



ARVO 2019 Annual Meeting Emerging Trends and Hot Topics

The following abstracts have been identified by members of the Annual Meeting Program Committee as representing the newest and most innovative research being conducted in the various specialties. To view abstracts, enter the program number (xxx – xxxxx) or title below in the "Search" field of the [Online Planner](#) or [mobile app](#).

Sunday, April 28

Anatomy and Pathology/Oncology

956. GNAQ and GNA11 in circulating tumor DNA as a novel liquid biopsy-based biomarker for Uveal Melanoma. 3pm

958. Exploratory study of candidate genes other than BAP1 associated with hereditary predisposition to uveal melanoma. 3:30pm

Clinical/Epidemiologic Research

1077 - A0035. Spectrum of Eye disorders in type 2 Diabetes (SPEED) in India. An eye care facility-based study. 3pm

Immunology/Microbiology

763 - B0241. cGAS-STING pathway activation in murine retina. 1pm

848 - B0326. Microbial keratitis following corneal transplantation. 1pm

986. Neuropilin-1 Deficiency on Myeloid Cells Promotes a Pro-inflammatory Phenotype while Inhibiting Choroidal Neovascularization. 3:30pm

987. Interleukin-33 attenuates ocular angiogenesis through a mast cell dependent pathway. 3:45pm

989. Systemic injection of low dose LPS transiently improves the retina function and structure of a mouse model of geographic atrophy. 4:15pm

Multidisciplinary Ophthalmic Imaging Cross-sectional Group

1285 - A0530. Magnetomotive OCT for specific visualization of ocular surface inflammation. 3pm

1297 - A0542. Enhanced imaging of the outer retina layers using speckle-reduced visible-light optical coherence tomography. 3pm

Retina

77 - A0257. Anti-VEGF Non-Responders are often short-term responders. 8am

112 - A0293. High-Dose High-Frequency Aflibercept For Recalcitrant Neovascular Age-Related Macular Degeneration (2-year follow up). 8am

356 - A0233. Short Term Effects of Carbidopa-Levodopa in Neovascular AMD. 1pm

1212 - A0226. Efficacy and safety of faricimab every 16 or 12 weeks for neovascular age-related macular degeneration: STAIRWAY phase 2 results. 3pm

Retinal Cell Biology

1220 - A0323. Elucidating the role of photoreceptors in AMD pathogenesis. 3pm

1255 - A0358. Garcinia extract inhibiting HIF suppresses laser-induced CNV in mice. 3pm

Visual Psychophysics/Physiological Optics

1033. Integrating AOSLO hardware and analysis using a database driven design. 3:45pm

Monday, April 29

Anatomy and Pathology/Oncology

1320. MYCN Overexpression Induces Cone Precursor Proliferation and Tumorigenesis in Explanted Retinae. 8:15am

1321. The Histone Methyltransferase NSD2 is a New Histopathologic Biomarker and Potential Therapeutic Target for Human Retinoblastoma. 8:30am

1322. In vivo assessment of novel intra-arterial and intravitreal chemotherapy compounds using a tumor-bearing rabbit model of intra-arterial chemotherapy: Efficacy without toxicity. 8:45am

1326. Intravitreal Bevacizumab for the Prevention of Radiation Maculopathy. 9:45am

2319 - A0367. Interaction of Immune Checkpoints in Tumor-Stromal Microenvironment of Primary and Chemoreduced Retinoblastoma. 4pm

2330 - A0378. An Intraocular Pressure Predictive of High-Risk Histopathologic Features in Group E Retinoblastoma Eyes. 4pm

Cornea

1416. High fat diet induced functional and pathological changes in lacrimal gland. 9:30am

2735 - B0485. The prevalence of ocular Graft Versus Host Disease on a Facebook forum. 4pm

2759 - B0509. Influence of somatosensory function and the menstrual cycle on dry eye symptoms. 4pm

Genetics Cross-sectional Group

1615 - A0495. Genetic analysis localizes a novel locus on chromosome 4q for the glaucoma endophenotype, cup-to-disc ratio: The Jiri Eye Study. 8:15am

Immunology/Microbiology

1347. Depletion of ocular surface CD11c+ dendritic cells prevents the generation of contrasuppressor cells and restores immune privilege of corneal allografts. 8:30am

1352. Novel alterations to the corneal neuroimmune phenotype in mice with central nervous system tauopathy. 9:45am

1722. Infection Patterns of Periodontal Microbiota and Age-related Macular Degeneration. 11:15am

1723. HTRA1 inactivates Thrombospondin-1 mediated subretinal immune-suppression. 11:30am

1724. Inflammatory cell type-specific bioluminescence for quantitative scoring of uveitis in vivo. 11:45am

Multidisciplinary Ophthalmic Imaging Cross-sectional Group

1456 - A0140. Estimation of Haemoglobin A1c from Retinal photographs via Deep Learning. 8:15am

Retina

1528 - A0212. Fully-Automated Drusen Segmentation in OCT using Deep Learning with Pyramid U-net. 8:15am

1538 - A0222. Deep learning predicts OCT measures of diabetic macular thickening from color fundus photographs. 8:15am

2009 - B0028. Evaluating color vision deficiency in patients with epiretinal membranes and its association with retinal surface defects. 11:15am

2010 - B0029. Binocular random perimetry of unilateral macular hole without occlusion. 11:15am

2020 - B0039. Exploring the 10-year Incidence of Endophthalmitis at a Tertiary Care Academic Referral Practice. 11:15am

2035 - B0054. Management of a Cluster of Endophthalmitis Cases due to Nutritionally Variant Streptococcus Following Intravitreal Bevacizumab. 11:15am

2038 - B0057. Predictors of Vitrectomy in Cases of Endophthalmitis Associated with Open Globe Injury. 11:15am

2628 - B0159. Usefulness of liquid biopsy of aqueous humor biomarkers in predicting anti-VEGF response in Diabetic Macular Edema. Results of a pilot study. 4pm

2634 - B0165. Understanding the relationship between ellipsoid zone inner border variation and its effect on visual acuity in Diabetic Retinopathy patients. 4pm

Retinal Cell Biology

1685 - B0322. Mapping interleukin-33 to metabolic function in the retinal pigment epithelium. 8:15am

Visual Psychophysics/Physiological Optics

1426 - A0110. Optoretinogram: stimulus-induced optical changes in photoreceptors observed with phase-resolved line-scan OCT. 8:15am

1779. Cone photoreceptor classification in the living human eye from light-induced phase changes. 12:15pm

1780. Adaptive optics line-field OCT for high-speed imaging of retinal structure and function. 12:30pm

1781. Measuring neuron loss in the retinal ganglion cell layer in healthy subjects. 12:45pm

Tuesday, April 30

Anatomy and Pathology/Oncology

2776. Single cell vitreous analysis increases sensitivity of MYD88L265P detection and allows detailed genotyping. 8:45am

3541 - A0582. Distribution of retinal amyloid deposits in association with Alzheimer's disease. 11:45am

3542 - A0583. Morphology of Retinal Pathologic Prion Protein (PrP) Deposits in Sporadic Creutzfeldt-Jakob Disease (sCJD) Patients. 11:45am

3554 - A0595. Whole Exome Profiling and Mutational Analysis of Ocular Surface Squamous Neoplasia. 11:45am

3575 - A0616. Ocular surface squamous neoplasia, a now medically treatable disease spectrum? 11:45am

3581 - A0622. Differentiation of orbital lymphoproliferative diseases by metabolomics. 11:45am

Clinical/Epidemiologic Research

3949 - A0448. Association of diagnosis code-based and laboratory results-based kidney disease with development of vision threatening diabetic retinopathy. 2:45pm

Cornea

4166 - B0524. Evaluation of the vitamin D3 levels in tear and blood of college students practicing indoor and outdoor physical activities. 2:45pm

4167 - B0525. Digital frequency domain approach for pO₂ sensing with a microfluorometer developed for transcorneal measurements. 2:45pm

Multidisciplinary Ophthalmic Imaging Cross-sectional Group

3092 - A0435. Handheld spectrally encoded coherence tomography and reflectometry (HH-SECTR) for motion compensated OCT angiography and mosaicking. 8:45am

3277. 4D OCTA: Time-resolved OCTA to image chorioretinal hemodynamics in the human eye. 11:45am

Retina

2985 - A0268. Characterization of the Controlled and Extended Release of Dexamethasone-Loaded Nanoparticles and Aflibercept-Loaded Microspheres from a Hydrogel Drug Delivery System. 8:45am

2987 - A0270. Study of Stability and Bioactivity of Aflibercept During Fabrication and Release from a Microsphere-Hydrogel Drug Delivery System. 8:45am

3443 - A0286. Quantity and morphology of inner retinal vasculature is reduced in intermediate Age-Related Macular Degeneration. 11:45am

3444 - A0287. Quantification of two-dimensional progression velocity in geographic atrophy and its relationship with autofluorescence at the borders. 11:45am

3484 - A0327. Subclinical choroidal neovascularizations in fellow-eyes of exudative age-related macular degeneration patients show a decrease in retinal sensitivity over time. 11:45am

3487 - A0330. Automated volumetric choroidal neovascularization segmentation and quantification in swept-source OCT angiography using machine learning. 11:45am

3493 - A0336. Outer Plexiform Layer Remodeling in Aging and Age-related Macular Degeneration. 11:45am

3665 - B0173. A bispecific aptamer targeting both VEGF and Angiopoietin-2 for treating retinal diseases. 11:45am

3938 - A0078. Treatment of Macular Degeneration Using Human Somatic Cell Nuclear Transfer Embryonic Stem cell Derived Retinal Pigment Epithelium: 1-Year Results in an Asian Patient. 2:45pm

3942 - A0082. A Pilot Study to Evaluate Surgical Implantation of a Protein-Based Artificial Retina in a Rodent. 2:45pm

Visual Neuroscience

3113 - A0504. Fishing for neuroreparative strategies in the short-living *Nothobranchius furzeri*. 8:45am

Wednesday, May 1

Anatomy and Pathology/Oncology

4352 - A0068. Presence and progression of atrophic areas in pathological myopia. 8:15am

4815. Choroidal Thickness in Myopic Children in the BLINK Study. 11:15am

Biochemistry/Molecular Biology

4228. Homology-Independent Targeted Integration in Photoreceptors. 9am

Clinical/Epidemiologic Research

4457 - A0348. Using head mounted display technology to document the prevalence of trachoma. 8:15am

4801. Cost-Effectiveness of Primary Care-Based Non-Mydriatic Fundus Photography with Automated Retinal Image Analysis Screening Among Low-Income Patients with Diabetes. 11am

4803. Extraction of Patient Specific Information from Fundus Images in the Wild. 11:30am

5221. Identification of novel serum metabolites associated with intraocular pressure: the Singapore Chinese Eye Study. 3pm

5224. Genome-wide association study identifies a novel locus associated with strabismus. 3:45pm

Genetics Cross-sectional Group

4247. Whole genome methylation profiling of retinal pigment epithelium reveals differential methylation and gene expression associated with AMD. 8:30am

4249. Genome-wide association study on a large multi-ethnic sample identifies new genetic loci that predispose to keratoconus. 9am

Immunology/Microbiology

4634 - B0128. Removal of a transcription activator for ascorbic acid transport reduces *Streptococcus pneumoniae* growth in vitreous humor. 8:15am

Retina

5307 - B0003. iTeleGEN: Development of a Web-Based Diabetic Retinopathy Education Module. 3pm

5325 - B0021. Longitudinal Change in Retinal Layer Thicknesses in Subjects with Proliferative Diabetic Retinopathy Treated with Intravitreal Aflibercept. 3pm

5329 - B0025. Correlation between retinal vessel density and retinal layer thickness in eyes with proliferative diabetic retinopathy. 3pm

5345 - B0041. Fractal Dimension Analysis of OCTA Images in Normal and Diabetic Eyes using the Circular Mass-radius Method. 3pm

5349 - B0045. Evaluating signs of microangiopathy secondary to diabetes in different areas of the retina with swept source OCTA. 3pm

5350 - B0046. Quantitative Analysis of Macular Ischemia in Diabetic Retinopathy using OCT Angiography. 3pm

5351 - B0047. Non-invasive assessment of retinal mitochondrial dysfunction in diabetic retinopathy. 3pm

Retinal Cell Biology

4867 - A0188. Investigation of the interaction of Sigma1 Receptor (S1R) and NRF2 in cone photoreceptor cells. 10:15am

5176. Zinc and microglia regulate retinal ganglion cell survival and axon regeneration after optic nerve injury. 3:30pm

5177. PARP inhibitors: The protective ways on retinal degeneration. 3:45pm

5179. Interplay between Histone Methyltransferases Ezh2 and G9a Regulates Retinal Ganglion Cell Gene Expression during Development. 4:15pm

Visual Psychophysics/Physiological Optics

4265. Direct subjective refraction with temporal defocus waves. 8:30am

Thursday, May 2

Clinical/Epidemiologic Research

6451. A Multi-Country Study of Myopia in Children: Digital Data Capture Using an Innovative Application - plano. 10:30am

6452. The Spatial Frequency Content of Urban and Indoor Environments as a Potential Risk Factor for Myopia Development. 10:45am

6454. Association of myopia progression with visual behavior. 11:15am

6456. Visual impairment associated with myopia among school children in China. 11:45am

Cornea

6248 - B0229. Conjunctival transcriptome profiling in vernal keratoconjunctivitis. 8am

Genetics Cross-sectional Group

6056 - A0553. Small molecules restore the expression and function of mutant alleles underpinning autosomal dominant and recessive inherited retinal dystrophies. 8am

6065 - A0562. Remodeling in rescued RP retina. 8am

Immunology/Microbiology

6414. Complement C3 and CD4 T cells coordinate corneal sensation loss in HSV-1 keratitis. 11:15am

6416. Virus-specific T cell receptor transgenic mice vaccinated with HSV-1 Δ NLS limit HSV--induced corneal neovascularization in the absence of antibody. 11:45am

Retina

5794 - A0239. Ex vivo analyzing the handling of a thermosensitive intraocular tamponade in pig eyes after pars plana vitrectomy. 8am

5800 - A0245. Optical coherence tomography distal-sensor guided manual injection device for transscleral subretinal access. 8am

5816 - A0261. Cigarette smoke promotes epithelial-mesenchymal transition in retinal pigment epithelial cells. 8am

6586 - A0285. Incidence of cystoid macula edema after primary rhegmatogenous retinal detachment surgery. 10:15am

6587 - A0286. Long-term prognosis of eyes with tilted disc syndrome-associated serous retinal detachment. 10:15am

6594 - A0293. Utilizing three-dimensional printing for the production of a scleral depressor: a technical assessment and primer for clinical integration. 10:15am

6595 - A0294. Visual outcome of multifocal intraocular lenses after retinal detachment surgery. 10:15am

6597 - A0296. Clinical characteristics of proven acute intraocular toxicity by perfluorocarbon liquids (PFCL) used in retinal surgery. 10:15am

6600 - A0299. Prognostic value of subfoveal subretinal fluid optical density ratio in macula-involving shallow retinal detachment. 10:15am

6609 - A0308. Hydrogel-based vitreous tamponade prevents proliferative vitreoretinopathy in an in-vitro model. 10:15am

Visual Psychophysics/Physiological Optics

5928 - A0425. Visual Acuity, Motor Vehicle Collisions, and Moving Violations in a Cohort of Patients Who Have Undergone Eyelid Surgery. 8am