

# ARVO 2016 · May 1–5 · Seattle

Poster and paper session recommendations by Heidelberg Engineering

## Fundus Autofluorescence

### A 0016 AMD Imaging 1

#### Discordance between Blue-Light Autofluorescence and Near-Infrared Autofluorescence in Age-Related Macular Degeneration

Given our findings of missed geographic atrophy lesions on BluePeak in 8% of eyes, clinicians should consider multi-modality imaging, including NIRAF and OCT, especially in clinical trials of GA.

Michael J. Heiferman, Amani A. Fawzi

 Sun, May 01  8:30 am – 10:15 am

### A 0335 Retinal Degeneration

#### The National Eye Institute Prospective ABCA4 Retinopathy Natural History Study: Autofluorescence Imaging Analysis

One year, prospective data supports BluePeak as a reliable method to monitor change in patients with ABCA4 retinopathy. This study provides an opportunity to investigate the association between fundus autofluorescence changes in Stargardt disease with molecular genetics and other clinical findings that may be used as outcome variables in future trials.

Laryssa Huryn, Brett G. Jeffrey, Aarti Hinduja, Catherine A. Cukras, Wadih M. Zein, Robert B. Hufnagel, Yuri V. Sergeev, Benedetto Falsini, Amy Turrieff, Denise Cunningham, Brian P. Brooks

 Sun, May 01  8:30 am – 10:15 am

### C 0069 AMD Imaging 2

#### The perimeter as predictor for the progression of geographic atrophy (GA) secondary to age-related macular degeneration (AMD)

GA progression rates are correlated with the area, perimeter and circularity of the lesion. The findings indicate that spread of GA may be associated with the extent of damaged adjacent retinal pigment epithelium cells.

Maximilian Pfau, Moritz Lindner, Lukas Goerdt, Steffen Schmitz-Valckenberg, Srinivas R. Sadda, Frank G. Holz, Monika Fleckenstein

 Mon, May 02  8:30 am – 10:15 am

## Fundus Autofluorescence

### C 0090 AMD Imaging 2

#### Prevalent and incident geographic atrophy (GA) in fellow-eyes of patients with unilateral neovascular age-related macular degeneration

Development of nGA and GA in patients with unilateral neovascularisation is a relatively common phenomenon. Multi-modal imaging incorporating OCT features and BluePeak significantly improves detection of the earliest changes.

Ruth E. Hogg, Rufino M. Silva, Giovanni Staurenghi, Chiara Rosina, Ana Rita Santos, Usha Chakravarthy

 Mon, May 02  8:30 am – 10:15 am

## OCT Angiography

### C 0106 Imaging posterior segment

#### Qualitative and quantitative assessment of retinal vascular impairment due to Epiretinal membrane: an OCT-Angiography analysis

OCT-A is a useful technology for detecting vascular abnormalities due to ERM both in the superficial and deep capillary plexa. The fully automated quantitative retinal vascular analysis may offer an objective method for monitoring disease progression and potentially the functional response to the surgical treatment.

Fiore Tito, Marco Lupidi, Florence Coscas, Carlo Cagini, Gabriel J. Coscas

 Mon, May 02  8:30 am – 10:15 am

### D 0099 In vivo animal imaging

#### Optical coherence tomography angiography (OCT-A) in an animal model for laser-induced choroidal neovascularization

This study demonstrates that in vivo OCT-A imaging can be performed in small animals like rats. Detailed and high-contrast images of the retinal and choroidal vascular plexus can be visualized without invasive dye injection. OCT-A imaging may allow for a more precise, spatial analysis of new blood vessel formation in CNV animal models as compared with conventional FA.

Johanna Meyer, Petra Fang, Tim Krohne, Frank G. Holz, Steffen Schmitz-Valckenberg

 Mon, May 02  11:00 am – 12:45 pm

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## Poster and paper session recommendations by Heidelberg Engineering

### Glaucoma

#### D 0008 Glaucoma Structure-Function

##### Progression in Glaucoma Suspects is Detected Earlier with Imaging than Standard Automated Perimetry

When trend-based methods are used to evaluate change in global indices of structure and function, detection of progression is seen significantly earlier with SD-OCT than SAP.

Alberto Diniz-Filho, Linda M. Zangwill, Akram Belghith, Robert N. Weinreb, Felipe A. Medeiros

 Sun, May 01  8:30 am – 10:15 am

#### D 0052 Glaucoma Imaging I

##### Intra- and interobserver reproducibility of Bruch's membrane opening minimum rim width and retinal nerve fiber layer thickness in healthy individuals with spectral domain optical coherence tomography

SPECTRALIS OCT shows excellent reproducibility for measuring both BMO-MRW and RNFL thickness in healthy subjects, with a tendency of higher reproducibility with BMO-MRW.

Alexandre S. Reis, Camila Zangalli, Ricardo Y. Abe, André L. Silva, Jayme R. Vianna, Jose Paulo C. Vasconcellos, Vital P. Costa

 Sun, May 01  1:30 pm – 3:15 pm

#### D 0074 Glaucoma Imaging I

##### Repeatability and reproducibility of optic nerve head and retinal nerve fiber layer parameter measurements with the Heidelberg SPECTRALIS OCT

For R&R, the COVs of measured parameters were higher for glaucoma eyes compared to normal controls, while Gage R&Rs were lower. All values were within expected ranges and may be taken into account in the clinical assessment of baseline and follow-up measurement results.

Christian Y. Mardin, Wolfgang Schrems, Laura-Maria Schrems-Hösl, Robert Laemmer

 Sun, May 01  1:30 pm – 3:15 pm

### Glaucoma

#### D 0084 Glaucoma Imaging I

##### Assessment of Reproducibility and Correlation of two SPECTRALIS® SD OCT Modules for RNFL Thickness measurements and diagnostic Reliability of ONH measurements with SD OCT Glaucoma Module Premium Edition in glaucoma patients and healthy controls

RNFLT of both modules showed a positive correlation and the results were reproducible. We found that BMO-MRW in T sector and NI is more sensitive in detecting glaucomatous changes than RNFLT standard SD OCT. The same was observed for BMO-MRW and RNFLT measured with APS module for NI, NS, TS, T sector.

Marita Awe, Pascal Buley, Carsten Framme, Shaghayegh Khalili Amiri, Katerina Hufendiek

 Sun, May 01  1:30 pm – 3:15 pm

#### Room 6 C Glaucoma Structure Function

##### Differences Between Healthy and Glaucomatous Myopic Eyes Using Automated Determination of Beta Peripapillary Atrophy Zone with Intact Bruch's Membrane:

Automated assessment of  $\beta$ PPA with intact BM from OCT B-scans shows promise for differentiating between healthy and glaucomatous myopic eyes, since  $\beta$ PPA with intact BM was associated mainly with glaucoma and to a lower degree with axial length.

Patricia Isabel C. Manalastas, Akram Belghith, Jost B. Jonas, Min Hee Suh, Adeleh Yarmohammadi, Robert N. Weinreb, Felipe A. Medeiros, Linda M. Zangwill

 Mon, May 02  4:15 pm – 4:30 pm

#### Room 6 A Glaucoma Imaging I

##### Longitudinal reproducibility of spectral domain optical coherence tomography (SD-OCT) in children with stable glaucoma and physiological cupping

The reproducibility of longitudinal SD-OCT measurements was very good ( $ICC > 0.8$ ) for all average and sectoral RNFL thicknesses, as well as for total and segmented retinal volumes. For average RNFL thickness, longitudinal reproducibility of SD-OCT in children with stable glaucoma over ~2 years is comparable to reported short-term reproducibility in children with normal eyes (1.16% COV) and adults with normal eyes and glaucoma (1.62-1.95% COV).

Limin Xu, Mays El-Dairi, Evan Silverstein, Sharon Freedman

 Tue, May 03  3:45 pm – 4:00 pm

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## Infrared and Redfree Imaging

### A 0353 AMD Clinical Research 3

#### Clinical features and long-term progression of reticular pseudodrusen in age-related macular degeneration: Findings from a multi-center cohort

RPD are highly prevalent in the fellow eyes of patients with unilateral AMD. Presence of RPD is associated with increased long-term risk of progression, highlighting the importance of comprehensive multimodal retinal imaging and careful monitoring of at-risk patients.

Joao Gil, João Pedro Marques, Ruth E. Hogg, Chiara Rosina, Maria L. Cachulo, Ana Rita Santos, Giovanni Staurengi, Usha Chakravarthy, Rufino M. Silva

 **Wed, May 04**  **11:00 am – 12:45 pm**

## Widefield Imaging

### A 0342 Retinal Degeneration

#### Wide-field MultiColor Spectral Imaging and Wide-field Spectral Domain Optical Coherence Tomography Imaging in ABCA4-related retinal dystrophies

WF-MC and WF-SD-OCT provide the opportunity to observe more details of retinal alterations in ABCA4-related retinal dystrophies at the posterior pole and in the peripheral retina visualizing the continuous change of lesions from the fovea to the periphery.

Simone Kellner, Silke Weinitz, Ghazaleh Farmand, Heidi B. Stoeher, Bernhard H. Weber, Ulrich Kellner

 **Sun, May 01**  **8:30 am – 10:15 am**

### C 0092 Vitreoretinal Interface Diseases

#### Ocriplasmin for vitreo-macular traction: a Wide-Field OCT Study

VMT are characterized by shallow vitreous detachment around the fovea always associated to a VPA. Rarely an initial peripheral vitreous detachment is visible. Intravitreal Ocriplasmin injection induces resolution of VMT and rarely a release of a VPA and a complete PVD. It can also induce and acute panretinopathy not related to vitreous detachment, characterized by an attenuation of photoreceptor outer segments layers involving all the retina area and shallow peripheral sub-retinal detachment.

Chiara Preziosa, Isabella D'Agostino, Ugo Nava, Stefano Erba, Matteo G. Cereda, Ferdinando Bottoni, Giovanni Staurengi

 **Tue, May 03**  **3:45 pm – 5:30 pm**

## MultiColor Imaging

### A 0341 Retinal Degeneration

#### Widefield MultiColor Spectral Imaging and Widefield Spectral Domain Optical Coherence Tomography Imaging in Retinitis Pigmentosa

WF-MC and WF-SD-OCT provide the opportunity to observe more details of retinal alterations in retinitis pigmentosa in the midperipheral and peripheral retina area.

Ulrich Kellner, Simone Kellner, Silke Weinitz, Ghazaleh Farmand, Birgit Lindau, Heidi B. Stoeher, Bernhard H. Weber

 **Sun, May 01**  **8:30 am – 10:15 am**

### D 0296 Clinical and Other Applications of OCT

#### MultiColor and Optical Coherence Tomography Appraisal of Deep Retinal Capillary Ischemia

Optical coherence tomography and Multicolor imaging techniques may be of great value in order to assess and differentiate the morphometric changes induced by different patterns of retinal arterial ischemia. The systemic and prognostic implications of this classification is highly relevant and therefore a precise diagnosis should be performed in the presence of retinal ischemic diseases.

Rosa Dolz-Marco, Laura Monje-Fernandez, María Andreu-Fenoll, Nestor Garcia-Marin, Roberto Gallego-Pinazo

 **Tue, May 03**  **3:45 pm – 5:30 pm**

## Anterior Segment Imaging and OCT

### D 0184 Trabecular Meshwork

#### Trabecular Micro-Bypass Stent Placement Influences Aqueous Angiography-Visualized Aqueous Humor Outflow in Human Eyes

Trabecular micro-bypass stents are a form of Minimally Invasive Glaucoma Surgeries (MIGS) that bypass the trabecular meshwork (TM) to improve aqueous humor outflow (AHO) to lower intraocular pressure (IOP). MIGS demonstrate inconsistent IOP lowering with one hypothesis related to improper placement.

Sindhu Saraswathy, Anna Dastiridou, Alan Begian, Hanz Legaspi, James Tan, Brian Francis, David Hinton, Robert Weinreb, Alex Huang

 **Wed, May 04**  **8:30 am – 10:15 am**

## Anterior Segment Imaging and OCT

### C 0134 Glaucoma Imaging II

#### Three-Dimensional 360 Degrees Imaging of Aqueous Humor Outflow Structures in the Living Human Eye with Spectral-Domain OCT

Three-dimensional model of the circumferential aqueous humor outflow (AHO) structures in the living human eye using an automated detection algorithm of Schlemm's Canal (SC) and first-order collector channels (CC) applied to non-invasive spectral domain optical coherence tomography (SD-OCT) images.

**Anna Dastiridou, Akram Belghith, Linda Zangwill, Robert Weinreb, Alex Huang**

 **Wed, May 04**  **11:00 am – 12:45 pm**

## Corneal Confocal Microscopy

### A 0197 Cornea Imaging

#### Repeatability and clinical utility of a novel method to measure in-vivo corneal nerve migration in diabetic neuropathy:

The cornea (...) offers unique neuro-imaging opportunities. Assessment of corneal nerve morphology using corneal confocal microscopy (CCM), a non-invasive surrogate for skin biopsy, has shown much promise as a marker for diabetic neuropathy, and other neurodegenerative diseases. (...) It allows repeated measurement, and hence, measurement of in-vivo nerve growth, or migration. This non-invasive, repeatable test has the potential to be a marker for the diagnosis of neuropathic conditions, and more importantly, for testing the efficacy of novel therapeutic treatments.

**Katie Edwards, Khaled Al Rashah, Nicola Pritchard, Christopher Poole, Cirous Dehghani, Anthony Russell, Rayaz Malik, Nathan Efron**

 **Mon, May 02**  **11:00 am – 12:45 pm**

### A 0203 Cornea Imaging

#### Corneal In Vivo Confocal Microscopy in Ocular Graft versus Host Disease

To compare the density of corneal immune cells and nerves in patients with dry eye disease (DED) with and without ocular graft versus host disease (GVHD) using in vivo confocal microscopy (IVCM). After adjusting for DED severity, cell densities assessed by IVCM are similar in patients with DED with or without ocular GVHD. Therefore, the corneal and conjunctival IVCM findings in ocular GVHD may solely be due to DED and not the underlying disease.

**Kunal Suri, Ahmad Kheirkhah, Yureeda Qazi, Michael Arnoldner, Pedram Hamrah, Reza Dana**

 **Mon, May 02**  **11:00 am – 12:45 pm**

## Corneal Confocal Microscopy

### A 0204 Cornea Imaging

#### Quantitative analysis of Central Corneal Sub-basal Inflammatory cells/Dendritic Cells in Large-area Mosaic images obtained by In Vivo Confocal Microscopy (IVCM)

Quantification and examination of the distribution of inflammatory dendritic cells (DCs) in large-area mosaic images of the cornea obtained by In Vivo Confocal Microscopy (IVCM). Inflammatory cells in the corneal sub-basal layer can be analyzed in vivo in a large field of view of the central cornea. The results provide information regarding the inflammatory status of the cornea in a more complete manner than would be possible from single image analysis, thereby possibly facilitating better diagnosis and management of inflammatory or other pathologic conditions.

**Reza A Badian, Tor Utheim, Stephan Allgeier, Bernd Koehler, Neil Lagali**

 **Mon, May 02**  **11:00 am – 12:45 pm**

### A 0056 Dry Eye II

#### Correlation between corneal changes by confocal microscopy and symptomatology in patients with dry eye syndromes

Evaluation of the corneal innervation and inflammatory cell infiltration by in vivo confocal microscopy (IVCM) and correlation of these confocal parameters with subjective symptoms of dry eye as measured by Ocular Surface Disease Index (OSDI) in patients with non-Sjögren's (NSDE) and Sjögren's syndrome dry eyes (SSDE). The corneas of eyes affected with NSDE and SSDE are characterized by alterations in corneal innervation and infiltration of inflammatory dendritic cells. These quantitative measures are correlated with severity of subjective symptoms of dry eye as measured with OSDI.

**Tudor Tepelus, Gloria Chiu, Jianyan Huang, Ping Huang, Srinivas Satta, Olivia Lee**

 **Tue, May 03**  **8:30 am – 10:15 am**

## Ultra High-Resolution Fundus Imaging

### A 0296 AMD Imaging 3

#### Differences in retinal cone morphology between subjects with dry AMD and healthy participants observed with OCT and narrow-angle Heidelberg Retinal Angiograph 2

**Marketa Cilkova, Adam Dubis, Esther Papamichael, Pdraig Mulholland, Andrew Rider, Steven Dakin, Adnan Tufail, Gary Rubin, Roger Anderson**

 **Wed, May 04**  **11:00 am – 12:45 pm**

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## Poster and paper session recommendations by Heidelberg Engineering

### Ultra High-Resolution Fundus Imaging

**A 0059** Adaptive optics retinal imaging

#### Adaptive Optics Free Photoreceptor Imaging – Comparison of Manual and Automated Cone Counts

Padraig Mulholland, Juliane Matlach, Marketa Cilkova, Tony Redmond, David Garway-Heath, Roger Anderson

 **Sun, May 01**  **8:30 am – 10:15 am**

### Fluorescence Lifetime Imaging

**A 0043** AMD Imaging 1

#### Retinal autofluorescence lifetime measurement suggest preservation of macular pigment in geographic atrophy

Sebastian Wolf, Chantal Dysli, Martin Zinkernagel

 **Sun, May 01**  **8:30 am – 10:15 am**

**D 0342** Clinical Imaging – Miscellaneous

#### Fluorescence Lifetime Imaging Ophthalmoscopy in Diabetic Retinopathy

Martin Hammer, Johanna Schmidt, Sven Peters, Lydia Sauer, Nicole Müller, Matthias Klemm, Regine Augsten, Daniel Meller

 **Tue, May 03**  **8:30 am – 10:15 am**

### Quantitative Fundus Autofluorescence

**A 0343** Retinal Degeneration

#### Quantifying Fundus Autofluorescence Rings in Patients with Retinitis Pigmentosa

Kaspar Schürch, Stephen Tsang, Winston Lee, Katherine Boudreault, Tobias Duncker, Russell Woods, Francois Delori, Janet Sparrow

 **Sun, May 01**  **8:30 am – 10:15 am**

**D 0346** Clinical Imaging – Miscellaneous


#### Quantitative fundus autofluorescence in patients treated with hydroxychloroquine


Francesco Viola, Maura Di Nicola, Eleonora Benatti, Elena Tabacchi, Riccardo Clerici, Alessandro Santaniello, Alessandro Invernizzi

 **Tue, May 03**  **8:30 am – 10:15 am**


### Schedule for all recommendations


#### Sunday, May 01

-  **8:30 am – 10:15 am:**  
 Poster session: AMD Imaging 1 (A 0016, A 0043)  
 Poster session: Retinal Degeneration (A 0341 – A 0343)  
 Poster session: Retinal Degeneration (A 0032)  
 Poster session: Adaptive optics retinal imaging (A 0059)  
 Poster session: Glaucoma Structure-Function (D 0008)

-  **1:30 pm – 3:15 pm:**  
 Poster session: Glaucoma Imaging 1  
 (D 0052, D 0074, D 0084)


#### Monday, May 02


-  **8:30 am – 10:15 am:**  
 Poster Session: AMD Imaging 2 (C 0069, C 0090)  
 Poster Session: Imaging posterior segment (C 0106)


-  **11:00 am – 12:45 pm:**  
 Poster Session: Cornea Imaging (A 0197, A 0203, A 0204)  
 Poster Session: In vivo animal imaging (D 0099)

-  **4:15 pm – 4:30 pm:**  
 Paper Session: Glaucoma Structure Function (Room 6C)


#### Tuesday, May 03


-  **8:30 am – 10:15 am:**  
 Poster session: Dry Eye 2 (A 0056)  
 Poster session: Clinical Imaging – Miscellaneous  
 (D 0342, D 0346)

-  **3:45 pm – 4:00 pm:**  
 Paper Session: Glaucoma Imaging 1 (Room 6A)

-  **3:45 pm – 5:30 pm:**  
 Poster Session: Vitreoretinal Interface Diseases (C 0092)  
 Poster Session: Clinical and other Applications of OCT  
 (D 0296)

#### Wednesday, May 04

-  **8:30 am – 10:15 am:**  
 Poster Session: Trabecular Meshwork (D 0184)

-  **11:00 am – 12:45 pm:**  
 Poster Session: AMD Imaging 3 (A 0296)  
 Poster Session: AMD Clinical Research 3 (A 0353)  
 Poster Session: Glaucoma Imaging 2 (C 0134)