00
Speaker: Emeline F. Nandrot, FR

Lens
13:00 - 15:00 Session 5

Eye and Lens Development

Session Motto: Molecular mechanism of lens and eye development

Chair: Xin Zhang, US
Chair: Ichiro Masai, JP

The Lens-derived Wnt Coordinates Growth of Ocular Compartments 13:00 - 13:24
Speaker: Xin Zhang, US

Fgf3 and Fgf8a differentially regulate lens vesicle formation and lens fiber differentiation in zebrafish 13:24 - 13:48
Speaker: Ichiro Masai, JP

Role of S100A4, a calcium and myosin II binding protein in lens fiber cell fate determination and suppression of non-lineage gene expression in the ocular lens 13:48 - 14:12
Speaker: Vasanth Rao, US

Genetic causes of congenital cataracts: major factors and novel mechanisms 14:12 - 14:36
Speaker: Elena Semina, US

Expression and Subcellular Localization of the Aquaglyceroporin AQP3 during Lens Development and Growth 14:36 - 15:00
Oral Presenter: Rosica S Petrova, NZ

Ophthalmic Genetics/Genomics
13:00 - 15:00 Session 6

Retinal MicroRNA from Development to Disease

Session Motto: The smaller the better. Come and learn about the fascinating world of non-coding RNA, with a focus on miRNA in this exciting session stretching the whole lifespan from development to death.

Chair: Riccardo Natoli, AU
Chair: Stefanie Wohl, US

A Perfect Circle: Extracellular Vesicles and miRNA in Retinal Degenerations 13:00 - 13:24
Speaker: Riccardo Natoli, AU

The role of microRNAs in Müller glia development, function and reprogramming 13:24 - 13:48
Speaker: Stefanie Wohl, US

The miR-211 for the prevention and treatment of AMD 13:48 - 14:12
Speaker: Giuliana Giamundo, IT

Mitochondrial miRNA 494-3p in Extracellular Vesicles Is a Potential New Molecular Target for Diagnosis and Treatment of Age-related Macular Degeneration 14:12 - 14:36
Oral Presenter: Yohei Otsuki, JP

Degenerating photoreceptors signal their distress by miRNA exchange: Devising a novel gene therapy by decoding the signal. 14:36 - 15:00
Speaker: Adrian Cioanca, AU

Glaucoma
13:00 - 15:00 Session 7

A Tissue is More Than Its Cells: Neuroprotective Signaling in the Inner Retina and Optic Nerve

Session Motto: A Tissue Is More Than It's Cells: Neuroprotective Signaling in the Inner Retina and Optic Nerve

Chair: Jeremy Sivak, CA
Chair: Nicholas Marsh-Armstrong, US

The myeloid cell response to optic nerve injuries 13:00 - 13:24
Speaker: Nicholas Marsh-Armstrong, US

Enhancing Mitochondrial Axonal Transport Restores Energetic Balance and Rescues Retinal Ganglion Cell Function in Glaucoma 13:24 - 13:48
Speaker: Adriana Di Polo, CA

***APOE4* AMELIORATES MICROGLIAL CYTOTOXICITY AND NEURODEGENERATION IN GLAUCOMA** 13:48 - 14:12
Speaker: Milica Margeta, US

Targeting Retinoid X Receptor in Retinal Ganglion Cells for Neuroprotection in Glaucoma 14:12 - 14:36
Oral Presenter: Nitin Chitranshi, AU

An Induced Signaling Mechanism To Alter the Translational Landscape in RGC Degeneration 14:36 - 15:00
Speaker: Jeremy Sivak, CA

Ocular Imaging & Psychophysics
13:00 - 15:00 Session 8

Functional Retinal Imaging and Psychophysics I

Session Motto:

Chair: Wolf Harmening, DE
Chair: Ramkumar Sabesan, US

Probing fast and slow photoreceptors response in humans and mice with Spatio-Temporal Optical Coherence Tomography-based optoretinography 13:00 - 13:24
Speaker: Andrea Curatolo, PL

Linking structure and function in the human retina with adaptive optics: color perception and the cone mosaic. 13:24 - 13:48
Speaker: William Tuten, US

Human photoreceptor optoretinography: methods and mechanisms 13:48 - 14:12
Speaker: Ravi Jonnal, US

Adaptive Optics based visual simulators: understanding the limits of human vision 14:12 - 14:36
Speaker: María Vinas-Pena, US

Developing Optoretinography as a Biomarker of Photoreceptor Function 14:36 - 14:48
Speaker: Raymond Warner, US

Assessing Foveal Circuitry in Individuals with Altered Foveal Morphology 14:48 - 15:00
Oral Presenter: Mina Gaffney, US

Cross-Discipline
13:00 - 15:00 Session 9

Circadian Rhythms and Ocular Health

Session Motto: Clock are important for retinal health

Chair: Gianluca Tosini, US
Chair: Ethan Buhr, US

The Effects of Circadian Disruption on the Retinal Pigment Epithelium 13:00 - 13:24
Speaker: Christopher Devera, US

Role of Bmal1 and Melatonin in the Modulation of Retina Cells Viability 13:24 - 13:48
Speaker: Gianluca Tosini, US

The impact of misalignment with the external light cycle on diabetic retinopathy 13:48 - 14:12
Speaker: Eleni Beli, GB

Circadian Control and Ocular Health: A Cross-Species Approach 14:12 - 14:36
Speaker: Tiffany Cook, US

Cone mediated activity upstream of the ipRGCs are sufficient to entrain the circadian system in humans 14:36 - 15:00
Speaker: James Kuchenbecker, US

Ocular Pharmacology, Therapeutics & Drug Delivery
13:00 - 15:00 Session 10

Glaucoma Therapeutics, beyond medications

Session Motto: There's more to therapy than just medications

Chair: Arsham Sheybani, US
Chair: Manjool Shah, US

Nanofiber-based Glaucoma Drainage Implant Improves Outcomes in a Preclinical Rabbit Surgery Model 13:00 - 13:24
Speaker: Ian Pitha, US

From bedside to bench...Uncovering the story of intraocular oxygen: Insights into racial disparities and post-vitrectomy glaucoma 13:24 - 13:48
Speaker: Carla Siegfried, US

GDF15 and the relation to IOP fluctuations in post-surgical glaucoma patients 13:48 - 14:12

Speaker: Arsham Sheybani, US

Development of the Forge, a New Glaucoma Drainage Device 14:12 - 14:36

Oral Presenter: Carol Toris, US

Rationale and Applications of FAS-inhibition for the Treatment of Open-Angle Glaucoma 14:36 - 15:00

Speaker: Manjool Shah, US

Epidemiology of Eye Disease & Global Eye Health
13:00 - 15:00 Session 11

International Research Collaboration for Eye Diseases: Lessons Learned from COVID-19 and Future Strategies

Session Motto: The unprecedented global pandemic, Covid-19 caused the most debilitating and deadly disease pandemic in the modern human history that the world was not prepared to deal with at any time. It disrupted not only individual laboratory research in most countries but has substantially affected international research collaborations during the pandemic. The involvement of eyes in the pandemic has made it essential that the researchers and service providers have the right information based on the highest quality of research and strategies. Additional morbidity and mortality are being caused by fungal infections where irreversible blindness is leading to additional devastation, In order to deal with the current pandemic and more importantly develop any reasonable plans for the future pandemics or similar situations, the scientific research community, health service providers, NGOs, ICO and other stakeholders around the world have very important and combined roles to play in developing plans for supporting high quality research programs, dissemination of the right information to all eye care professionals, and support operations for the eye research and health care delivery teams around the world, The proposed ISER session is a joint effort of the leaders from the US National Eye Institute (NEI) and International Council of Ophthalmology (ICO) will focus on inviting new ideas from key professionals from various sectors interested in international research collaboration on eye diseases, on a global platform at ISER-2023 for discussion to learn from each other and develop proactive strategies for continuation of high quality research programs.

Chair: Gyan John Prakash, US
Chair: Robert Hufnagel, US

International Research Collaboration for Eye Diseases: Lessons Learned from COVID-19 and Future Strategies 13:00 - 13:24

Speaker: Gyan John Prakash, US

Sensitive Extraction-free SARS-CoV-2 RNA Virus Detection Using a Chelating Resin 13:24 - 13:48

Speaker: Robert Hufnagel, US

International Research Collaboration for Eye Diseases: Lessons Learned from Covid-19 and Future Strategies 13:48 - 14:12

Retinal Cell Biology
13:00 - 15:00 Session

Mitochondria in retinal degeneration

Session Motto: Mitochondria have become a central point of focus in retinal function and degeneration. We will cover mitochondrial structure and function in different cell types of the retina and consider dysfunction in the context of secondary mitochondrial disease (i.e., caused by age, environment or genetic variants in genes other than mitochondrial). Soundbites: Mitochondria: the retina’s Achilles’ heel Mitochondria at the nexus of Retinal Degeneration Treating sick mitochondria to cure AMD

Chair: Bärbel Rohrer, US

Cone Photoreceptor Mitochondria - Light and Energy 13:00 - 13:24
Speaker: Wei Li, US

Mitochondria-targeting drugs to rescue damaged retinal cells 13:24 - 13:48
Speaker: Deborah Ferrington, US

Oxidative stress and anaphylatoxin receptor activation control mitochondrial calcium uptake, ATP production and fission-fusion status in RPE cells 13:48 - 14:12
Speaker: Bärbel Rohrer, US

Correction of Diabetic Retinopathy by Mitochondrial Transfer 14:12 - 14:36
Oral Presenter: Denis A. Proshlyakov, US

Damaged Cone Mitochondria are Transferred to Muller Glia 14:36 - 15:00
Oral Presenter: Susan Brockerhoff, US

Retinal Degeneration
13:00 - 15:00

The future of AAV gene therapy: Beyond inherited retinal degenerations (iRDs)

Session Motto: The good, the bad and the complicated in ocular gene therapy.

Chair: Catherine Bowes Rickman, US

scAAVengr, a transcriptome-based pipeline for engineering AAVs with single-cell resolution 13:00 - 13:24
Speaker: Leah Byrne, US

Augmenting complement factor H by gene therapy in a model of dry AMD 13:24 - 13:48
Speaker: Catherine Bowes Rickman, US

Perspectives on ocular gene therapy: innovations, opportunities, and clinical challenges 13:48 - 14:12
Speaker: Jacek Krol, CH

The future of AAV gene therapy: Beyond inherited retinal degenerations (iRDs) 14:12 - 14:36
Speaker: Mark Pennesi, US

Coffee Break
15:00 - 15:30 Others

Coffee Break / Meet the Experts

Cornea and Ocular Surface
15:30 - 17:30 Opening & Session 1

Contact Lenses (incl. antimyopia)

Session Motto: This session explores new findings in a broad variety of topics, including myopia management, microbial keratitis in kids and ocular drug delivery. Hope to see you there!

Chair: Lyndon Jones, CA
Chair: Pauline Kang, AU

Update on myopia management options 15:30 - 15:54
Speaker: Pauline Kang, AU

Optically induced changes in the human choroid and 15:54 - 16:18

myopia
Speaker: Scott Read, AU

Contact lens related complications and microbial keratitis in children 16:18 - 16:42
Speaker: Kathleen Watt, AU

Developing a High-throughput in vitro Eye Model for Evaluating Ocular Drug Delivery with Contact Lenses 16:42 - 17:06
Speaker: Chau-Minh Phan, CA

Adhesion of Coronavirus on Daily Disposable Soft Contact Lenses - Pilot Study 17:06 - 17:18
Oral Presenter: Parthasarathi Kalaiselvan, AU

Physical Contact between Dendritic Cells and Nerves in Human Corneal Epithelium Modulates their Immediate Response to Soft Contact Lens Wear 17:18 - 17:30
Oral Presenter: Rabia Mobeen, AU

Retinal Cell Biology
15:30 - 17:30 Session 2

Lipids in the retina: The good, the bad, and the ugly

Session Motto: Lipids comprise a structurally and functionally diverse class of biomolecules that are found in all cells in the retina. Most, if not all, of the lipids found in the retina are synthesized de novo by retinal cells; those that are not then alternatively are imported from the blood and in some cases (e.g., cholesterol), both local de novo synthesis and extraretinal import are utilized to meet the immediate specific needs of the retina. This Session will provide brief overviews of the current status of knowledge concerning the formation, distribution, and function of phospholipids, sphingolipids, sterols, fatty acids, and some of their derivatives in the normal biology of the retina as well as their involvement in retinal degenerative diseases.

Chair: Steven Fliesler, US
Chair: Nawajes Mandal, US

Acsl6 controls phospholipid composition in the retina 15:30 - 15:54
Speaker: Ekaterina Lobanova, US

What Good We See to Tackle ‘Ceramide’, the Bad Guy in Degenerative Retinal Diseases 15:54 - 16:18
Speaker: Nawajes Mandal, US

Sterols and Oxysterols in the Retina: Biology and Pathobiology 16:18 - 16:42
Speaker: Steven Fliesler, US

Visual Neuroscience
15:30 - 17:30 Session 3

Visual processing in the retinal output channels; dendrites, disease, and diversity

Session Motto: Visual processing in the retinal output channels; dendrites, disease, and diversity

Chair: Teresa Puthussery, US
Chair: Ben Sivyer, US

Circuit Mechanisms Underlying High-fidelity Direction Coding in the Retina 15:30 - 15:54
Speaker: Gautam Awatramani, CA

An Intersectional Approach to Dissecting Novel Intrinsically Photosensitive Retinal Ganglion Cell Subtypes and their 15:54 - 16:18

Neurotransmitter Release
Speaker: Tavita Garrett, US

Identification of an ON-type Direction Selective Ganglion Cell in Primate Retina 16:18 - 16:42
Speaker: Teresa Puthussery, US

Light-evoked Dendritic Spikes in Sustained but Not Transient Retinal Ganglion Cells 16:42 - 17:06
Speaker: Arne Brombas, AU

Degeneration of the Lateral Geniculate Nucleus and Retinal Ganglion Cells Following Lesions to the Visual Cortex in Infant Marmosets 17:06 - 17:30
Oral Presenter: Tanin Sepehrisadr, AU

RPE-Choroid
15:30 - 17:30 Session 4

The Choroidal Vasculature in Health and Disease

Session Motto: Vascular abnormalities are a hallmark feature of some of the most serious and prevalent forms of retinal disease. This session will showcase some key novel insights into our understanding of the underlying pathologies, and also present ideas and recent progress relating to the development of new therapies. Join us and discover the choroidal vasculature.

Chair: John Greenwood, GB
Chair: Alice Brandli, AU

Exploring choriocapillaris vascular defects in eyes with neovascular AMD: the OCTA perspective 15:30 - 15:54
Speaker: Amani Fawzi, US

Insights into Human Choriocapillaris Dysfunction from Gene Expression Analyses 15:54 - 16:18
Speaker: Robert Mullins, US

Choroidal large vessel morphology in macular diseases 16:18 - 16:42
Speaker: Jiwon Baek, KR

Application of microfluidics in research in retinal and choroidal angiogenesis 16:42 - 17:06
Speaker: Dong Hyun Jo, KR

γδ T-cells Display a Protective Role in a Mouse Model of Wet Age-related Macular Degeneration 17:06 - 17:18
Oral Presenter: Alice Brandli, AU

A Method for Visualizing Ocular Vasculature in Healthy and Diseased Pigmented Mice Using Podocalyxin 17:18 - 17:30
Oral Presenter: Imran A. Bhutto, US

Lens
15:30 - 17:30 Session 5

Oxygen and redox control of lens differentiation, homeostasis and transparency

Session Motto: Oxygen and redox regulation: Key factors in development, homeostasis and resistance to disease.

Chair: Marc Kantorow, US
Chair: Julie Lim, NZ

Lens morphological studies of amyloid-like fibrils in a rat 15:30 - 15:54

oxidation model, large particles in human cataracts and OFZ formation
Speaker: Joseph Costello, US

Hypoxia regulation of the epigenetic landscape of differentiating lens cells 15:54 - 16:18
Speaker: Lisa Brennan, US

Novel Glutaredoxin Activators Protect the Lens from Oxidative Stress Damage 16:18 - 16:42
Speaker: Hongli Wu, US

Circadian Regulation of Glutathione in the Lens 16:42 - 17:06
Speaker: Julie Lim, NZ

HIF1a is a global regulator of lens fiber gene expression and differentiation 17:06 - 17:30
Speaker: Joshua Disatham, US

Ophthalmic Genetics/Genomics
15:30 - 17:30 Session 6

Immunogenetics of ocular disorders

Session Motto:

Chair: Matthew Rutar, AU

Understanding the Cellular and Molecular Basis of Complement Factor Polymorphisms in AMD. 15:30 - 15:54
Speaker: Kelly Mulfaul, US

Microglia genomics in model systems for inherited and complex retinal degenerative diseases 15:54 - 16:18
Speaker: Thomas Langmann, DE

Diabetes-Relevant Inflammatory Stimuli, but Not Elevated Glucose, Increase Prostaglandin Production in Primary Human Müller Glia 16:18 - 16:42
Oral Presenter: Amy Stark, US

Role of Placental Histopathological and Molecular Changes in Retinopathy of Prematurity (ROP) Risk Prediction 16:42 - 17:06
Oral Presenter: Tarandeep Kaur, IN

Glaucoma
15:30 - 17:30 Session 7

Biomaterials for ocular diagnostics and drug delivery

Session Motto: There is an emerging role for bioengineering approaches to understanding ocular disease, monitor pathology, and for drug delivery. This session is focused on talks leveraging the use of biomaterials for ocular diagnostics and drug delivery

Chair: Vijaykrishna Raghunathan, US

Suprachoroidal Drug and Gene Delivery 15:30 - 15:54
Speaker: Uday Kompella, US

Mucoadhesive micelle based system for anterior segment conditions 15:54 - 16:18
Speaker: Heather Sheardown, CA

Development of a Nanocarrier Platform for Targeting 16:18 - 16:42

Schlemm's Canal Cells

Electrical Stimulation Enhances Pluripotent Stem Cell-derived Photoreceptor Cell Replacement Therapy to Restore Visual Function 16:42 - 17:06
Oral Presenter: Michelle O'Hara-Wright, AU

Characterising Safety and Efficacy of Red Blood Cell Derived Extracellular Vesicles (RBC-EV) as Therapeutic Delivery Vehicles for Retinal Degenerations 17:06 - 17:30
Oral Presenter: Rakshanya Sekar, AU

Ocular Imaging & Psychophysics
15:30 - 17:30 Session 8

Functional Retinal Imaging and Psychophysics II

Session Motto: Functional biomarkers of ocular health and disease are a critical component of basic science research, clinical trials, and ophthalmic patient care. Psychophysics has been a mainstay of functional assessment of the visual system for decades, where recent innovations in the resolution and localization of stimulus delivery and precision of eye tracking have enabled linking structure and function with unprecedented detail. In parallel, technological and methodological developments in high-resolution retinal imaging have permitted objective measurement of functional responses in photoreceptors and other retinal neurons. These sessions showcase the new developments in both subjective and objective assessment of retinal function, that together, promise to transform the diagnosis, staging and treatments retinal disease.

Chair: Jessica Morgan, US
Chair: Ravi Jonnal, US

Functional OCT for Intrinsic Signal Optoretinography 15:30 - 15:54
Speaker: Xincheng Yao, US

Progress on stimulus evoked OCT based functional retinal imaging in mice 15:54 - 16:18
Speaker: Robert Zawadzki, US

Improving the clinical utility of the intensity-based optoretinogram 16:18 - 16:42
Speaker: Robert Cooper, US

Multimodal functional imaging in retinal degenerations 16:42 - 17:06
Speaker: Vimal Pandiyan, US

The relationship of foveolar cone topography, fixational eye movements and visual resolution 17:06 - 17:30
Speaker: Wolf Harmening, DE

Cross-Discipline
15:30 - 17:30 Session 9

Biomechanics of the Eye: Posterior

Session Motto: Biomechanics - an important aspect of understanding ocular (patho)physiology.

Chair: Ross Ethier, US
Chair: Kirill Larin, US

Optic nerve head astrocyte response to compressive and tensile strains using 3D hydrogels 15:30 - 15:54
Speaker: Preethi Ganapathy, US

The Biomechanics of the Astrocytic Lamina in Mouse Models of Glaucoma 15:54 - 16:18

Speaker: Vicky Nguyen, US

Geometric Deep Learning to Describe the Structural and Biomechanical Phenotype of the Glaucomatous Optic Nerve Head 16:18 - 16:42

Speaker: Michael Girard, SG

Advances in Optical Coherence Elastography 16:42 - 17:06

Ocular Pharmacology, Therapeutics & Drug Delivery
15:30 - 17:30 Session 10

Optic nerve neuroprotection and neurorestoration

Session Motto: Neuroprotection and neurorestoration

Chair: Keith Martin, AU
Chair: Stuart Graham, AU
Chair: Katharina Bell, SG

Could Intermittent Fasting Provide an Adjunctive Therapy for Treating Acute IOP Elevation? 15:30 - 15:54

Speaker: Katharina Bell, SG

Exercise promotes neurorecovery in the aged optic nerve 15:54 - 16:18

Speaker: Vicki Chrysostomou, SG

New approaches for neuroprotection in glaucoma – modulating neuroserpin 16:18 - 16:42

Speaker: Stuart Graham, AU

Gene therapy for optic nerve protection and repair 16:42 - 17:06

Speaker: Keith Martin, AU

Cornea and Ocular Surface
15:30 - 17:30 Session 11

Current pathophysiological concepts of ocular Graft-versus-Host Disease

Session Motto: Ocular graft-versus-host disease (oGVHD) is a rapidly progressing inflammatory condition of the eye following allogeneic hematopoetic stem cell transplantation (aHSCT). Although a rare disease in general, patients after aHSCT develop oGVHD in up to 60% of the cases. A´s oGVHD has a strong impact on patients quality-of-life, patient-centered care by specialized ophthalmologists is of upmost importance to prevent blindness. This session aims at outlining the current understanding of oGVHD pathophysiolgoy and to discuss current and future options for earlier diagnosis and better treatment of this disease.

Chair: Philipp Steven, DE
Chair: Yoko Ogawa, JP

Ocular Manifestations of Graft-vs-Host Disease: Clinical Perspective from a Tertiary Care Teaching Hospital in India 15:30 - 15:54

Speaker: Radhika Tandon, IN

Immune-mediated Fibrosis, and Stress-Induced Senescence in Chronic GVHD-Related Dry Eye Disease 15:54 - 16:18

Speaker: Yoko Ogawa, JP

Adverse-environment triggers ocular GVHD 16:18 - 16:42

Speaker: Philipp Steven, DE

Ocular Immunology
15:30 - 17:30 Session

Ocular Microbiology

Session Motto: Microbial infection remains a burden for patients and society due to its potential morbidity. This session will update clinicians and researchers on common ocular infections.

Chair: Mary Marquart, US
Chair: Stephanie Watson, AU

Queensland Microbial Keratitis Database: Tracking trends in keratitis 15:30 - 15:54
Speaker: Matthew Green, AU

The Bacterial Ocular Surveillance System 15:54 - 16:18
Speaker: Maria Cabrera Aguas, AU

***Bacillus* Endophthalmitis: The Necessity of B-ing Cereus** 16:18 - 16:42
Speaker: Michelle Callegan, US

***Pseudomonas aeruginosa* versus cornea: A model of diversity, inclusion and cooperation** 16:42 - 17:06
Speaker: David Evans, US

Retinal Degeneration
15:30 - 17:30

Electronic restoration of light sensitivity in retinal degeneration

Session Motto:

Chair: Michael Ibbotson, AU

Hybrid optogenetic and electrical stimulation of retinal ganglion cells for vision restoration 15:30 - 15:54
Speaker: Wei Tong, AU

Nanoparticle-enhanced infrared neural modulation in the retina for use in vision prosthetics 15:54 - 16:18
Speaker: James Begeng, AU

Using neural feedback to improve in vision with cortical prosthetics 16:18 - 16:42
Speaker: Michael Ibbotson, AU

Poster Session
17:30 - 19:00 Others

Poster Session

84 **Investigating the Role of a Novel Metabolic Regulator in the Eye** 17:30 - 17:30
Poster Presenter: Rui Ning Chia, SG

85 **Correction of Mutant *Myo7a* in the RPE of a Mouse Model of Usher Syndrome 1B by Base Editing** 17:30 - 17:30
Poster Presenter: Simona Torriano, US

86 **The Safety of Ranibizumab and Bevacizumab on Senescent Retinal Pigment Epithelial Cells** 17:30 - 17:30
Poster Presenter: Jeongah Shin, KR

87 **Catalytic Subunits of AMPK, *Prkaa1* and *Prkaa2*, Differentially Regulate Rod Photoreceptor Function** 17:30 - 17:30

	Poster Presenter: Tae Jun Lee, US	
88	**Functional Analysis of the Angiogenesis-related Factors Induced by Mechanical Stressed RPE Using Animal Model** *Poster Presenter*: Akira Minamoto, JP	17:30 - 17:30
89	**Are All RPE Good: Using Electrochemical Impedance Spectroscopy (EIS) to Assess Changes in Cell Morphology** *Poster Presenter*: Arvydas Maminishkis, US	17:30 - 17:30
90	**Defining the Molecular Signature of Early Cone Photoreceptors Using a Novel Human Pluripotent Stem Cell (hPSC) Cone-rod Reporter Line** *Poster Presenter*: Praveen Joseph Susai Manickam, US	17:30 - 17:30
91	**The Ocular Genomic Multidisciplinary Team (OcularGen MDT) Drives Novel Molecular Diagnoses and Therapy Eligibility in the Inherited Retinal Dystrophies** *Poster Presenter*: Benjamin Nash, AU	17:30 - 17:30
92	**Effects of Ranibizumab on Individual Members of the Vascular Endothelial Cell Growth Factor Family in Patients with Diabetic Macular Edema** *Poster Presenter*: Brett Trombley, US	17:30 - 17:30
93	**A Simple Twist Technique for Lens-sparing One-handed Peripheral Vitrectomy in Phakic Patients – A Learning Approach for Junior Surgeons** *Poster Presenter*: David Petrovski, NO	17:30 - 17:30
94	**Benzalkonium Chloride and Ethylenediaminetetraacetic Acid Enhance the Photodynamic Antimicrobial Effect** *Poster Presenter*: Koichiro Shinji, JP	17:30 - 17:30
96	**Effect of Hydrogen Sulfide-releasing Compounds on Interleukin-6 Production in Lipopolysaccharide-induced Inflammation in the Porcine Anterior Uvea** *Poster Presenter*: Sunny Ohia, US	17:30 - 17:30
97	**Accumulation of Phosphorylated Alpha-synuclein Parallels Cone Dysfunction in the A53T Mouse Model of Parkinson's Disease** *Poster Presenter*: Christine Nguyen, AU	17:30 - 17:30
98	**Is Pupil Size Important while Performing Near Work?** *Poster Presenter*: Geetha Sravani, AU	17:30 - 17:30
99	**Visuomotor Skills in Amblyopia: A Systematic Review and Meta-analysis** *Poster Presenter*: Archayeeta Rakshit, AU	17:30 - 17:30
100	**Ocular Surface Neurobiology Changes in Patients with Prior Neurotoxic Chemotherapy Treatment for Breast Cancer** *Poster Presenter*: Jeremy Chung Bo Chiang, AU	17:30 - 17:30
102	**The Influence of Lifestyle Factors on the Ocular Surface and Meibomian Glands** *Poster Presenter*: Katrina Schmid, AU	17:30 - 17:30
103	**Characterisation of Epithelial Dendritic Cells in Human Donor Cornea using in vivo Laser Scanning Confocal**	17:30 - 17:30

	Microscopy and Immunohistochemistry *Poster Presenter*: Fatema Nasrin, AU	
104	**Effective Mitigation of Mustard Gas Keratopathy by Topical Drops in Rabbits *in vivo*** *Poster Presenter*: Prashnat Sinha, US	17:30 - 17:30
105	**Calcitonin Gene-related Peptide Promotes Corneal Healing Following Mechanical Injury** *Poster Presenter*: Asmaa Zidan, US	17:30 - 17:30
106	**Impact of Corneal Nerve Loss on Symptoms and Signs of Dry Eye Disease in Diabetic Chronic Kidney Disease** *Poster Presenter*: Kofi Asiedu, AU	17:30 - 17:30
107	**In vitro Effects of Air-borne Diesel Exhaust Particles (DEP) on Meibomian Gland Epithelial Cell Viability and Lipid Production** *Poster Presenter*: Ha Duong, AU	17:30 - 17:30
108	**Contribution of Corneal Cold Thermoreceptor Activity to Spontaneous Blinking Rate and Characteristics** *Poster Presenter*: Maria Carmen Acosta, ES	17:30 - 17:30
109	**Clinical and Histopathological Features of Corneal Keloid** *Poster Presenter*: Taiichiro Chikama, JP	17:30 - 17:30
110	**The Impact of Probiotics and Prebiotics on Tear Inflammatory Biomarkers in Dry Eye Disease** *Poster Presenter*: Azadeh Tavakoli, AU	17:30 - 17:30
111	**DNA Methylation Changes and Increased mRNA Expression of Coagulation Proteins, Factor V and Thrombomodulin in Fuchs Endothelial Corneal Dystrophy** *Poster Presenter*: Ida Maria Westin, SE	17:30 - 17:30
112	**Mapping of Label-retaining Cells and Hyaluronan in the Mouse and Human Cornea** *Poster Presenter*: Sudhir Verma, US	17:30 - 17:30
113	**Evaluating the Role that Diabetic Keratopathy Plays on Extracellular Vesicle Properties** *Poster Presenter*: Brenna Hefley, US	17:30 - 17:30
114	**Effects of Hypoxia on Corneal Diabetes** *Poster Presenter*: Purnima Sharma, US	17:30 - 17:30
115	**Transpalpebral Electrical Stimulation Promotes the Corneal Nerve Regeneration** *Poster Presenter*: Menglu Yang, US	17:30 - 17:30
116	**Molecular Characterization of Cornea Epithelial Stem Cells and the Process of Lens Regeneration** *Poster Presenter*: Surabhi Sonam, US	17:30 - 17:30
117	**Biomarker Enabled Specific Targeted Therapy in Ocular Surface Disease** *Poster Presenter*: Sethu Swaminathan, IN	17:30 - 17:30
118	**The Use of the Southend GCA Probability Score (GCAPS) in**	17:30 - 17:30

	Assessing Risk of Giant Cell Arteritis in an Australian Eye Hospital Cohort *Poster Presenter*: Eloise Norman, AU	
119	**Sirtuin 6 Is Implicated in Retinal Vasculopathy through Potential Regulation of Endothelin 1 Expression in Neuronal Cells** *Poster Presenter*: Erick Palacios, US	17:30 - 17:30
120	**Swiss Multicentric XEN Gel Stent Study - 2 Year Outcomes** *Poster Presenter*: Anthia Papazoglou, CH	17:30 - 17:30
121	**The Effect of TRPV4 against the Change of Fibrosis-related Factors in Trabecular Meshwork Cells under Pressure Stress** *Poster Presenter*: Reiko Yamagishi-Kimura, JP	17:30 - 17:30
122	**Analysis of Neuroprotective Functions of Glia Cells in RGC Using Coculture System** *Poster Presenter*: Kaori Komatsu, JP	17:30 - 17:30
124	**Angiotensin II-related Activation of Scleral Fibroblasts and the Role of Retinal Ganglion Cell Death in Glaucoma** *Poster Presenter*: Heejong Shin, KR	17:30 - 17:30
125	**Biomechanics of the Endothelial Glycocalyx Layer in the Human Conventional Aqueous Outflow Pathway** *Poster Presenter*: Alireza Karimi, US	17:30 - 17:30
126	**Association of Deep Vessel Density of Macula with Vascular Incompetence of Glaucoma Patients** *Poster Presenter*: Si-Eun Oh, KR	17:30 - 17:30
127	**Autophagy Response to Intraocular Pressure Elevation Is Blunted in the Ageing Mouse Retina** *Poster Presenter*: Brianna C. Afiat, AU	17:30 - 17:30
128	**Intraocular Pressure Elevation Following the Injection of Intravitreal Dexamethasone Implant in the Patients who Underwent Glaucoma Filtration Surgery** *Poster Presenter*: Dong Kyu Lee, KR	17:30 - 17:30
129	**Effect of Glutathione on Diallyl Disulfide-induced Release of Hydrogen Sulfide i*n vitro* and on Intraocular Pressure in Normotensive Rabbits** *Poster Presenter*: Catherine Opere, US	17:30 - 17:30
130	**Identification of a Subtype of Ocular Hypertensive Eyes with the Best Response to Topical Medication** *Poster Presenter*: Asma Poursoroush, US	17:30 - 17:30
131	**Development of an AAV to Overexpress Insulin-like Growth Factor in the Retina as a Treatment for Glaucoma** *Poster Presenter*: Joseph Holden, US	17:30 - 17:30
132	**Small Molecule Amino Acid Signatures of Nicotinamide-treated Glaucomatous Retina** *Poster Presenter*: Megan Croom, US	17:30 - 17:30
133	**TRPV4 Inhibition Modifies Retinal Response to Acute IOP**	17:30 - 17:30

	Elevation in Older, but Not Younger Mice *Poster Presenter*: Pei Ying Lee, AU	
134	**Nocturnal and Diurnal IOP Fluctuations - Variable Responses to Therapies** *Poster Presenter*: Barbara Wirostko, US	17:30 - 17:30
135	**The Effect of Cataract Surgery on Risk of Dementia: A Nationwide Cohort Study** *Poster Presenter*: Chaeyeon Lee, KR	17:30 - 17:30
136	**Retinal Age Gap as a Predictive Biomarker for Future Risk of Clinically Significant Diabetic Retinopathy** *Poster Presenter*: Ruiye Chen, AU	17:30 - 17:30
137	**Psychiatric and Systemic Risk Factors for Dry Eye Disease in Adult Korean Population: Korea National Health and Nutrition Examination Survey 2017-2018 (KNHANES VII)** *Poster Presenter*: Yong Woo Lee, KR	17:30 - 17:30
139	**Structural, Functional and Mechanistic Basis for the Oligomerisation of the Major Eye Lens Protein βB2-crystallin** *Poster Presenter*: Aidan Bradley Grosas, AU	17:30 - 17:30
140	**Longitudinal Studies of Lens Growth and Cataract Formation in Mouse Models by Using SD-OCT** *Poster Presenter*: Chun-hong Xia, US	17:30 - 17:30
141	**Cationic Branched Peptides and Polymers for Fusarium Keratitis** *Poster Presenter*: Mayandi Venkatesh, SG	17:30 - 17:30
142	**Improves Discriminative Power for Multiple Sclerosis Patients Without Previous Optic Neuritis by Combining Retinal Structural and Vascular Measurements** *Poster Presenter*: Alina Popa-Cherecheanu, RO	17:30 - 17:30
143	**Ganglion Cell Layer - Inner Plexiform Layer Analysis on Ocular Coherence Tomography in Cases of Pituitay Tumours** *Poster Presenter*: Rachna Agarwal, IN	17:30 - 17:30
144	**Optical Coherence Tomography Angiography as an Adjunctive Tool in Para-chiasmal Neoplasms: A Systematic Review and Meta-analysis** *Poster Presenter*: Lim Khai Shin, Alva, SG	17:30 - 17:30
145	**The Pupillary Light Reflex and Multimodal Imaging in Patients with Central Serous Chorioretinopathy** *Poster Presenter*: Xiaoyin Zhou, JP	17:30 - 17:30
146	**A Myopia Phenotype in the *Opn3* Germline Null** *Poster Presenter*: Courtney Linne, US	17:30 - 17:30
147	**Mesopic and Scotopic Visual Fields Detect Clinically Significant Defects in Early/Intermediate AMD: A Systematic Review and Meta-analysis** *Poster Presenter*: Matt Trinh, AU	17:30 - 17:30
148	**Clinical Features and Visual Prognosis of 14 Patients with**	17:30 - 17:30

	Diffuse Choroidal Hemangioma Associated with Sturge-Weber Syndrome *Poster Presenter*: Minjae Kang, KR	
149	**Enhanced Mitochondrial Metabolism Promotes Differentiation of the RPE** *Poster Presenter*: Roni A. Hazim, US	17:30 - 17:30
150	**Pigment Epithelium-derived Factor (PEDF) Is an Interleukin-6 Antagonist in the RPE: Insight of Structure-function Relationships** *Speaker*: Patricia Becerra, US	17:30 - 17:30
151	**Investigation into the Role of Osteopontin in the Aging Retinal Pigment Epithelium and Age-related Macular Degeneration** *Poster Presenter*: Vipul M. Parmar, US	17:30 - 17:30
153	**Lacking Sphingosine 1-phosphate Receptor 3 Attenuates the Development of Argon Laser-induced CNV in Mice** *Poster Presenter*: Hiroki Iwanishi, JP	17:30 - 17:30
154	**Phase I/II Open-label Study of Implantation into One Eye of hESC-derived RPE in Patients with Retinitis Pigmentosa due to Monogenic Mutation: First Safety Results** *Poster Presenter*: Christelle Monville, FR	17:30 - 17:30
155	**Comparison of the Streptozotocin-induced Diabetic Retinopathy Model in Brown Norway and Sprague Dawley Rats** *Poster Presenter*: Marc Cerrada-Gimenez, FI	17:30 - 17:30
156	**Pathophysiology of Usher Syndrome Type 2 Using Retinal Organoids Derived from hiPSC and Development of Novel Gene Editing Gene Therapy** *Poster Presenter*: Deborah Aubin, AU	17:30 - 17:30
157	**Non-invasive Detection of Reactive Oxygen Species Induced by Mitochondrial Stress in Retinal Pigment Epithelium Cells Using Autofluorescence Multispectral Imaging** *Poster Presenter*: Abhilash Goud Marupally, AU	17:30 - 17:30
158	**A Method for Quantification of Drusen-like Deposits in Human Induced Pluripotent Stem Cell-derived Retinal Pigmented Epithelium Cells Using 3D Reconstructed Confocal Z-stacks** *Poster Presenter*: Jenna Hall, AU	17:30 - 17:30
159	**CXCL10/CXCR3 Axis Mediates Glaucomatous Optic Neuropathy** *Poster Presenter*: Wenbo Zhang, US	17:30 - 17:30
160	**The Ferroxidase Ceruloplasmin Plays an Essential Protective Role in Iron-Overloaded Retinas** *Poster Presenter*: Brandon Anderson, US	17:30 - 17:30
162	**Voluntary Exercise Modulates Pathway Associated with Age-related Macular Degeneration Including Inflammation and Maintenance of Extracellular Matrix** *Poster Presenter*: Nicholas Bariesheff, AU	17:30 - 17:30

163	**Characteristics and in vivo Efficacy of Human (Allogeneic) Adipose Tissue-derived Mesenchymal Stem Cell Sheets** *Poster Presenter*: Tsutomu Yasukawa, JP	17:30 - 17:30
164	**HDAC6 Is Involved in Retinal Degeneration by Activation of Microglial Cells in Mice** *Poster Presenter*: In-Beom Kim, KR	17:30 - 17:30
165	**Investigations into Photoreceptor Energy Metabolism during Experimental Retinal Detachment** *Poster Presenter*: Glyn Chidlow, AU	17:30 - 17:30
166	**Human Mutation Causing Retinal Ciliopathy Highlights Dual Functions for Centrosomal Protein, CEP162** *Poster Presenter*: Jason Willer, US	17:30 - 17:30
167	**Effect of Novel Nitroxide-corticosteroid Hybrid Compounds on Retinal Vasculature in a Rodent Model of Laser-induced Age-related Macular Degeneration** *Poster Presenter*: Rimaz Toto, AU	17:30 - 17:30
168	**Single Cell RNA Sequencing of Cone Photoreceptors in Mouse Models of Primary and Secondary Cone Death** *Poster Presenter*: Paula Fuller-Carter, AU	17:30 - 17:30
	Engineered AAV capsids and inducible systems as strategies for an optimised gene therapy targeting acquired retinal diseases *Poster Presenter*: Brenda Castro, AU	17:30 - 17:30

Others

19:30 - 22:00 Others

Gala Dinner

Wednesday, 22. February 2023

Cornea and Ocular Surface
08:00 - 10:00 Opening & Session 1

Corneal Epithelial Homeostasis

Session Motto: To understand the molecular mechanisms that regulate corneal epithelial homeostasis, and how their dysfunction results in proliferative disorders of the ocular surface.

Chair: Shivalingappa Swamynathan, US
Chair: Stephanie Watson, AU
Chair: Anil Tiwari, IN

Optimise corneal and ocular surface health 08:00 - 08:24
Speaker: Stephanie Watson, AU

The role of stromal Wnt/beta-catenin for epithelial stratification in the mouse cornea 08:24 - 08:48
Speaker: Chia-Yang Liu, US

Krüppel-like factors KLF4 and KLF5 orchestrate corneal epithelial homeostasis 08:48 - 09:12
Speaker: Shivalingappa Swamynathan, US

Bioengineered corneas for studying corneal epithelial homeostasis and wound healing 09:12 - 09:36
Speaker: Anil Tiwari, IN

Conjunctival Epithelial Plasticity on the Ocular Surface in a Mouse Model of Limbal Stem Cell Deficiency 09:36 - 09:48
Speaker: Mijeong Park, AU

Optimisation of Corneal Tissue Engineering to Facilitate Epithelial Wound Healing 09:48 - 10:00
Oral Presenter: Issy Cowlishaw, NZ

Retinal Cell Biology
08:00 - 10:00 Session 2

Lipids in diabetic retinopathies

Session Motto: Data from several clinical trials demonstrate that in addition to the well accepted role of hyperglycemia, dyslipidemia is an important, but often overlooked factor in the development of diabetic retinopathy. This session will discuss the role of retinal-specific vs. systemic cholesterol homeostasis, sphingolipid metabolism, fatty acid metabolism and bioactive lipid mediators in diabetes-induced retinal damage. Novel therapeutic approaches taking advantage of recent understanding of the role lipid metabolism plays in diabetic retinopathy progression will be addressed.

Chair: Julia Busik, US

12/15-Lipoxygenase and Neuroglial Injury in Diabetic Retinopathy 08:00 - 08:24
Speaker: Mohamed Al-Shabrawey, US

Cannabinoid Receptor 2 Agonism Demonstrates Therapeutic Potential in Inflammatory Diabetic Retinopathy Models 08:24 - 08:48
Speaker: John Penn, US

FGF21 increases mitochondrial lipid oxidation to promote physiological vascularization in mice modeling Phase I ROP 08:48 - 09:12
Speaker: Lois Smith, US

Anti-ceramide Immunotherapy for Diabetic Retinopathy 09:12 - 09:36
Oral Presenter: Tim Florian Dorweiler, US

Apolipoprotein D (APOD) Integrates Retinal Glucose and Fatty Acid Metabolism and Suggests the APOD-leptin Receptor-Glut4/CD36 Axis 09:36 - 10:00
Oral Presenter: Irina Pikuleva, US

Visual Neuroscience
08:00 - 10:00 Session 3

The spectacular macula

Session Motto: A defining feature of the retina of diurnal primates including humans is the fovea: a specialised region which serves high visual acuity. Vision loss in the fovea causes significant visual impairment and thus it is important to conserve and restore foveal vision. The aim of this symposium is bringing together speakers who study the structure, physiology and pathology of the fovea using different techniques. The symposium will be of interest for basic researchers and clinicians.

Chair: Ulrike Grünert, AU
Chair: Christine Curcio, US

Optimizations and constraints in the properties of foveal cones 08:00 - 08:24
Speaker: Michael Tri. H. Do, US

Why the macula for AMD: retinal neuroscience meets drusen biology 08:24 - 08:48
Speaker: Christine Curcio, US

Exploring the molecular and metabolic differences between the human macula and the peripheral retina 08:48 - 09:12
Speaker: Ling Zhu, AU

Molecular Mechanisms that Underlie the Foveal Formation and Maturation 09:12 - 09:36
Speaker: Yirong Peng, US

Modeling Human Cone Photoreceptor Density Spatial Distribution 09:36 - 09:48
Oral Presenter: Xiaolin Wang, US

Developing a Macular Region in Stem Cell-derived Retinal Organoids 09:48 - 10:00
Oral Presenter: Benjamin Lim, AU

RPE-Choroid
08:00 - 10:00 Session 4

Metabolism of the Retinal Pigment Epithelium

Session Motto: Why does the metabolism of the "black curtain" behind the eye, the retinal pigment epithelium, matter?

Chair: Mark Gillies, AU
Chair: Jianhai Du, US

Glucose Metabolism in the RPE 08:00 - 08:24
Speaker: Robert Casson, AU

Metabolic Communication between RPE and the Neural Retina 08:24 - 08:48
Speaker: Jianhai Du, US

Selective knockdown of metabolic genes in the RPE affects photoreceptor function 08:48 - 09:12
Speaker: Mark Gillies, AU

The activation of mTOR pathway and consequent metabolic changes in the process of RPE dedifferentiation 09:12 - 09:36
Speaker: Chen Zhao, CN

***In-vitro* Generation of Foveal and Mid-peripheral RPE Cells to Study Regional Degenerative Disease** 09:36 - 10:00
Oral Presenter: Davide Ortolan, US

Lens
08:00 - 10:00 Session 5

Lens crystallins - PTMs that alter structure and function

Session Motto:

Chair: Larry David, US
Chair: Barbara Pierscionek, GB

Introduction of L-isoasp at residues 12 and 14 in human γS-crystallin using native chemical ligation increases susceptibility to denaturation and disulfide bond formation. 08:00 - 08:24
Speaker: Larry David, US

The Thermodynamic Cost of Domain-Swapping in Long-Lived γ-Crystallins and the Evolution of Durable Transparency in the Human Eye Lens 08:24 - 08:48
Speaker: David Thorn, US

Rapid Deamidation/isomerization of Asparagine Residues and Effect of C-terminal Adjacent Amino Acid Residues in Human Lens αA-Crystallin 08:48 - 09:12
Speaker: Takumi Takata, JP

Correlating crystallin modifications to the lens GRIN properties 09:12 - 09:36
Speaker: Barbara Pierscionek, GB

The quest to find the cause of human age-related cataract. From lens to brain. 09:36 - 10:00
Speaker: Roger Truscott, AU

Ophthalmic Genetics/Genomics
08:00 - 10:00 Session 6

Epigenetics as a Driver of Ocular Disease: Clinical Advances and Challenges

Session Motto: Elucidating epigenetics underlying diagnostic, therapeutic and disease prevention advances and modalities for translation.

Chair: Neena Haider, US
Chair: Margaret DeAngelis, US
Chair: Leah Owen, US

Disease tissue multiomics with cell type resolution unveils molecular drivers of AMD 08:00 - 08:24
Speaker: May Chen, US

Systems Biology Analysis Identifies Novel Placental Mechanisms of Postnatal Infant Disease 08:24 - 08:48
Speaker: Leah Owen, US

A systems biology approach to identify novel causal genes for Age-related Macular Degeneration 08:48 - 09:12

Speaker: Luz Orozco, US

Allele Specific Expression as an underlying mechanism in complex ocular diseases 09:12 - 09:36

Speaker: Margaret DeAngelis, US

Glaucoma
08:00 - 10:00 Session 7

Young Investigators Session: Neuro-Glio-Vascular Regulation in Glaucoma

Session Motto: Bright young minds making a difference

Chair: Adriana Di Polo, CA
Chair: Luis Alarcon-Martinez, AU

Clinical Implications of Neurovascular Deficits in Glaucoma 08:00 - 08:20

Speaker: Yukihiro Shiga, CA

Role of Pericytes and Inter-pericyte Tunneling Nanotubes in Neurovascular Dysfunction in Glaucoma 08:20 - 08:40

Speaker: Luis Alarcon-Martinez, AU

Visualizing and Quantifying Individual Astrocyte Morphologies across the Collagenous Lamina Cribrosa 08:40 - 09:00

Oral Presenter: Susannah Waxman, US

Glia-mediated Modulation of Pericyte and Capillary Function in Glaucomatous Optic Neuropathy 09:00 - 09:20

Speaker: Deborah Villafranca-Baughman, CA

Retinal Ganglion Cell Adaptation to Ionic Stress in the Microbead Occlusion Model of Glaucoma 09:20 - 09:40

Oral Presenter: Andrew Boal, US

Ocular Blood Flow and Glaucoma 09:40 - 10:00

Speaker: Sasan Moghimi, US

Ocular Imaging & Psychophysics
08:00 - 10:00 Session 8

Applications of Imaging in Retinal Therapeutics

Session Motto: This session will cover uses of imaging tools for applications in retinal therapeutics from animal experiments to clinical practice, including detecting the presence of retinal pathology and its resolution over time, and the presence, morphology, and localization of transplanted cells and surrounding environments. Speakers are both invited from the field of biology and clinics, and the goal is to merge the knowledge on clinical status/needs and the uses of cutting-edge imaging technology such as optical coherence tomography, scanning laser ophthalmoscopy, combined imaging modalities, and adaptive optics. The hope is to thereby move the field of retinal therapeutics forward faster.

Chair: Michiko Mandai, JP
Chair: Jessica Morgan, US

Multimodal imaging of transplanted iPS-derived RPE cell in a patient with AMD 08:00 - 08:24

Speaker: Seiji Takagi, JP

Retinal Morphological Features in Patients with Large Macular Holes Treated by Autologous Retinal Transplantation 08:24 - 08:48

Speaker: Shohei Kitahata, JP

Applications of Adaptive Optics Imaging for Assessing the Safety and Efficacy of Gene Therapy in Inherited Retinal Degenerations 08:48 - 09:12
Speaker: Jessica Morgan, US

Imaging HIF-1alpha mRNA to Visualize Activated Monocytes and Macrophages in Living Retina 09:12 - 09:36
Speaker: Imam Uddin, US

High Resolution and Multimodal Structural Phenotyping of Intermediate and Advanced Non-neovascular Age-related Macular Degeneration 09:36 - 10:00
Oral Presenter: Chiara M. Eandi, FR

Cross-Discipline
08:00 - 10:00 Session 9

Ocular Tumours: Cell biology and pathology

Session Motto: Yes, primary tumours do happen in the eye.

Chair: Michele Madigan, AU
Chair: Fanfan Zhou, AU

Biomarker Heterogeneity in Human Choroidal Melanoma 08:00 - 08:24
Speaker: Svetlana Cherepanoff, AU

Novel Targets, Therapies and Signalling Pathways in Uveal Melanoma 08:24 - 08:48
Speaker: Fanfan Zhou, AU

Circulating DNA and uveal melanoma responses to Protein kinase C (PKC) inhibitors 08:48 - 09:12
Speaker: John Park, AU

Expression of the Melanocortin System and Its Potential Anti-inflammatory Function in the Human Choroid 09:12 - 09:36
Speaker: Chieh-Lin Wu, AU

Melanocytes, Naevi and the Choroidal Microenvironment 09:36 - 09:48
Speaker: Michele Madigan, AU

Role of Autophagy and Mitophagy in Uveal Melanoma 09:48 - 10:00
Oral Presenter: Natasha Josifovska, NO

Ocular Pharmacology, Therapeutics & Drug Delivery
08:00 - 10:00 Session 10

Ocular Drug Delivery - Successes and Failures

Session Motto: Because delivery matters

Chair: Ilva Rupenthal, NZ
Chair: Heather Sheardown, CA

Recent ocular drug delivery successes and failures – an overview 08:00 - 08:24
Speaker: Ilva Rupenthal, NZ

Potential and pitfalls of ocular mRNA delivery 08:24 - 08:48
Speaker: Katrien Remaut, BE

Melanin binding in ocular pharmacokinetics: impact and potential in targeted delivery 08:48 - 09:12

Speaker: Arto Urtti, FI

Ultrasound-mediated drug delivery to the eye: critical insights to facilitate a timely path to the clinic 09:12 - 09:36
Speaker: Isaac Rad, AU

Retinal Cell Biology
08:00 - 10:00 Session 11

Modeling inherited retinal degenerative blindness: from patient derived 3D organoids to multi-layered microphysiologic systems

Session Motto: Using patient stem cells to elucidate human disease pathology

Chair: Budd Tucker, US
Chair: Majlinda Lako, GB

Combining Patient iPSCs, CRISPR-mediated Genome Editing and Single Cell RNA-sequencing to Model Retinal Development and Disease 08:00 - 08:24
Speaker: Budd Tucker, US

Understanding and Treating Retinoblastoma with iPSC-derived Organoids and RPE Cell Models 08:24 - 08:48
Speaker: Majlinda Lako, GB

Modeling Age-related macular degeneration with 3D iPSC-derived Outer Blood-Retina Barrier 08:48 - 09:12
Speaker: Kapil Bharti, US

Ocular Immunology
08:00 - 10:00 Session

The eye on the melting point: Scleritis - the underestimated challenge

Session Motto:

Chair: Uwe Pleyer, DE
Chair: Peter McCluskey, AU

Epidemiology & clinical features of scleritis 08:00 - 08:24
Speaker: Peter McCluskey, AU

PUK – what is it and how do we treat it 08:24 - 08:48
Speaker: Uwe Pleyer, DE

Panel Discussion 08:48 - 09:12

Retinal Degeneration
08:00 - 10:00

Balancing retinal degeneration with regeneration: The role of Microglia

Session Motto: Retinal injury and retinal degeneration stimulate an inflammatory response by the innate immune system. Resident microglia and extra-retinal macrophages migrate and accumulate near the site of injury or disease and release pro-inflammatory cytokines. In zebrafish, retina injury triggers a regeneration response that replaces lost neurons. Evidence suggests that inflammatory cytokines released from microglia promote regeneration. In mammals, microglia can potentiate photoreceptor degeneration and inflammatory signals may limit regeneration. Pro-inflammatory signaling from microglia thus creates a tug-of-war between the negative effects of cytotoxicity and positive effects if regeneration. As immunomodulation has been posited as a potential therapy for retinitis pigmentosa, it is important to consider how immunosuppression may influence regeneration. In this session, speakers will discuss ongoing research into the role of microglia in the contexts of retinal damage or disease.

Chair: Brian Perkins, US
Chair: Malia Edwards, US

Müller cell remodeling associated with RPE migration and calcified drusen in geographic atrophy 08:00 - 08:24
Speaker: Malia Edwards, US

The TSPO-NOX1 Axis Controls Phagocyte-triggered Pathological Angiogenesis in the Eye 08:24 - 08:48
Speaker: Anne Wolf, DE

Innate immune system activity and regeneration of the RPE 08:48 - 09:12
Speaker: Jeff Gross, US

Loss of Microglia Prevents Cone Degeneration in a Zebrafish cep290-/- Mutants 09:12 - 09:36
Speaker: Brian Perkins, US

Microglia plasticity mechanisms in the developing and degenerating retina 09:36 - 10:00
Speaker: Melanie Samuel, US

Exhibition
09:00 - 18:00 Others

Exhibition

Coffee Break
10:00 - 10:30 Others

Coffee Break

Ceremony
10:30 - 12:00 Opening & Session 1

Prize Ceremony and Lecture

Introduction 10:30 - 10:40
Speaker: Olaf Strauß, DE
Speaker: Carol Toris, US

Laudatio 10:40 - 10:50
Speaker: Joshua Dunaief, US

Lecture by Award Winner 10:50 - 11:35
Speaker: Steven Fliesler, US

Retinal Degeneration
12:00 - 13:00 Session 2

VISION 2020 Symposium - Australian Eye Research: Towards a Vision Mission

Background

The National Eye Research Collaborative was created by Vision 2020 Australia to facilitate a cross sector approach to agreeing to and advocating for priorities in eye and vision related research, with an ultimate goal of securing a Medical Research Future Fund vision mission.
In 2021, following a series of consultations with a broad range of stakeholders, the Roadmap for eye health and vision care and the 10 Point Plan to enhance Australian Ophthalmic Research was developed by the collaborative, providing a cross-sector, multidisciplinary approach to vision research.

Chairs

· **Prof. Mark Radford**
Executive Director & CEO, Queensland Eye Institute
· **Prof. Peter McCluskey**
Professor & Chair of Ophthalmology, Director Save Sight Institute, USYD

Topics & Speakers

1. **Purpose of the eye health & vision care strategic road map**
Prof. Peter McCluskey & Prof. Mark Radford
2. **The Challenge**
Prof. Bill Morgan, Managing Director Lions Eye Institute and Centre for Ophthalmology and Visual Science and Professor of Ophthalmology UWA
3. **Why we need vision science**
Prof. Sharon Bentley, Deputy Dean, Faculty of Health, Director, Centre for Vision and Eye Research, Acting Head, School of Public Health & Social Work, QUT
4. **Prevention – why is patient centered and targeted research important**
Prof. Lisa Keay, Head of the School of Optometry and Vision Science, UNSW.
5. **Treatment & Support**
Prof. Stephanie Watson, Head, Corneal Research Group, Save Sight Institute, USYD
6. **Next Steps**
Prof. Peter McCluskey & Prof. Mark Radford

Session Motto:

Chair: Peter McCluskey, AU
Chair: Mark Radford, AU

Cornea and Ocular Surface
13:00 - 15:00 Opening & Session 1

Genetics of Corneal Disease

Session Motto: Genetics of Corneal Disease: From Gene Discovery to Development of Precision Medicines.

Chair: Paul Baird, AU
Chair: Vinod Mootha, US

Bioinformatic insights into risk factors and mechanisms underlying keratoconus 13:00 - 13:24

Speaker: Pirro Hysi, GB

Targeting the Molecular Origins of Fuchs' Endothelial Corneal Dystrophy 13:24 - 13:48

Speaker: Vinod Mootha, US

Age-, Sex- and Race-specific Alterations in microRNAs in the Human Tear Fluid 13:48 - 14:12

Oral Presenter: Ashok Sharma, US

Keratitis Fugax Hereditaria – A Periodic Corneal Autoinflammation Caused by the Pathogenic Variant c.61G>C in NLRP3 14:12 - 14:36
Oral Presenter: Annamari T. Immonen, FI

Retinal Cell Biology
13:00 - 15:00 Session 2

Cell biology and biophysics of photoreceptors

Session Motto: Exploring the structure and function of photoreceptors in health and disease.

Chair: Peter Calvert, US
Chair: Jillian Pearring, US

The WAVE Complex Drives the Morphogenesis of the Photoreceptor Outer Segment Cilium 13:00 - 13:24
Speaker: Vadim Arshavsky, US

Formation of the photoreceptor disc rim 13:24 - 13:48
Speaker: Muna Naash, US

The Tectonic Complex Impedes Membrane Diffusion through the Photoreceptor Connecting Cilium 13:48 - 14:12
Speaker: Jillian Pearring, US

Dynamics of Opsins in Ciliary Membranes and Cone Lamellae 14:12 - 14:36
Speaker: Peter Calvert, US

Rhythmicity of Photoreceptor Outer Segment Phagocytosis in Zebrafish 14:36 - 15:00
Oral Presenter: Jenni Partinen, FI

Visual Neuroscience
13:00 - 15:00 Session 3

Macula Matters: Recent Advances in Macular Physiology

Session Motto: Understanding high acuity vision

Chair: Frans Vinberg, US
Chair: Raunak Sinha, US

Differential Tuning of Photoreceptor Function across the Visual Field in the Primate Retina 13:00 - 13:24
Speaker: Raunak Sinha, US

Exploring foveal function using calcium imaging ophthalmoscopy 13:24 - 13:48
Speaker: Juliette McGregor, US

In vivo optoretinography of human cone phototransduction and its underlying mechanisms 13:48 - 14:12
Speaker: Ramkumar Sabesan, US

Light Signaling in the Human Macula 14:12 - 14:36
Speaker: Frans Vinberg, US

Light-sheet Fluorescence Microscopy of Entire Human Eyes 14:36 - 15:00
Oral Presenter: Marie Darche, FR

RPE-Choroid
13:00 - 15:00 Session 4

Pigmented cells of the posterior pole: New cellular and molecular insights

Session Motto: While once thought to be just a layer of black paint behind the retina, pigmented cells of the eye—including the retinal pigment epithelium and choroidal melanocytes--have an amazing diversity of functions in ocular physiology. Our group will discuss exciting data including the newest ultrastructural approaches to understanding pigmented cells and their organelles in 3D, the importance of these cells in the health of the photoreceptors, new insights into melanocyte cell biology and cell-cell interactions, and what we are learning about pigmented cells of the eye through transcriptomic approaches.

Chair: Robert Mullins, US

Regional, genetic, and disease-related insights into human RPE and melanocytes using single-cell approaches 13:00 - 13:24
Speaker: Andrew Voigt, US

Shedding light on the role of melanocyte-derived extracellular vesicles in the choroid 13:24 - 13:48
Speaker: Solange Landreville, CA

Recessive Stargardt Disease: An RPE Perspective 13:48 - 14:12
Speaker: Roxana Radu, US

Imaging and ultrastructure of RPE and its organelles 14:12 - 14:36
Speaker: Leon von der Emde, DE

Analysis of AAV-mediated *TYR* Delivery Following Subretinal, Intravitreal and Intravenous Routes of Delivery 14:36 - 14:48
Oral Presenter: Alessandra Larimer-Picciani, US

A Patient-derived Organoid Biobank for Uveal Melanoma 14:48 - 15:00
Oral Presenter: Lauren Dalvin, US

Lens
13:00 - 15:00 Session 5

Crystallins: Lens and Beyond

Session Motto: This session will highlight the latest developments on the structure and functions of α-crystallins and their small heat shock proteins in the lens and other tissues. Several experts in the field will present their latest research that will include therapeutic applications of small heat shock proteins in retinal diseases.

Chair: Ram Nagaraj, US
Chair: Patrice Fort, US

Intrinsic and extrinsic neuroprotective potential of functionally enhanced alphaA-crystallin 13:00 - 13:24
Speaker: Patrice Fort, US

Multifunctional properties of a novel αB crystallin chaperone peptide in retinal protection 13:24 - 13:48
Speaker: Ram Kannan, US

Deletion of 21-28 and 54-61 sequences in alpha B-crystallin results in smaller oligomers with enhanced chaperone activity 13:48 - 14:12
Speaker: Krishna Sharma, US

Oligomerisation of Beta- and Gamma-crystallins 14:12 - 14:36
Speaker: John Carver, AU

Retinal ganglion cell protection by sHSP in animal models of glaucoma 14:36 - 15:00

Speaker: Mi-Hyun Nam, KR

Ophthalmic Genetics/Genomics
13:00 - 15:00 Session 6

Reticular Pseudo drusen (RPD): Basic science to the clinic

Session Motto: Reticular pseudo-drusen (RPD): what are they and where did they come from?

Chair: Robyn Guymer, AU
Chair: Erica Fletcher, AU

What are RPD and why they are important 13:00 - 13:24

Speaker: Carla Abbott, AU

Reticular Pseudodrusen (RPD): What we know about RPD from the histology 13:24 - 13:48

Speaker: Una Greferath, AU

Clinical Manifestation of Reticular Pseudodrusen 13:48 - 14:12

Speaker: Chi Luu, AU

Towards a genome-wide association study of Reticular Pseudodrusen in Age-Related Macular Degeneration 14:12 - 14:36

Speaker: Samaneh Farashi, AU

Systemic changes in age-related macular degeneration patients with reticular pseudodrusen. 14:36 - 14:48

Speaker: Jessica Ma, AU

Using stem cells to help our understanding of RPD 14:48 - 15:00

Speaker: Maciej Daniszewski, AU

Glaucoma
13:00 - 15:00 Session 7

Translating recent glaucoma genetic discoveries

Session Motto: Glaucoma is one of the most highly heritable human diseases with hundreds of risk genes identified to date. Knowledge of these genes is now being harnessed, either via approaches which capitalize on advances in our understanding of the molecular underpinnings of disease or via approaches which predict disease risk or clinical endpoints by accumulating evidence across many genes (for example in the form of polygenic risk scores). The speakers in this session will explore the translational consequences of recent genetic discoveries in glaucoma.

Chair: Jamie Craig, AU
Chair: Puya Gharahkhani, AU

Translating glaucoma polygenic risk scoring into clinical practice 13:00 - 13:24

Speaker: Jamie Craig, AU

From genes to clinics: translational aspects of gene discovery for glaucoma 13:24 - 13:48

Speaker: Puya Gharahkhani, AU

Polygenic risk and clinical outcomes in early primary open-angle glaucoma 13:48 - 14:12

Speaker: Owen Siggs, AU

Gene therapy targets in glaucoma 14:12 - 14:36

Speaker: Mark Hassall, AU

Dominant Mutation in METTL23 gene is responsible for Normal tension glaucoma 14:36 - 15:00

Oral Presenter: Yang Pan, JP

Ocular Imaging & Psychophysics
13:00 - 15:00 Session 8

Novel Methods in Imaging

Session Motto: From trans-scleral to structured illumination, novel methods for imaging of the anterior and posterior eye are developing rapidly. With an eye towards clinical applications, these exciting new technologies will provide unprecedented information to researchers and clinicians alike. This session will highlight a handful of the latest developments for imaging of the eye including assessment of intraocular scatter and two-photon excited fluorescence ophthalmoscopy.

Chair: Jennifer Hunter, US

Assessment of intraocular scattering in healthy subjects and cataract patients using optical imaging technologies 13:00 - 13:24

Speaker: Ireneusz Grulkowski, PL

High resolution imaging of healthy and pathological retina using an adaptive optics camera with transscleral flood illumination 13:24 - 13:48

Speaker: Kiyoko Gocho, FR

Association of Retinal Age Gap with Arterial Stiffness and Incident Cardiovascular Disease 13:48 - 14:00

Oral Presenter: Zhuoting Zhu, AU

Probing the Origin of Human *In Vivo* RPE Fluorescence Lifetime Changes with Age by Comparing to Endogenous Fluorophores 14:00 - 14:12

Oral Presenter: Janet AH Tang, US

In vivo imaging of the human eye using a two-photon-excited fluorescence scanning laser ophthalmoscope 14:12 - 14:36

Speaker: Jakub Bogusławski, PL

Structured and patterned illumination imaging of the retina 14:36 - 15:00

Speaker: Serge Meimon, FR

Cross-Discipline
13:00 - 15:00 Session 9

Biological Mechanisms Regulating Ocular Growth and Myopia

Session Motto: It is well-established that refractive eye growth is dependent on visual input processed by the retina that then leads to increase in vitreous chamber size. However, the exact mechanisms underlying refractive eye growth and myopia remain elusive. This session will highlight recent research on potential mechanisms underlying myopic eye growth, including atypical opsins, dopamine, and retinal pathways, as well as characteristics of visual input that may influence refractive eye growth such as light levels and spectral wavelengths.

Chair: Machelle Pardue, US
Chair: Ranjay Chakraborty, AU

Effect of L-DOPA treatment on form-deprivation myopia in melanopsin deficient Opn4$^{-/-}$ mice 13:00 - 13:24

Speaker: Ranjay Chakraborty, AU

Modulation of inner retinal signaling pathways in myopia 13:24 - 13:48

Speaker: Reece Mazade, US

Retinal pathways underlying myopia in the guinea pig 13:48 - 14:12
Speaker: Sally McFadden, AU

The role of luminance levels in normal ocular growth and the development of myopia 14:12 - 14:36
Speaker: Regan Ashby, AU

Effects of Red Light Therapy on the Eye and Potential as a Treatment for Myopia 14:36 - 15:00
Speaker: Lisa Ostrin, US

Ocular Pharmacology, Therapeutics & Drug Delivery
13:00 - 15:00 Session 10

Retinal regeneration and cell-based therapies

Session Motto: Cellular approaches to retina repair

Chair: Valerie Wallace, CA
Chair: Ross Poche, US

Investigating Material Exchange Mechanisms in Photoreceptors 13:00 - 13:24
Speaker: Valerie Wallace, CA

Awakening the regenerative potential of the mammalian retina 13:24 - 13:48
Speaker: Ross Poche, US

Sequential Phases of Müller Glia Activation Involve Distinct Plagl1-regulated Pathways 13:48 - 14:12
Speaker: Carol Schuurmans, CA

Direct Neuronal Reprogramming of Müller Glia by Temporal Identity Factors 14:12 - 14:36
Speaker: Michel Cayouette, CA

An Unexpected Regulator of Regeneration in the Injured Mouse Retina 14:36 - 15:00
Speaker: Jin Woo Kim, KR

Retinal Cell Biology
13:00 - 15:00 Session 11

Do extracellular vesicles mediate intercellular communication in the retina?

Session Motto:

Chair: Aparna Lakkaraju, US
Chair: Miguel Flores-Bellver, US

Linking extracellular vesicles with drusen formation and age-related macular degeneration 13:00 - 13:24
Speaker: Miguel Flores-Bellver, US

Exosomes: The RPE-microglia Communication Highway 13:24 - 13:48
Speaker: Colin Germer, US

Pathogenic role of extracellular vesicles in IPSC model(s) of retinal diseases. 13:48 - 14:12
Speaker: Ruchira Singh, US

Ocular Immunology
13:00 - 15:00 Session

Infectious Eye Disease Symposium

Session Motto:

Chair: Bahram Bodaghi, FR

The Infectious Uveitis Treatment Algorithm Network (TITAN): Global Current Practice Patterns for the Management of Viral Anterior Uveitis 13:00 - 13:24
Speaker: Rupesh Agrawal, SG

FUB! registry and diagnosis infectious uveitis 13:24 - 13:48
Speaker: Richard Symes, AU

Ocular Viral Posterior Uveitis 13:48 - 14:12
Speaker: Bahram Bodaghi, FR

A Pilot Study Characterising the Immune Response in Herpes Keratitis 14:12 - 14:36
Oral Presenter: Sana Arshad, AU

Retinal Degeneration
13:00 - 15:00

New Insights into early/intermediate AMD

Session Motto: Discussing new findings related to the early stages of age-related macular degeneration (AMD) including clinical markers, systemic factors, disease mechanisms, and potential interventions.

Chair: Lisa Nivison-Smith, AU

Thickness Changes in Intermediate Age-Related Macular Degeneration Using Location-Specific, Gridwise Optical Coherence Tomography Analysis 13:00 - 13:24
Speaker: Lisa Nivison-Smith, AU

Microperimetry for the Early Stages of AMD 13:24 - 13:48
Speaker: Zhichao Wu, AU

Nutritional Insights for AMD 13:48 - 14:12
Speaker: Bamini Gopinath, AU

Correlation of central versus peripheral macular structure-function with acuity in age-related macular degeneration 14:12 - 14:36
Speaker: Faran Sabeti, AU

Multispectral pattern recognition recognises change in drusen area with high sensitivity in age-related macular degeneration 14:36 - 15:00
Speaker: Angelica Ly, AU

Coffee Break
15:00 - 15:30 Others

Coffee Break / Meet the Experts

Cornea and Ocular Surface
15:30 - 17:30 Opening & Session 1

Advances in biomaterial technology and cell-based therapies for corneal regeneration

Session Motto:

Chair: Nick Di Girolamo, AU
Chair: Mijeong Park, AU

A Native Scaffold for Corneal Epithelial Regeneration 15:30 - 15:54
Speaker: Nick Di Girolamo, AU

Innovations in Fluid-gels for Treating Ocular Surface Disease 15:54 - 16:18
Speaker: Liam Grover, GB

Development and Characterization of a Clinically Relevant Mouse Model of Alkali-induced LSCD 16:18 - 16:42
Oral Presenter: Lina Sprogyte, AU

The Effect of Eggshell Membrane Components on the Promotion of Corneal Epithelial Wound Healing 16:42 - 17:06
Oral Presenter: Tadahiko Tamura, JP

Crystallins to Keratoplasties: Improving Biomimetic Corneal Stromal Materials 17:06 - 17:30
Oral Presenter: Judith Glasson, NZ

Retinal Cell Biology
15:30 - 17:30 Session 2

Development, maintenance and function of photoreceptor synapses

Session Motto: In order to be able to see, photoreceptors must transmit the light signals they generate to other neurons. The session will cover recent advances in our understanding how photoreceptors do this through their synaptic contacts.

Chair: Kirill Martemyanov, US

The roles of PKCα and TPBG in the rod pathway 15:30 - 15:54
Speaker: Catherine Morgans, US

Roles of synaptic ribbons in rods and cones 15:54 - 16:18
Speaker: Wallace B. Thoreson, US

Molecular insight into the function of the photoreceptor to bipolar cell pathway 16:18 - 16:42
Speaker: Takahisa Furukawa, JP

Molecular Principles of Cone Wiring 16:42 - 17:06
Speaker: Kirill Martemyanov, US

Visual Neuroscience
15:30 - 17:30 Session 3

Novel approaches to modulate neural activity: from the cornea to the retina

Session Motto: In this session, we will highlight the latest electrophysiological and optical methods to measure neural activity in the cornea and retina in animal models. Recent advances in the development of optical tools and electrophysiological methods for both recording and control ocular neural activity, open avenues for uncovering pivotal aspects of the biology of ocular pain and vision, in addition to new clinical applications

Chair: Victor Meseguer, ES
Chair: Ariadna Diaz-Tahoces, ES

Trigeminal ganglion neuron recordings as a tool to deepen the physiology and pathophysiology of the ocular surface 15:30 - 15:54
Speaker: Ariadna Diaz-Tahoces, ES

Optochemical modulation of corneal nerve activity 15:54 - 16:18
Speaker: Victor Meseguer, ES

Vision restoration with photoswitchable drugs 16:18 - 16:42
Speaker: Pau Gorostiza, ES

In Vivo Structure-Activity Relationship Study of Corneal Cold Nerve Endings 16:42 - 17:06
Speaker: Fernando Aleixandre-Carrera, ES

RPE-Choroid
15:30 - 17:30 Session 4

Metabolic interactions between the retina and RPE

Session Motto: A metabolic ecosystem comprising retina and RPE.

Chair: James Hurley, US
Chair: Nancy J. Philp, US

Metabolite transport in the retina and RPE 15:30 - 15:54
Speaker: Nancy J. Philp, US

Metabolic synergy between the retina and RPE 15:54 - 16:18
Speaker: James Hurley, US

Metabolic Responses of RPE-choroid to $NaIO_3$-induced RPE Death 16:18 - 16:42
Oral Presenter: Daniel Hass, US

Investigating the Effects of Cytokines on RPE Metabolism 16:42 - 17:06
Oral Presenter: David Hansman, AU

Lens
15:30 - 17:30 Session 5

Channels, water homeostasis and regulation of lens volume

Session Motto: This session will investigate how the dynamic regulation of the cellular physiology of the lens that controls the lens water content (volume) and water to protein ratio (gradient of refractive index) contributes to the overall regulation of the transparent and refractive properties of the lens at the whole tissue level.

Chair: Paul Donaldson, NZ
Chair: Kevin Schey, US

Linking the regulation of lens water transport to crystallin function provides new insights into how the refractive and transparent properties of the lens changes with age. 15:30 - 15:54
Speaker: Paul Donaldson, NZ

Lens AQP Structure and Function 15:54 - 16:18
Speaker: Kevin Schey, US

Lens Na,K-ATPase responds to activation of the mechanosensitive ion channel piezo1. 16:18 - 16:42
Speaker: Nick Delamere, US

Genetic modulation of gap junctional coupling alters lens water transport. 16:42 - 17:06

Speaker: Tom White, US

Effects of Hydrogen Peroxide on Lens Intracellular pH, Gap Junction Coupling and Hydrostatic Pressure 17:06 - 17:30
Oral Presenter: Kulandaiappan Varadaraj, US

Ophthalmic Genetics/Genomics
15:30 - 17:30 Session 6

Epigenetics and the Healthy Eye: Development, Aging, and Therapeutics

Session Motto:

Chair: Margaret DeAngelis, US
Chair: Leah Owen, US
Chair: Neena Haider, US

Epigenetic memory in iPSC differentiation 15:30 - 15:54
Speaker: Michael Farkas, US

Single Cell Multi-omics Atlas of the Human Retina 15:54 - 16:18
Speaker: Rui Chen, US

Increased H3K27 Trimethylation Protects Degenerating Cones in the *cpfl1* Mouse 16:18 - 16:42
Oral Presenter: Annie L Miller, AU

The role of epigenetics in the development of glaucoma: A mouse model 16:42 - 17:06
Speaker: Bruce Ksander, US

Glaucoma
15:30 - 17:30 Session 7

Role of Actin Cytoskeleton and Cell Adhesive Mechanisms in Homeostasis of IOP and Glaucoma

Session Motto: Cytoskeletal dynamics and adhesive contacts (cell-matrix and cell-cell junctions) play a central role in the regulation of aqueous humor outflow. This session brings together mechanotransduction, intracellular signaling mechanisms, ion channels, kinases, and transcriptional mechanisms to explore how changes in intraocular pressure, cell mechanics and extracellular matrix regulate the function and pathology of trabecular meshwork.

Chair: Vasanth Rao, US
Chair: David Krizaj, US
Chair: Megumi Honjo, JP

Understanding the role of the microenvironment in segmental flow and its characterization 15:30 - 15:54
Speaker: Vijaykrishna Raghunathan, US

New Molecular Insights into Glucocorticoid-Induced Actin Cytoskeletal Reorganization and Cell Adhesive Interactions in Human Trabecular Meshwork Cells 15:54 - 16:18
Speaker: Rupalatha Maddala, US

Possibility of New Glaucoma Treatment by Regulation of ATX-LPA Pathway 16:18 - 16:42
Speaker: Megumi Honjo, JP

Basic and clinical aspects of ROCK inhibitors for secondary glaucoma 16:42 - 17:06
Speaker: Toshihiro Inoue, JP

Mechanosensitive Ion Channels as Dynamic Modulators of Actomyosin and Integrin Remodeling in Trabecular Meshwork Cells 17:06 - 17:18

Speaker: Christopher Rudzitis, US

YAP/TAZ Mediate TGFβ2-induced Schlemm's Canal Cell Dysfunction 17:18 - 17:30

Oral Presenter: Samuel Herberg, US

Ocular Imaging & Psychophysics
15:30 - 17:30 Session 8

New measures of ocular blood flow and oximetry in health and disease

Session Motto: moderator twitter handle: @SchallekLab session description: The vasculature of the retina and choroid combine to provide nutrients and dispose of metabolic waste for the retina and optic nerve. Beyond the structural observation of vessels, new measures of perfusion may provide essential information to evaluate the health of the retina. In recent years a variety of technologies including as OCT, AOSLO and laser Doppler Holography have explored these parameters in the animal and human retina, revealing new insights to the workings of the spatial and temporal dynamics of blood flow. Recent work that spans a number of these technologies will be presented to showcase the depth and breadth of the field. A discussion will follow of the synergies and differences of parallel approaches and their applications.

Chair: Jesse Schallek, US
Chair: Amani Fawzi, US

Characterization of intermittent retinal capillary perfusion in sickle cell disease using AOSLO and OCT angiography 15:30 - 15:54

Speaker: Toco Chui, US

Visible-light OCT Oximetry in Retinal Capillaries 15:54 - 16:18

Speaker: Yali Jia, US

Imaging the speed and behavior of single red and white blood cells in the inflamed retina 16:18 - 16:42

Speaker: Jesse Schallek, US

In vivo high-order hemodynamics of human retinal capillary blood flow 16:42 - 17:06

Speaker: Yuhua Zhang, US

Modeling blood flow in the diabetic retinal microvasculature 17:06 - 17:30

Speaker: Jennifer Sun, US

Cross-Discipline
15:30 - 17:30 Session 9

The Role of Exosomes and Other Extracellular Vesicles in Eye Health and Disease

Session Motto: The very hot topic of exosomes and other extracellular vesicles in ocular health and disease will be covered in this platform session titled "The Role of Exosomes and Other Extracellular Vesicles in Eye Health and Disease". A number of scientists at the forefront of this young field with focus on (1) outer retina and RPE, (2) retinal vasculature, (3) inner retina, (4) vitreous, and (5) aqueous humor outflow pathway will give presentations and discuss the current state of knowledge. The considerable potential of exosomes and other extracellular vesicles as diagnostic and therapeutic biomarkers, as well as exosome-based treatments in ocular disorders will be discussed.

Chair: Mikael Klingeborn, US
Chair: Fiona McDonnell, US

Chronic Subtoxic Oxidative Stress in Retinal Pigmented Epithelium Cause Polarized Desmosome Shedding via 15:30 - 15:54

Exosomes
Speaker: Mikael Klingeborn, US

Exosomes in the Conventional Outflow Pathway 15:54 - 16:18
Speaker: Fiona McDonnell, US

Activation of Classical Complement Pathway by Exosomes in Diabetic Retinopathy 16:18 - 16:42
Speaker: Julia Busik, US

Role of Extracellular Vesicles in RPE Dysfunction 16:42 - 17:06
Speaker: Jeffrey M. Sundstrom, US

Extracellular Vesicles as Mediators of Retinal Homeostasis and Immune Modulation 17:06 - 17:30
Speaker: Yvette Wooff, AU

Ocular Pharmacology, Therapeutics & Drug Delivery
15:30 - 17:30 Session 10

Glaucoma pharmacology

Session Motto: It is exciting to be part of a group of innovators in ophthalmology and a chair of such an wonderful group of ophthalmic researchers. It is so important that we better understand not only the underlying pathophysiology of glaucoma but also the opportunities for better treatments. These are the conferences that ignite ideas and collaborations that ultimately impact our patients.

Chair: Carol Toris, US
Chair: Barbara Wirostko, US

(Don’t) Go with the Flow: Innovative Approaches towards Sustainable Outflow Therapies 15:30 - 15:54
Speaker: Ganesh Prasanna, US

Prospects of Utilizing Viral Delivery of Ocular Hypotension-associated Proteins for Sustained Intraocular Pressure Reduction 15:54 - 16:18
Speaker: Michael Fautsch, US

New Perspectives on Ocular Biodisposition from Studies on the Anti-glaucoma Drug JV-GL1 16:18 - 16:42
Speaker: Jenny Wang, US

Heteromeric vs. Homomeric Receptor Complexes: Implications for Ligand Recognition, Signal Transduction, and Ocular Therapeutics 16:42 - 17:06
Speaker: David Woodward, GB

Update on Pregabalin as a Glaucoma Therapeutic 17:06 - 17:18
Speaker: Monica Jablonski, US

IOP Elevation by $GABA_A$ Disinhibition of the Nucleus Raphe Pallidus 17:18 - 17:30
Oral Presenter: Arthur DeCarlo, US

Cornea and Ocular Surface
15:30 - 17:30 Session 11

Corneal Biology and Clinical Strategies

Session Motto:

Chair: Arkasubhra Ghosh, IN
Chair: Peter Lwigale, US

BMP signaling inhibits the persistence of myofibroblasts during wound healing of the embryonic cornea 15:30 - 15:54
Speaker: Peter Lwigale, US

Using the Power of Deep Learning to Accurately Classify Keratoconus Patients from Multiple International Centres 15:54 - 16:18
Oral Presenter: Nicole Hallett, AU

Mapping of Orientation of Collagen Fibers in Healthy and Keratoconus Corneas: A First in Patient Study 16:18 - 16:42
Oral Presenter: Raghav Narasimhan, IN

Temporal and spatial analysis or corneal keratocyte differentiation and patterning following UV cross-linking 16:42 - 17:06
Speaker: Matthew Petroll, US

Understanding the Role of Neural Crest Cells in Corneal Development 17:06 - 17:30
Speaker: Aftab Taiyab, CA

Visual Neuroscience
15:30 - 17:30 Session

Retinal Plasticity

Session Motto: Retinal Plasticity An understanding of retinal structure and function has been a 150 year journey through biological science with the goal of understanding precisely how the retina is anatomically composed and how that structure interacts physiologically. These rules of organization, partnerships, genetic, metabolic, and physiological states are altered in retinal disease. This session will explore some of the issues and mechanisms relevant to plasticity in the retina.

Chair: Bryan William Jones, US
Chair: Rebecca Pfeiffer, US

Synaptic and Circuit Remodeling of Primate Foveal Midget Pathways 15:30 - 15:54
Speaker: Rachel Wong, US

Molecular mechanisms controlling long-term responses to injury in inner retina. 15:54 - 16:18
Speaker: Seth Blackshaw, US

Inhibiting retinoic acid-induced physiological remodeling mitigates vision loss in mice undergoing photoreceptor degeneration 16:18 - 16:42
Speaker: Richard H Kramer, US

Muller Cell Connectomics in Health and Disease 16:42 - 17:06
Speaker: Rebecca Pfeiffer, US

Longitudinal Characterization of Retinal Vasculature Alterations with Optical Coherence Tomography Angiography in a Mouse Model of Tauopathy 17:06 - 17:30
Oral Presenter: Seth Buscho, US

Retinal Degeneration
15:30 - 17:30

Biomarkers and novel therapies for non-neovascular AMD

Session Motto: Is this the dawn of a new era for treating non neovascular Age-related macular degeneration (AMD)?

Chair: Robyn Guymer, AU
Chair: Zhichao Wu, AU

DARC, a novel biomarker of cell death and a biomarker in GA trials *Speaker*: Francesca Cordeiro, GB	15:30 - 15:54
ONL Therapeutics Approach to Treating Geographic Atrophy *Speaker*: David Zack, US	15:54 - 16:18
Gene therapy for geographic atrophy in AMD *Speaker*: Doron Hickey, AU	16:18 - 16:42
Towards Slowing Progression of Geographic Atrophy: The LEAD Study *Speaker*: Robyn Guymer, AU	16:42 - 17:06
Efficacy and Safety of Intravitreal Pegcetacoplan in Geographic Atrophy: 24-month Results from the DERBY and OAKS Phase 3 Trials *Speaker*: Mary Rophael, AU	17:06 - 17:30

Others
18:30 - 20:00 Others

ECR Drinks

Thursday, 23. February 2023

Cornea and Ocular Surface
08:00 - 10:00 Opening & Session 1

Corneal Bioengineering Research

Session Motto: The global shortage of donor corneas is a significant clinical issue. Bioengineering human corneal tissue replacements is an important and rapidly evolving research field that generates alternative solutions to tackle corneal blindness and donor tissue shortages. It is also a multidisciplinary research that requires input from clinicians, scientists, engineers and policy makers. Recognising its importance and complexity, Australian and New Zealand researchers established the ANZ corneal bioengineering working group in 2019. In this session, we invited key researchers from the ANZ corneal bioengineering working group together with selected presenters from abstracts to share their most recent and novel findings in corneal bioengineering covering topics from innovative biomaterials and 3D printing to important considerations for application of bioengineering in corneal treatments.

Chair: Jingjing You, AU
Chair: Trevor Sherwin, NZ

A Bioengineered Cornea 08:00 - 08:24
Speaker: Gerard Sutton, AU

Engineering the Cornea 08:24 - 08:48
Speaker: Zhi Chen, AU

Sex, age and stem cells in corneal bioengineering 08:48 - 09:12
Speaker: Trevor Sherwin, NZ

Translating Bioengineered Endothelium for Clinical Use and Evaluation of its Characteristics and Performance 09:12 - 09:36
Oral Presenter: Sheng Hua, AU

Choosing the right collagen for corneal bioengineering 09:36 - 10:00
Speaker: Jingjing You, AU

Retinal Cell Biology
08:00 - 10:00 Session 2

Diabetic Retinopathy: What's New?

Session Motto: Diabetic retinopathy (DR) still remains the major cause of vision loss that is increasing like an epidemic globally. This session highlights the novel findings in the field of DR, molecular pathways and genomics that unravels potential novel therapeutic targets.

Chair: Arup Das, US

A New Pathogenic Mechanism for Retinal Inflammation in Diabetic Retinopathy 08:00 - 08:24
Speaker: Jian-Xing Ma, US

Diabetic Retinopathy: Does Genomics play a role in Development and Progression of its Phenotypes? 08:24 - 08:48
Speaker: Arup Das, US

Levodopa Treatment for Diabetic Retinopathy 08:48 - 09:12
Speaker: Machelle Pardue, US

Characterization of NLRP3 Inflammasome Activation in the Onset of Diabetic Retinopathy 09:12 - 09:36
Oral Presenter: Charisse Yu Jean Kuo, NZ

Discussion 09:36 - 10:00

Visual Neuroscience
08:00 - 10:00 Session 3

Gene replacement and editing strategies to study retinal structure and function

Session Motto: Genetic approaches and their outcomes to alter retinal structure and function

Chair: Maureen McCall, US
Chair: Jay Neitz, US

Gene therapy for congenital stationary night blindness 08:00 - 08:24
Speaker: Ron Gregg, US

Gene editing of P23H human rhodopsin induces scotopic vision in a pig model of RP 08:24 - 08:48
Speaker: Maureen McCall, US

Developing gene therapy methods for treating cone disorders by intravitreal injection 08:48 - 09:12
Speaker: Maureen Neitz, US

Identification of Genes Regulating Retinal Ganglion Cell Regeneration 09:12 - 09:36
Oral Presenter: Kevin Emmerich, US

Three-dimensional Ultrastructure of the Normal Rod Photoreceptor Synapse and Degenerative Changes Induced by Retinal Detachment 09:36 - 10:00
Oral Presenter: Gil Torten, US

RPE-Choroid
08:00 - 10:00 Session 4

RPE and photoreceptor interactions

Session Motto: RPE and photoreceptor interactions The interactions between the photoreceptors and RPE cells are critical for the health of the retina. RPE phagocytosis of photoreceptor outer segment portions is critical for vision. The first talk will be on novel signaling mechanisms associated with diurnal RPE phagocytosis. Bisretinoid accumulation as lipofuscin contributes to RPE atrophy and photoreceptor degeneration, and reactions in photoreceptor outer segments lead to the formation of uncharacterized bisretinoid species. Advances on this topic will be the subject of the second talk. In the healthy RPE, the metabolic and energy-sensing pathways are implicated in protection against oxidative stress and neurotoxicity, which differ in age-related macular degeneration (AMD), as will be discussed in the third talk. Moreover, several members of the nuclear receptor family modulate cellular homeostatic pathways in RPE cells. The fourth talk will focus on the emerging roles of nuclear receptors in the aging eye and AMD pathogenesis.

Chair: Patricia Becerra, US
Chair: Silvia Finnemann, US

Anti-inflammatory signaling of MERTK in the RPE independent of diurnal outer segment phagocytosis 08:00 - 08:24
Speaker: Silvia Finnemann, US

Dysregulated metabolic and energy-sensing pathways in AMD 08:24 - 08:48
Speaker: Nady Golestaneh, US

Nuclear Receptor Regulation of Lipid Metabolism and Inflammation in the Retina and RPE 08:48 - 09:12
Speaker: Goldis Malek, US

Gene therapy-based expression of PEDF protects Rho$^{P23H/+}$ mutant retina 09:12 - 09:36
Speaker: Andrea Bighinati, IT

In Vivo Assay for Drug Discovery and Detection of Photoreceptor Survival Factors 09:36 - 09:48
Speaker: Alexandra Bernardo-Colon, US

Diffuse and Discrete Deposits in Clinically Documented Eyes with Age-related Macular Degeneration 09:48 - 10:00
Speaker: Cheryl Au, AU

Lens
08:00 - 10:00 Session 5

Eye and lens regeneration

Session Motto: oculum pro oculo

Chair: Kelly Ai-Sun Tseng, US
Chair: Irene Vorontsova, NZ

Newt lens regeneration: A developmental paradigm uncovered 08:00 - 08:24
Speaker: Katia Del Rio-Tsonis, US

Regenerating During Development: Understanding Vertebrate Eye Regrowth Using the Frog Embryo 08:24 - 08:48
Speaker: Kelly Ai-Sun Tseng, US

Understanding spatially dictated single-cell transcriptomics in the transparent ocular lens 08:48 - 09:12

Lens Nucleus Centralisation in the Zebrafish Lens: A Model to Study the Regulation of Emmetropisation and Myopia 09:12 - 09:36
Oral Presenter: Irene Vorontsova, NZ

Ophthalmic Genetics/Genomics
08:00 - 10:00 Session 6

From Genotype-Phenotype Correlations to Disease Modelling in Retinal Disorders

Session Motto:

Chair: Christina Zeitz, FR

How can we unpack risk factors in myopia 08:00 - 08:24
Speaker: Paul Baird, AU

State of the art of congenital stationary night blindness 08:24 - 08:48
Speaker: Christina Zeitz, FR

Inherited retinal disorders and modifieres 08:48 - 09:12
Speaker: Neena Haider, US

State of the art of nystagmus 09:12 - 09:36
Speaker: Jinu Han, KR

Blood and Tissue Levels of Factor H-Related 4 Protein do not Modulate Susceptibility to Age-related Macular Degeneration or its Progression Course 09:36 - 10:00
Oral Presenter: Moussa A. Zouache, US

Glaucoma
08:00 - 10:00 Session 7

Neural Crest in Anterior Segment Dysgenesis and Glaucoma

Session Motto: The Neural Crest : Migratory cells that pave the way to normal anterior eye development

Chair: Aftab Taiyab, CA
Chair: Judith West-Mays, CA

Molecular Distinguishing Ocular and Craniofacial Neural Crest Cell Populations 08:00 - 08:24
Speaker: Brenda Bohnsack, US

Role of AP-2β Transcription Factor in Neural Crest-derived Anterior Segment Development and Dysgenesis 08:24 - 08:48
Speaker: Judith West-Mays, CA

Anterior segment disorders: genetics, disease mechanisms and the window to precision medicine 08:48 - 09:12
Speaker: Alan Ma, AU

Gene expression profiling of murine neural crest-derived cells in the anterior segment 09:12 - 09:36
Speaker: Tsutomu Kume, US

Ocular Imaging & Psychophysics
08:00 - 10:00 Session 8

Optical Methods for Elastography in Ophthalmology

Session Motto: making one world of in eye research

Chair: Oliver Stachs, DE
Chair: Alexander Heisterkamp, DE

Brillouin Spectroscopy and Optical Coherence Elastography of the Eye 08:00 - 08:24
Speaker: Kirill Larin, US

From classical to balanced heterodyne Brillouin detection 08:24 - 08:48
Speaker: Karsten Sperlich, DE

Elastography of the Retina 08:48 - 09:12
Speaker: Gereon Hüttmann, DE

Basics about Elastography 09:12 - 09:36
Speaker: Alexander Heisterkamp, DE

Cross-Discipline
08:00 - 10:00 Session 9

Ion Channels in Retinal Pathologies and Therapeutic Approaches

Session Motto: Ion channels and pathology of homeostatic functions: regulatory pathways and key events leading to pathology

Chair: Bikash Pattnaik, US
Chair: Soyle Nymark, FI

Complement Activated Ion Channels in the RPE 08:00 - 08:24
Speaker: Olaf Strauß, DE

TRPML1 activity on lysosomes of RPE cells is blocked by accumulation of lipid waste 08:24 - 08:48
Speaker: Claire Mitchell, US

Genome Editing of Ocular Ion Channels for Therapeutic Use 08:48 - 09:12
Speaker: Meha Kabra, US

A Mutation-agnostic Treatment for Inherited Retinal Degenerations by Drug Repurposing 09:12 - 09:36
Oral Presenter: Henri Leinonen, FI

Ocular Pharmacology, Therapeutics & Drug Delivery
08:00 - 10:00 Session 10

The Role of Genetics to inform Ocular Therapeutics

Session Motto:

Chair: Radha Ayyagari, US

Genome variant curation for better patient care 08:00 - 08:24
Speaker: Kristy Lee, US

Pharmacogenomics of Glaucoma 08:24 - 08:48
Speaker: Sayoko Moroi, US

Optic neuropathy in familial dysautonomia: Mechanism and therapeutic opportunities 08:48 - 09:12
Speaker: Anil Chekuri, US

Identification of Therapeutic Targets for MacTel Using Genomics and Metabolomics 09:12 - 09:36
Speaker: Melanie Bahlo, AU

Ocular Immunology
08:00 - 10:00 Session

Failure of the immune privilege

Session Motto: The eye as an immune privileged organ is rarely affected by immunological processes. Nevertheless, if protective mechanisms fail, patients may experience intraocular inflammatory diseases. In our session we will focus on key aspects of the "Failure of immune privilege", including genetic factors, that facilitate the development of an autoimmune response (Denis Wakefield, Australia). Nevertheless, the immune privilege can be overcome, and uveitis develops. Uveitis is a T cell-mediated disease with a chronic or relapsing course, which has been extensively investigated in two rat models with respect of the role and type of T cells involved (Gerhild Wildner, Germany). B cells are also involved in uveitis and play a role in antigen presentation and regulating autoreactive T cells (Charles Egwuagu, Unites States). In summary, this session will cover the genetic predisposition, the pathogenic role of T cells and their dynamics within the eye, and the regulation of pathogenic T cells by B cells.

Chair: Gerhild Wildner, DE
Chair: Dennis Wakefield, AU

Genetic Predisposition to Ocular Inflammation 08:00 - 08:24
Speaker: Dennis Wakefield, AU

The Immunopathogenesis of Chronic and Relapsing Autoimmune Uveitis 08:24 - 08:48
Speaker: Gerhild Wildner, DE

Regulatory B cells in ocular inflammation 08:48 - 09:12
Speaker: Charles Egwuagu, US

Microglia Facilitate Complement C5aR1 Signalling in Neural Retina during Health and Disease 09:12 - 09:36
Oral Presenter: Adhithi Ramesh, AU

Human 3D *in vitro* Model of the Inner Blood-retinal Barrier and Diabetic Retinopathy 09:36 - 10:00
Oral Presenter: Thomas Maurissen, CH

Retinal Degeneration
08:00 - 10:00
Mechanism of retinal injury, repair and fibrosis
Session Motto:
Chair: Heping Xu, GB
Chair: Xiaomeng Wang, SG

Secreted Frizzled-Related Protein as a Novel Target for the Treatment of Retinal Angiogenesis. 08:00 - 08:24
Speaker: Xiaomeng Wang, SG

Reprogramming of the serine/glycine synthesis in a fibrosis mouse model 08:24 - 08:48
Speaker: Ting Zhang, AU

Differential Role of Macrophage and Microglia in Choroidal Neovascularisation-mediated Retinal Fibrosis 08:48 - 09:12
Speaker: Manon Szczepan, IE

Myo/Nog Cells Are Progenitors of Myofibroblasts in a Mouse Model of Proliferative Vitreoretinopathy 09:12 - 09:36
Oral Presenter: Mindy George-Weinstein, US

Exhibition
09:00 - 16:00 Others
Exhibition

Coffee Break
10:00 - 10:30 Others
Coffee Break

Ceremony
10:30 - 12:00 Opening & Session 1
Prize Ceremony and Lecture

Introduction 10:30 - 10:40
Speaker: Olaf Strauß, DE
Speaker: Steven Fliesler, US

Laudatio 10:40 - 10:50
Speaker: Catherine Bowes Rickman, US

Lecture by Award Winner 10:50 - 11:35
Speaker: Krzysztof Palczewski, US

Others
12:00 - 13:00 Session 3
AOPT Lunchtime Symposium

Selecting drugs: New Chemical/biologic entities: Pros and cons. A case study: Phosphorodiamidate Morpholino 12:00 - 12:12

Oligonucleotide (PMO) Delivery to Retinal Layers
Speaker: Sri Mudumba, AU

Keeping the Patient in Mind: From Bench to Bedside 12:12 - 12:24
Speaker: Mildred MG Olivier, US

Teaching Training and mentoring physicians who run trials 12:24 - 12:36
Speaker: Eydie Miller-Ellis, US

Manufacturing Ophthalmic Therapeutics: from bench to bedside 12:36 - 12:48
Speaker: Ashwath Jayagopal, US

Expedited programs: what to know when you interact with regulators 12:48 - 13:00
Speaker: Cheryl L. Rowe-Rendleman, US

Cornea and Ocular Surface
13:00 - 15:00 Opening & Session 1

New developments in corneal wound healing

Session Motto: Innovation, discovery, and validation!

Chair: Vivek Singh, IN
Chair: Sayan Basu, IN

Human stem cell-based approaches for ocular surface disorders – from cells to 3D bioprinted corneal tissues. 13:00 - 13:24
Speaker: Heli Skottman, FI

Limbus-derived mesenchymal/stromal cells in corneal wound healing: clinical experience and future directions 13:24 - 13:48
Speaker: Sayan Basu, IN

Bioengineering Corneal Tissue - scientific challenges versus clinical requirements 13:48 - 14:12
Speaker: Damien Harkin, AU

Silk Fibroin for Corneal Healing: Characterization and Photobonding of Membranes 14:12 - 14:36
Oral Presenter: Rocio Gutierrez-Contreras, ES

Harnessing Structural Data to Design Novel Ocular Surface Drugs 14:36 - 14:48
Oral Presenter: Tarsis Ferreira, US

Biomimetic hydrogel and 3D printed cornea for Corneal wound healing and stromal replacement 14:48 - 15:00
Speaker: Vivek Singh, IN

Retinal Cell Biology
13:00 - 15:00 Session 2

Functions of the Retinal Circadian Clock and Retinal Circadian Photoreception

Session Motto: A time for day and a time for night, in the retina.

Chair: Christophe Ribelayga, US

Structure, function, and plasticity of rod/cone gap junctions 13:00 - 13:24
Speaker: Christophe Ribelayga, US

Circadian regulation of photopic light responses: Distinct 13:24 - 13:48

roles of dopamine, clock genes, and rod-cone gap junctions.
Speaker: P. Michael Iuvone, US

Melanopsin Function in Humans 13:48 - 14:12
Speaker: Andrew Zele, AU

Phagosome Degradation by the Retinal Pigment Epithelium Occurs on a Daily Cycle, Revealing that the Phagocytic Rate Does Not Peak after Lights-on 14:12 - 14:36
Oral Presenter: Antonio Escudero Paniagua, US

Visual Neuroscience
13:00 - 15:00 Session 3

Synaptic mechanisms of adaptation in the retina

Session Motto: Our sense of vision allows us to navigate environments over a vast range of lighting conditions, from a cloudy night to bright midday sunshine. This extraordinary dynamic range relies on adaptation mechanisms within the retina that adjust sensitivity and gain as ambient light changes. This session will present recent findings elucidating molecular mechanisms of light adaptation at retinal synapses.

Chair: Catherine Morgans, US
Chair: Tomomi Ichinose, US

Modulatory effect of dopamine on bipolar cell signaling in the mouse retina 13:00 - 13:24
Speaker: Tomomi Ichinose, US

Role of Kv11.1 (Kcnh2) in the function of retinal rod bipolar cells 13:24 - 13:48
Speaker: R. Lane Brown, US

mGluR5 Regulates the Light Response of Retinal ON-Bipolar Cells 13:48 - 14:12
Speaker: Robert Duvoisin, US

Functional Compensation Mechanisms During Photoreceptor Degeneration in Retinitis Pigmentosa 14:12 - 14:36
Speaker: Deepa Matthew, US

Dopaminergic Amacrine Cell Activation in the Developing Retina 14:36 - 15:00
Oral Presenter: Vrinda Jain, AU

RPE-Choroid
13:00 - 15:00 Session 4

RPE-photoreceptor homeostasis: exploring unbeaten pathways and novel links

Session Motto: Expect the unexpected!

Chair: Silvia Finnemann, US

Modulation of mitochondrial integrity and function in human pluripotent stem cell-derived RPE 13:00 - 13:24
Speaker: Divya Sinha, US

Molecular Mechanisms of Phosphatidylserine Exposure at the Photoreceptor Outer Segment Tip 13:24 - 13:48
Speaker: Jade A. Vargas, US

Activity of voltage-gated sodium channels in RPE is critical for actin organization affecting the early phases of 13:48 - 14:12

photoreceptor outer segment phagocytosis
Speaker: Soyle Nymark, FI

Melanopsin signaling and RPE Phagocytosis 14:12 - 14:36
Speaker: Sujata Rao, US

Discussion 14:36 - 15:00

Lens
13:00 - 15:00 Session 5

Therapeutic strategies for lens-related pathologies

Session Motto: Working towards treatments for lens-related pathologies so we can live life more clearly.

Chair: Juliet Moncaster, US
Chair: Michael O'Connor, AU

Investigating drug-related cataracts using micro-lenses 13:00 - 13:24
Speaker: Michael O'Connor, AU

Anti-aging α-klotho overexpression and age-related changes in mouse lenses across lifespan 13:24 - 13:48
Speaker: Juliet Moncaster, US

Heparan sulfate proteoglycans in fibrotic cataract 13:48 - 14:12
Speaker: Tayler Wishart, AU

Characterisation of Tropomyosin Activity in TGF-β-induced Lens EMT 14:12 - 14:36
Oral Presenter: Mary Flokis, AU

Fiber Cell Dysmorphogenesis and Calcium Precipitation in Age-related Nuclear Cataracts 14:36 - 15:00
Oral Presenter: Xiaohua Gong, US

Ophthalmic Genetics/Genomics
13:00 - 15:00 Session 6

Retinal Gene Therapy

Session Motto: Gene therapy in eye diseases is a fast-growing field with high potential of translational application in eye clinic. We will discuss in vivo gene editing for treatment of different retina diseases, together with presenting novel tools and proof-of-concept demonstration.

Chair: Yang Hu, US
Chair: Livia Carvalho, AU

CRISPR RNA Editing as a Therapeutic Approach for Retinal Diseases 13:00 - 13:24
Speaker: Rick Liu, AU

Gene therapy for KCNV2-deficiency: from supernormal to normal 13:24 - 13:48
Speaker: Livia Carvalho, AU

The past, present and future of AAV-based gene therapeutics. Vector bioengineering as a foundation of translational gene therapy programs. 13:48 - 14:12
Speaker: Leszek Lisowski, AU

Quantification of AAV Dose-response with Single Cell Resolution 14:12 - 14:36

Oral Presenter: Morgan Sedorovitz, US

Glaucoma
13:00 - 15:00 Session 7

Beyond the Soma: Protecting Axons and Dendrites in Optic Neuropathy

Session Motto: "We have soma chemistry - let's connect!"

Chair: Rebecca Sappington, US
Chair: Leonard Levin, US

Differential Roles of Phospholipid Translocation in Axonal Degeneration 13:00 - 13:24
Speaker: Leonard Levin, US

Beyond the Soma: Protecting Axons and Dendrites in Optic Neuropathy 13:24 - 13:48
Speaker: Pete Williams, SE

Interleukin-6 and Microtubule Architecture: Implications for Axon Structure and Function in Retinal Ganglion Cells 13:48 - 14:12
Speaker: Rebecca Sappington, US

Compartmentalized retinal ganglion cell death after axonal insult 14:12 - 14:36

Prolonged Unilateral Ocular Hypertension Results in Elevated Glial Reactivity and Microglial Activation in the Human Optic Nerve Head 14:36 - 15:00
Oral Presenter: Mary Anne Garner, US

Ocular Imaging & Psychophysics
13:00 - 15:00 Session 8

Anterior Segment Ocular Imaging for objective, quantitative diagnosis

Session Motto: Imaging techniques at the interface of optics, physics and mechanics to unravel basic ocular mechanisms and treatments in the anterior segment of the eye You can cite @MarcosLabUR and @CVSUoR in your twitter announcements

Chair: Susana Marcos, US

Advances in measurements of air-induced corneal deformations 13:00 - 13:24
Speaker: Karol Karnowski, PL

Dynamic imaging and quantification of human accommodation with OCT 13:24 - 13:48
Speaker: Bianca Maceo Heilman, US

Applying Collagen Understanding to Refractive Assessment, Treatment and Evaluating Outcomes 13:48 - 14:12

Ultrasound Biomicroscopy (UBM) Determination of Angle Width 14:12 - 14:36
Oral Presenter: Roxana Ursea, US

Cross-Discipline
13:00 - 15:00 Session 9

Protein Quality Control in the Retina

Session Motto: Protein homeostasis, or proteostasis, refers to maintaining the balance of protein synthesis, folding, and degradation to ensure optimal cell function and organismal health. The eye is constantly exposed to oxidative, inflammatory, and protein folding/degradation challenges. Accordingly, specialized cell types within the eye such as the photoreceptors and the retinal pigment epithelium must adapt to these challenges primarily through regulation of protein quality control pathways (e.g., the unfolded protein response, the ubiquitin proteasome pathway, or autophagy) or risk triggering cellular dysfunction and ultimately disease (e.g., retinitis pigmentosa (RP), achromatopsia, or age-related macular degeneration (AMD)). This session will explore the involvement of protein quality control pathways in ocular disorders, the challenges associated with studying such processes, and the current chemical and genetic methodology for restoring protein homeostasis for retinal disease intervention.

Chair: John Hulleman, US

Mitochondria and Endoplasmic Reticulum Stress in Achromatopsia Patient Retinal Organoids 13:00 - 13:24
Speaker: Jonathan Lin, US

Testing the role of IRE1 in photoreceptor development and maintenance 13:24 - 13:48
Speaker: Douglas A. Gould, US

Repurposing of FDA Approved Anti-Diabetic Drugs to Prevent Retinopathy in a Mouse Dietary glycemia-induced Model of AMD 13:48 - 14:12
Speaker: Allen Taylor, US

Spatiotemporal control of protein homeostasis in the retina 14:12 - 14:36
Speaker: John Hulleman, US

Gene-Independent Strategies for Cone Preservation in Inherited Rod-cone Dystrophies 14:36 - 15:00
Oral Presenter: Daniel Chung, US

RPE-Choroid
13:00 - 15:00 Session 10

On the origin of the myofibroblast: contributions of EMT of RPE and EndMT of choroidal endothelial cells in retinal fibrosis

Session Motto: Origin Story: Which cells gives rise to the myofibroblast in fibrosis?

Chair: Daisy Shu, US
Chair: Francine Behar-Cohen, FR

Macrophage-to-myofibroblast transition in retinal fibrosis 13:00 - 13:24
Speaker: Heping Xu, GB

Epigenomic and Transcriptomic Changes During Human RPE EMT 13:24 - 13:48
Speaker: Timothy Blenkinsop, US

Role of Mitochondria and Cellular Metabolism during Epithelial-mesenchymal Transition of RPE 13:48 - 14:12
Speaker: Daisy Shu, US

***CPH-RP* Variants Disrupt Ciliogenesis of the Retinal Pigment Epithelium: A Novel Cause of Retinitis Pigmentosa** 14:12 - 14:36
Oral Presenter: Vasiliki Kalatzis, FR

Establishing Live Imaging Approach to Study Photoreceptor-RPE Interactions *in vivo* in Zebrafish 14:36 - 15:00
Oral Presenter: Noora Emilia Nevala, FI

Retinal Degeneration
13:00 - 15:00
The role of retinal damage in diabetic retinopathy
Session Motto: Novel mechanisms in retinal diseases
Chair: Subrata Chakrabarti, CA
Chair: Folami Powell, US

Lighting the Dark Matter - Non-coding RNAs in Diabetic Retinopathy 13:00 - 13:24
Speaker: Subrata Chakrabarti, CA

microRNAs as New Actors in Inherited Retinal Diseases 13:24 - 13:48
Speaker: Sandro Banfi, IT

Retinal Müller glial-expressed ZFP36 protects the retina from diabetes-induced damage 13:48 - 14:12
Speaker: Sui Wang, US

Neurovascular unit Breakdown in a Mouse Model of T2D Occurs in Parallel in the Retina and Brain 14:12 - 14:36
Oral Presenter: Karis Little, GB

Retinal Dysfunction and Degeneration Associated with Reduced Glut1 Expression in Endothelial Cells Is Rescued by Induced Hyperglycemia 14:36 - 14:48
Oral Presenter: Ivy Samuels, US

Targeting mediators of retinal energy homeostasis protects against retinal degeneration 14:48 - 15:00
Speaker: Folami Powell, US

Coffee Break
15:00 - 15:30 Others
Coffee Break / Meet the Experts

Cornea and Ocular Surface
15:30 - 17:30 Opening & Session 1
The future of dry eye diagnosis and management
Session Motto:
Chair: Danielle Robertson, US
Chair: Maria Markoulli, AU
Chair: Henry Reis, CA

The gut-eye-lacrimal gland-microbiome axis in Sjögren Syndrome and dry eye 15:30 - 15:54
Speaker: Cintia de Paiva, US

Osmolarity: Gold Standard for Dry Eye Disease Determination or Random Number Generator? 15:54 - 16:18
Speaker: Lyndon Jones, CA

The relationship between dendritic cells and corneal nerves 16:18 - 16:42
Speaker: Katie Edwards, AU

The impact of probiotics and prebiotics on dry eye disease 16:42 - 16:54
Speaker: Azadeh Tavakoli, AU

A Novel, Real-time Imaging of Meibomian Gland Ducts by Optical Coherence Tomography 16:54 - 17:06
Oral Presenter: Fatima Iqbal, AU

Neuro-epithelial Roles of Axon Guidance Proteins in Corneal Wound Healing 17:06 - 17:18
Oral Presenter: Victor Guaiquil, US

In vivo Evidence that Skin Lipids May Be a Cause of Dry Eye in Humans 17:18 - 17:30
Speaker: Jim Kokkinakis, AU

Retinal Cell Biology
15:30 - 17:30 Session 2

VLC-PUFA in Stargardt disease, AMD and aging

Session Motto: Everything you would like to know but you are afraid to ask about the role of VLC-PUFAs in Stargardt disease, AMD and aging.

Chair: Dorota Skowronska-Krawczyk, US
Chair: Martin-Paul Agbaga, US

VLC-PUFAs in Aging Eye 15:30 - 15:54
Speaker: Dorota Skowronska-Krawczyk, US

Delineating the Role of Mutant ELOVL4 on VLC-PUFA in Retinal Function 15:54 - 16:18
Speaker: Martin-Paul Agbaga, US

Synthetic VLC-PUFAs as Potential Therapeutic Agents for Retinal Disease 16:18 - 16:42
Speaker: Paul Bernstein, US

Visual Neuroscience
15:30 - 17:30 Session 3

Ion Channels in Ocular Physiology

Session Motto: Ion channels are widely key proteins in cellular function. They are essential in signal transduction, information processing, secretion, phagocytosis, cellular mobility, proliferaton, regulation of gene expression. This session will bring together work from different ocular tissues in which ion channels play an essential role in cell function. New insights into the interaction of ion channels in synaptic transmission but also new astonishing interactions with intracellular molecules such as the actomyosin sceleton will futher improve our understanding ion channel function.

Chair: Olaf Strauß, DE
Chair: Bikash Pattnaik, US

Presynaptic calcium channels of the photoreceptor synapse 15:30 - 15:54
Speaker: Amy Lee, US

Role of Kir7.1 channel in shaping outer retina physiology 15:54 - 16:18
Speaker: Bikash Pattnaik, US

Dynamics of RPE Connectivity 16:18 - 16:42
Speaker: Julia Fadjukov, FI

Mechanotransduction in Retinal Ganglion Cells 16:42 - 17:06
Speaker: David Krizaj, US

Reversal of Retinal Dysfunction in a Mouse Model of HCN1 Genetic Epilepsy 17:06 - 17:18
Oral Presenter: Bang Bui, AU

Studying the Role of Potassium Channels in an Inherited Retinal Disorder 17:18 - 17:30
Oral Presenter: Yashvi Bhatt, AU

RPE-Choroid
15:30 - 17:30 Session 4

Nuclear control of RPE cell fate

Session Motto: The shapeshifting RPE

Chair: Aparna Lakkaraju, US
Chair: Goldis Malek, US

Investigation of effects of Hippo pathway modulation on RPE injury 15:30 - 15:54
Speaker: Sabine Fuhrmann, US

Mitochondrial function drives nuclear control of RPE cell fate through ROS mediated retrograde signaling 15:54 - 16:18
Speaker: James Handa, US

Distinctive roles of Nur77-mediated signaling in aging RPE: Implications for Age-Related Macular Degeneration 16:18 - 16:42
Speaker: Tanu Parmar, US

Plasma membrane-to-nucleus signaling dynamically regulates lysosome gene expression in the retinal pigment epithelium 16:42 - 17:06
Speaker: Aparna Lakkaraju, US

Retinal Cell Biology
15:30 - 17:30 Session 5

Stress Signaling pathways and Diabetic Retinopathy

Session Motto: With diabetes becoming as an epidemic of the 21st century, number of patients with diabetic retinopathy is also increasing. However, despite extensive research in the field, molecular mechanisms of its development remain unclear. This session will highlight novel signaling pathways initiated by hyperglycemic/hyperlipidemic stress that could potentially identify some therapeutic targets.

Chair: Anjan Kowluru, US

ER-associated stress signaling pathway in diabetic retinopathy 15:30 - 15:54
Speaker: Sarah Xin Zhang, US

Nrf2 as a protective pathway and therapeutic target in diabetic retinopathy 15:54 - 16:18
Speaker: Elia Duh, US

Status Update on Contributary Roles of Rac1-Nox2 Signaling Axis in Diabetic Retinopathy 16:18 - 16:42
Speaker: Renu Kowluru, US

IL-1 Signaling in Different Models of Diabetic Retinopathy 16:42 - 17:06
Speaker: Susanne Mohr, US

The impact of diabetes on the neurovascular unit – 17:06 - 17:30

commonalities and contrasts between the retina and brain
Speaker: Alan Stitt, GB

Cornea and Ocular Surface
15:30 - 17:30 Session 6

The Biological Aspects of Human Corneal Endothelial Cells in Health and Disease

Session Motto: This session will provide attendees with an excellent overview of the recent advancements in human corneal endothelial cell biology, in both health and disease, as well as a vibrant platform for debate. In addition, recently proposed future therapies involving regenerative medicine and novel pharmaceutical agents will be discussed.

Chair: Shigeru Kinoshita, JP
Chair: Ula Jurkunas, US
Chair: Viridiana Kocaba, NL

Cell Cycle and Guttae Formation of Corneal Endothelial Cells 15:30 - 15:54
Speaker: Ula Jurkunas, US

Corneal Endothelial Transition Zone 15:54 - 16:18
Speaker: Jodhbir S. Mehta, SG

Cell Therapy for Corneal Endothelial Cell Loss 16:18 - 16:42
Speaker: Shigeru Kinoshita, JP

Proteomics & Guttae Analysis in Fuchs Endothelial Corneal Dystrophy 16:42 - 17:06
Speaker: Viridiana Kocaba, NL

TRPV4 and Piezo1 Involvement in Corneal Endothelial Cells Physiology 17:06 - 17:18
Oral Presenter: Luka Lapajne, SI

Cellular Interplay through Extracellular Vesicle miR-184 Alleviates Corneal Endothelium Degeneration 17:18 - 17:30
Oral Presenter: Morio Ueno, JP

Ocular Pharmacology, Therapeutics & Drug Delivery
15:30 - 17:30 Session 7

Cellular Senescence in Retinal Disease: From Dish to Clinic

Session Motto: Harnessing aging biology to remedy diseases of the aging eye.

Chair: Przemyslaw (Mike) Sapieha, CA
Chair: Frédérick Antoine Mallette, CA

Endogenous self-RNA recognition in senescent endothelial cells 15:30 - 15:54
Speaker: Reinhold Medina,

Cellular Senescence in Retinal Vascular Diseases 15:54 - 16:18
Speaker: Przemyslaw (Mike) Sapieha, CA

Cholesterol Metabolism and cellular senescence in retinopathies 16:18 - 16:42
Speaker: Frédérick Antoine Mallette, CA

Ocular Imaging & Psychophysics
15:30 - 17:30 Session 8

Imaging Eye Pathology in Neurodegenerative Disease

Session Motto:

Chair: Jonathan Lin, US

Evaluating Retinal Changes in Paired Brain and Eye Autopsy Specimens From Patients With Neurodegenerative Disease 15:30 - 15:54

Retinal manifestations of Alzheimer's disease 15:54 - 16:18
Speaker: Maya Koronyo-Hamaoui, US

Retinal biomarkers in Alzheimer's disease and Multiple Sclerosis: moving from observation to clinically relevant outcomes 16:18 - 16:42
Speaker: Heather Moss, US

Hyperspectral retinal imaging biomarkers of Alzheimer's disease 16:42 - 17:06
Speaker: Peter van Wijngaarden, AU

Cross-Discipline
15:30 - 17:30 Session 9

New Developments in Understanding Nystagmus

Session Motto: Latest Nystagmus Research

Chair: Linda McLoon, US
Chair: Fatema Ghasia, US

Potential Molecular Basis of Infantile Nystagmus 15:30 - 15:54
Speaker: Linda McLoon, US

Machine Learning and Fixation Stability: Utility in detecting childhood eye diseases 15:54 - 16:18
Speaker: Fatema Ghasia, US

Genetic testing in infantile nystagmus: How, what, when and why? 16:18 - 16:42
Speaker: Jay Self, GB

Foveal Development in Infantile Nystagmus 16:42 - 17:06
Speaker: Mervyn Thomas, GB

Heterogeneity and developmental progression of waveforms in INS as a clue to mechanism. 17:06 - 17:30
Speaker: James Phillips, US

Epidemiology of Eye Disease & Global Eye Health
15:30 - 17:30 Session 10

The Changing pattern of eye disease and its consequences globally- the work of the VLEG and the Global Vision Database

Session Motto: The last 30 years have seen remarkable advances in understanding of eye diseases, treatments and eye care delivery, many of which have evolved into high quality and cost-efficient programs which have changed the lives of millions of people. Reductions in age-standardised prevalence of blindness and vision impairment over this time period are to be welcomed, yet the ageing of populations coupled with population growth means that numbers of people with vision loss continues to increase. This session looks at the latest information on vision loss 'burden' and the important inter-regional differences that exist and differences within populations. The two most important causes, cataract and uncorrected refractive error are associated with the most cost-effective healthcare interventions. Each of these will be considered from the perspective of scaling up delivery of high quality care. Retinal diseases have seen major changes with the advent of diabetic screening programs and modern treatment of age-related macular degeneration- these will also be discussed from the perspective of global, regional and individual impact. World Sight Day 2022 was marked by the World Health Organization's Report of the 2030 targets on effective coverage of eye care, an important milestone in bringing these indicators within the framework of Universal Health Coverage. Members of the teams that prepared the baseline estimates for these indicators will discuss their approach and the findings and what is needed in order to achieve the targets set by the WHO.

Chair: Rupert Bourne, GB
Chair: Konrad Pesudovs, AU

Cataract- the World's leading cause of blindness: global and regional change and predictions 15:30 - 15:54
Speaker: Konrad Pesudovs, AU

Developing the WHO 2030 targets on effective coverage of eye care: Effective Cataract Surgical Coverage 15:54 - 16:18
Speaker: Ian Tapply, GB

Undercorrected Refractive Error - Changing Trends and Opportunities 16:18 - 16:42
Speaker: Nina Tahhan, AU

Developing the WHO 2030 targets on effective coverage of eye care: Effective Refractive Error Coverage 16:42 - 17:06
Speaker: Maria Cicinelli, IT

Drawing the themes together and strategies to upscale future eyecare 17:06 - 17:30
Speaker: Serge Resnikoff, AU

Ocular Immunology
15:30 - 17:30 Session

Corneal and limbal inflammatory disease

Session Motto: Uniting clinicians and scientists. Forging collaborations.

Chair: Louis Tong, SG
Chair: Keryn Williams, AU

Tear Cytokine in Sjogren's Syndrome: Report from International Sjogren's Syndrome Collaboration 15:30 - 15:54
Speaker: Louis Tong, SG

Neuroinflammation and corneal nerve regeneration 15:54 - 16:18
Speaker: Yu Chi Liu, SG

Genetics based approaches for assessing keratoconus risk 16:18 - 16:42
Speaker: Stuart MacGregor, AU

Meibum Proteins in Meibomian Gland Dysfunction 16:42 - 17:06
Speaker: Jacqueline Tan, AU

Retinal Degeneration
15:30 - 17:30

Retinopathy of Prematurity: Progressive Retinal Dysfunction

Session Motto: ROP: Not once and done

Chair: Sylvain Chemtob, CA
Chair: Anne Fulton, US

Long-term Impacts of Retinopathy of Prematurity – Lessons from Bench and Bedside 15:30 - 15:54
Speaker: Ellen Zhou, CA

Neuro-retinal dysfunction in ROP 15:54 - 16:18
Speaker: Anne Fulton, US

Lactate as Observed in Circulatory Compromise Acts on GPR81 Receptor to Preserve Sub-retinal Integrity of the Developing Outer Retina 16:18 - 16:42
Speaker: Sylvain Chemtob, CA

Increased retinal oxidative injury and lipid peroxidation by PUFA during intermittent hypoxia in the Neonatal Rat Model. 16:42 - 17:06
Speaker: Jacob V. Aranda, US

The long-term structural and functional impact of retinopathy of prematurity on the retina and vision 17:06 - 17:30
Speaker: Cynthia Qian, CA