



Alfredo Dubra, PhD

Professor of Ophthalmology

Bio

BIO

My interest in ophthalmology started at a very early age, motivated by my own amblyopia and hyperopia. These led me to study physics and optics, first at the Universidad de la República (Uruguay), and later at Imperial College London (UK) and the University of Rochester (USA). Since then, my research has focused on the advancement of optical technologies for improving the understanding, diagnosing and monitoring of conditions that result in vision loss.

The premise that motivates all the work in my lab, is that after the first few days of life most retinal cells are post-mitotic, and thus early detection and treatment of disease are paramount for preventing vision loss. Therefore, my work is centered on optical technologies that can reveal and monitor pathology with ever increasing sensitivity and detail, even revealing cellular and sub-cellular structural and functional changes. I also believe that people affected by vision loss are better served by the scientific community if we work synergistically, and for that reason, everyone in my lab is committed to the dissemination of our technical advances across the vision research community.

ACADEMIC APPOINTMENTS

- Professor, Ophthalmology
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Laser Safety Committee, Stanford University and SLAC, (2018- present)
- Associate Adjunct Professor of Ophthalmology, Medical College of Wisconsin, (2016- present)

HONORS AND AWARDS

- Overseas Research Student Award, Universities UK (Ex. Committee of Vice-Chancellors and Principals) (2000)
- Career Award at the Scientific Interface, Burroughs Wellcome Fund (2008)
- Career Development Award, Research to Prevent Blindness (2012)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, The International Society for Optics and Photonics (2011 - present)
- Member, Association for Research in Vision and Ophthalmology (2001 - present)
- Member, Optical Society of America (2008 - present)

PROFESSIONAL EDUCATION

- PhD, Imperial College London, UK , Physics (2004)
- MSc, Universidad de la República, Uruguay , Physics (2000)
- BSc, Universidad de la República, Uruguay , Physics (1998)

PATENTS

- Alfredo Dubra. "United States Patent 8,226,236 Method and apparatus for imaging in an eye", University Of Rochester, May 18, 2006

LINKS

- Dubra Lab: <https://dubralab.stanford.edu/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The optics of the eye can be thought of as an imperfect microscope objective through which the retina can be observed. Our lab develops and uses adaptive optics, eye movement correction and optical microscopy technologies to improve the non-invasive visualization of the retina to the point that individual retinal structure and function can be visualized at the cellular and even sub-cellular scale.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Gaston Ali Ayubi Zavalla, Xiaojing Huang

Publications

PUBLICATIONS

- **Normalized weighted cross correlation for multi-channel image registration** *OPTICS CONTINUUM*
Ayubi, G. A., Kowalski, B., Dubra, A.
2024; 3 (5): 649-665
- **Minimum intensity projection of embossed quadrant-detection images for improved photoreceptor mosaic visualisation.** *Frontiers in ophthalmology*
Kalitzeos, A., Michaelides, M., Dubra, A.
2024; 4: 1349297
- **Application of novel non-invasive ophthalmic imaging to visualize peripapillary wrinkles, retinal folds and peripapillary hyperreflective ovoid mass-like structures associated with elevated intracranial pressure.** *Frontiers in neurology*
Graven-Nielsen, M., Dubra, A., Dodd, R. L., Hamann, S., Moss, H. E.
2024; 15: 1383210
- **Robust real-time estimation of non-uniform angular velocity and sub-pixel jitter in images captured with resonant scanners** *OPTICS EXPRESS*
Ayubi, G. A., Dubra, A.
2023; 31 (26): 44199-44211
- **Structural and Functional Changes in Non-Paraneoplastic Autoimmune Retinopathy.** *Diagnostics (Basel, Switzerland)*
Akhavanrezayat, A., Khatri, A., Onghanseng, N. G., Halim, M. S., Or, C., Sredar, N., Razeen, M., Hasanreisoglu, M., Regenold, J., Thng, Z. X., Mohammadi, S. S., Jain, T., Yavari, et al
2023; 13 (21)
- **Invited Session V: The eye as a window to systemic and neurodegenerative health: Seeking Answers through a keyhole: Harnessing the Synergy of Dynamic OCT/OCT Angiography and Adaptive Optics SLO for Retinal Assessment of Systemic Disease.** *Journal of vision*

- Rosen, R., Otero-Marquez, O., Migacz, J., Zhou, D., Pinhas, A., Castanos, M., Ahsanuddin, S., Rickford, K., Murillo, B., Zhou, R., Spellman, L., Sredar, N., Gillette, et al
2023; 23 (11): 30
- **Comparison of macular Macrophage Like Cell and Muller Cell Density in Patients with Multiple Sclerosis using OCT**
Navarro, S., Soetikno, B., Hargrave, A., Buickians, D., Dubra, A., Moss, H.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Quad-Fusion Adaptive Optics Scanning Light Ophthalmoscopy: A Novel Multi-Directional Non-Confocal Imaging Technique for Enhancement of Microvascular and Cellular Structures**
Rosen, R. B., Dubra, A., MuncharazDuran, L., Rios, H., Migacz, J., Ahsanuddin, S., Weitz, R., Glassberg, J. A., Chui, T. P.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Longitudinal imaging of microscopic scattering features in the foveal avascular zone of multiple sclerosis using adaptive optics ophthalmoscopy**
Hargrave, A., Navarro, S., Buickians, D., Kipp, L., Han, M., Kowalski, B., Dubra, A., Moss, H.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Surpassing the diffraction limit for improved resolution in adaptive optics optical coherence tomography in the living human eye**
Bower, A. J., Zhang, F., Liu, T., Kowalski, B., Lu, R., Liu, Z., Hammer, D. X., Dubra, A., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Sub-diffraction adaptive optics fluorescence imaging of the living human eye using pixel reassignment**
Zhang, F., Giannini, J., Lu, R., Kowalski, B., Bower, A. J., Aguilera, N., Li, J., Abouassali, S., Das, V., Liu, T., Dubra, A., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Warp speed multi-aperture adaptive optics scanning laser ophthalmoscopy using machine learning**
Park, J., Hagan, K., DuBose, T., McNabb, R., Dubra, A., Izatt, J., Farsiu, S.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
 - **Special Section Guest Editorial: Advances in Optical Measurements and Instrumentation for Ophthalmology and Optometry** *OPTICAL ENGINEERING*
Malacara-Hernandez, D., Dubra, A., Schwiegerling, J., Artal, P., Mejia, Y., Plaza, E.
2022; 61 (12)
 - **Insights into Sickle Cell Disease through the Retinal Microvasculature: Adaptive Optics Scanning Light Ophthalmoscopy Correlates of Clinical OCT Angiography.** *Ophthalmology science*
Pinhas, A., Migacz, J. V., Zhou, D. B., Castanos Toral, M. V., Otero-Marquez, O., Israel, S., Sun, V., Gillette, P. N., Sredar, N., Dubra, A., Glassberg, J., Rosen, R. B., Chui, et al
2022; 2 (4): 100196
 - **Widespread subclinical cellular changes revealed across a neural-epithelial-vascular complex in choroideremia using adaptive optics.** *Communications biology*
Aguilera, N., Liu, T., Bower, A. J., Li, J., Abouassali, S., Lu, R., Giannini, J., Pfau, M., Bender, C., Smelkinson, M. G., Naik, A., Guan, B., Schwartz, et al
2022; 5 (1): 893
 - **Reflectance adaptive optics findings in a patient with Vogt-Koyanagi-Harada disease.** *American journal of ophthalmology case reports*
Pham, A. T., Onghanseng, N., Halim, M. S., Ormaechea, M. S., Hassan, M., Akhavanrezayat, A., Uludag, G., Tran, A. N., Razeen, M. M., Sredar, N., Dubra, A., Nguyen, Q. D.
2022; 27: 101660
 - **Photoreceptor and Retinal Pigment Epithelium Relationships in Eyes With Vitelliform Macular Dystrophy Revealed by Multimodal Adaptive Optics Imaging.** *Investigative ophthalmology & visual science*
Liu, T., Aguilera, N., Bower, A. J., Li, J., Ullah, E., Dubra, A., Cukras, C., Brooks, B. P., Jeffrey, B. G., Hufnagel, R. B., Huryn, L. A., Zein, W. M., Tam, et al
2022; 63 (8): 27
 - **Retinal magnification factors at the fixation locus derived from schematic eyes with four individualized surfaces** *BIOMEDICAL OPTICS EXPRESS*
Huang, X., Anderson, T., Dubra, A.
2022; 13 (7): 3786-3808
 - **Retinal magnification factors at the fixation locus derived from schematic eyes with four individualized surfaces.** *Biomedical optics express*
Huang, X., Anderson, T., Dubra, A.
2022; 13 (7): 3786-3808

- **Investigating hyalocyte-like cells in epiretinal membranes using serially acquired optical coherence tomography**
Soetikno, B., Miller, D., Zhang, H., Goldberg, J. L., Leng, T., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Assessing vitreous cortex hyalocyte morphology and dynamics in the living human eye**
Rosen, R. B., Otero-Marquez, O., Migacz, J. V., Ahsanuddin, S., Rickford, K., Murillo, B., Zhou, R., Spellman, L., Weitz, R., Dubra, A., Chui, T.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Characterization of fluorescently labeled photoreceptors observed in carriers of choroideremia using multimodal adaptive optics imaging**
Bower, A. J., Aguilera, N., Abouassali, S., Liu, T., Li, J., Lu, R., Giannini, J., Smelkinson, M., Fariss, R. N., Dubra, A., Liu, Z., Hammer, D., Brooks, et al
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Retinal Magnification Factor Derived from Individualized Four-Surface Schematic Eye using Real Ray Tracing**
Huang, X., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Evaluation of the double-pass wavefront in model and human eyes**
Akondi, V., Huang, X., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Automated correction of jitter, interleaving and non-uniform image sampling in scanning ophthalmoscopes**
Dubra, A., Akondi, V., Hargrave, A., Kowalski, B.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **In vivo measurement of the light distribution in the focal plane of an AOSLO focused at inner and outer retina**
Rogers, J., Stangel, N., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Automatic retinal layer segmentation of visible-light optical coherence tomography images using deep learning**
Gopal, B., Zhang, T., Norcia, A., Goldberg, J. L., Dubra, A., Zhang, H., Soetikno, B.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Imaging of vitreous cortex hyalocyte dynamics using non-confocal quadrant-detection adaptive optics scanning light ophthalmoscopy in human subjects** *BIOMEDICAL OPTICS EXPRESS*
Migacz, J., Otero-Marquez, O., Zhou, R., Rickford, K., Murillo, B., Zhou, D. B., Castanos, M., Sredar, N., Dubra, A., Rosen, R. B., Chui, T. P.
2022; 13 (3): 1755-1773
- **Imaging of vitreous cortex hyalocyte dynamics using non-confocal quadrant-detection adaptive optics scanning light ophthalmoscopy in human subjects.** *Biomedical optics express*
Migacz, J. V., Otero-Marquez, O., Zhou, R., Rickford, K., Murillo, B., Zhou, D. B., Castanos, M. V., Sredar, N., Dubra, A., Rosen, R. B., Chui, T. Y.
2022; 13 (3): 1755-1773
- **Correction of non-uniform angular velocity and sub-pixel jitter in optical scanning** *Optics Express*
Kowalski, B., Akondi, V., Dubra, A.
2022; 30 (1): 112-124
- **Hybrid FPGA-CPU pupil tracker** *BIOMEDICAL OPTICS EXPRESS*
Kowalski, B., Huang, X., Steven, S., Dubra, A.
2021; 12 (10): 6496-6513
- **Hybrid FPGA-CPU pupil tracker.** *Biomedical optics express*
Kowalski, B., Huang, X., Steven, S., Dubra, A.
2021; 12 (10): 6496-6513
- **Clinical Imaging of Macular Surface Macrophages in Retinal Vasculopathies - Automated OCT Cell Density Mapping and Adaptive Optics Microscopy**
Rosen, R., Otero-Marquez, O., Toral, M., Zhou, D., Weitz, R., Migacz, J., Dubra, A., Chui, T.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021
- **Millisecond-latency FPGA-based pupil tracker for eye motion stabilization**
Kowalski, B., Dubra, A., Huang, X.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Fundus albipunctatus photoreceptor microstructure revealed using adaptive optics scanning light ophthalmoscopy.** *American journal of ophthalmology case reports*
Sobol, E. K., Deobhakta, A., Wilkins, C. S., Francis, J. H., Chui, T. Y., Dubra, A., Zhou, D. B., Castanos, M. V., Lema, G. M., Rosen, R. B., Migacz, J. V.
2021; 22: 101090
- **Direct comparison of photoreceptor reflectivity measurements using simultaneous adaptive optics SLO and OCT**
Bower, A., Liu, T., Liu, Z., Aguilera, N., Li, J., Lu, R., Giannini, J., Cornelissen, S., Dubra, A., Hammer, D., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021
- **Adaptive optics fluorescence lifetime ophthalmoscopy of iGlucoSnFR-TS suggests increased glucose in RPE of rho(-/-) compared to healthy mice**
Kunala, K., Xue, Y., Huynh, K., Yang, Q., Parkins, K., Steven, S., Dubra, A., Cepko, C., Hunter, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021
- **Correction of resonant optical scanner dynamic aberrations using nodal aberration theory** *OPTICS EXPRESS*
Huang, X., Dubra, A.
2021; 29 (7): 10346–63
- **In-vivo sub-diffraction adaptive optics imaging of photoreceptors in the human eye with annular pupil illumination and sub-Airy detection.** *Optica*
Lu, R., Aguilera, N., Liu, T., Liu, J., Giannini, J. P., Li, J., Bower, A. J., Dubra, A., Tam, J.
2021; 8 (3): 333-343
- **Persistent Dark Cones in Oligocone Trichromacy Revealed by Multimodal Adaptive Optics Ophthalmoscopy** *FRONTIERS IN AGING NEUROSCIENCE*
Li, J., Liu, T., Flynn, O. J., Turriff, A., Liu, Z., Ullah, E., Liu, J., Dubra, A., Johnson, M. A., Brooks, B. P., Hufnagel, R. B., Hammer, D. X., Hury, et al
2021; 13: 629214
- **Integrating adaptive optics-SLO and OCT for multimodal visualization of the human retinal pigment epithelial mosaic.** *Biomedical optics express*
Bower, A. J., Liu, T., Aguilera, N., Li, J., Liu, J., Lu, R., Giannini, J. P., Hury, L. A., Dubra, A., Liu, Z., Hammer, D. X., Tam, J.
2021; 12 (3): 1449-1466
- **multimodal visualization of the human retinal pigment epithelial mosaic** *BIOMEDICAL OPTICS EXPRESS*
BOWER, A. J., LIU, T. O., AGUILERA, N. Y., LI, J. E., LIU, J. I., LU, R. N., GIANNINI, J. P., HURY, L. A., DUBRA, A. O., LIU, Z. N., HAMMER, D. X., TAM, J. Y.
2021; 12 (3): 1449–66
- **Comparison of confocal and non-confocal split-detection cone photoreceptor imaging.** *Biomedical optics express*
Sredar, N., Razeen, M., Kowalski, B., Carroll, J., Dubra, A.
2021; 12 (2): 737-755
- **Comparison of confocal and non-confocal split-detection cone photoreceptor imaging** *Biomedical Optics Express*
Sredar, N., Razeen, M., Kowalski, B., Carroll, J., Dubra, A.
2021; 12 (2): 737–55
- **Dynamic wavefront distortion in resonant scanners** *Applied Optics*
Akondi, V., Kowalski, B., Dubra, A.
2021; 60 (36): 11189-11195
- **Novel Foveal Features Associated With Vision Impairment in Multiple Sclerosis.** *Investigative ophthalmology & visual science*
Hargrave, A., Sredar, N., Khushzad, F., Yarp, J., Tomczak, A., Han, M., Kipp, L., Dubra, A., Moss, H. E.
2021; 62 (12): 27
- **Shack-Hartmann wavefront sensor optical dynamic range** *Optics Express*
Akondi, V., Dubra, A.
2021; 29 (6): 8417-8429
- **Multi-layer Shack-Hartmann wavefront sensing in the point source regime.** *Biomedical optics express*
Akondi, V., Dubra, A.
2021; 12 (1): 409-432
- **Multi-layer Shack-Hartmann wavefront sensing in the point source regime** *Biomedical Optics Express*

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- Akondi, V., Dubra, A.
2021; 12 (1): 409-432
- **Dynamic distortion in resonant galvanometric optical scanners.** *Optica*
Akondi, V., Kowalski, B., Burns, S. A., Dubra, A.
2020; 7 (11): 1506-1513
 - **Discovery and clinical translation of novel glaucoma biomarkers.** *Progress in retinal and eye research*
Beykin, G., Norcia, A. M., Srinivasan, V. J., Dubra, A., Goldberg, J. L.
2020: 100875
 - **Quadrant Non-Confocal AOSLO Imaging of Retinal Vasculature**
Migacz, J. V., Sredar, N., Zhou, D. B., Toral, M., Pinhas, A., Dubra, A., Rosen, R., Chui, T. P.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Intraobserver Repeatability and Interobserver Reproducibility of Foveal Cone Density Measurements in CNGA3- and CNGB3-Associated Achromatopsia** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*
Georgiou, M., Litts, K. M., Singh, N., Kane, T., Patterson, E. J., Hirji, N., Kalitzeos, A., Dubra, A., Michaelides, M., Carroll, J.
2020; 9 (7)
 - **Multi-directional image fusion in AOSLO angiography**
Migacz, J. V., Sredar, N., Zhou, D. B., Castanos, M. V., Pinhas, A., Weitz, R., Dubra, A., Rosen, R. B., Chui, T.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Dynamic Visualization of Abnormal Parafoveal Blood Flow in Sickle Cell Patients Using AOSLO Vascular Imaging**
Pinhas, A., Migacz, J. V., Zhou, D., Toral, M., Israel, S., Sun, V., Gillette, P., Sredar, N., Dubra, A., Glassberg, J., Rosen, R. B., Chui, T.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Functional consequences of disrupted cone photoreceptor reflectivity visualized using multimodal adaptive optics retinal imaging in oligocone trichromacy**
Li, J., Liu, T., Flynn, O., Turriff, A., Liu, Z., Liu, J., Dubra, A., Hufnagel, R., Johnson, M. A., Brooks, B., Hammer, D. X., Huryn, L., Jeffrey, et al
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Multimodal cellular assessment of the retinal pigment epithelium using an integrated adaptive optics retinal imager**
Bower, A. J., Liu, T., Li, J., Aguilera, N., Liu, J., Lu, R., Giannini, J., Huryn, L., Dubra, A., Liu, Z., Hammer, D., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Characterization of Retinal vascular changes in Multiple Sclerosis using Adaptive Optics and OCTA**
Khushzad, F., Yarp, J., Hargrave, A., Sredar, N., Mahesh, V., Tomczak, A., Kipp, L., Han, M., Dubra, A., Moss, H.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Novel microscopic foveal pit pathology in multiple sclerosis revealed with adaptive optics ophthalmoscopy**
Hargrave, A., Sredar, N., Razeen, M. M., Khushzad, F., Yarp, J., Leishangthem, L., Tomczak, A., Kipp, L., Han, M., Kowalski, B., Dubra, A., Moss, H.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
 - **Intraobserver Repeatability and Interobserver Reproducibility of Foveal Cone Density Measurements in CNGA3- and CNGB3-Associated Achromatopsia.** *Translational vision science & technology*
Georgiou, M., Litts, K. M., Singh, N., Kane, T., Patterson, E. J., Hirji, N., Kalitzeos, A., Dubra, A., Michaelides, M., Carroll, J.
2020; 9 (7): 37
 - **Photoreceptor Structure in GNAT2-Associated Achromatopsia** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Georgiou, M., Singh, N., Kane, T., Robson, A. G., Kalitzeos, A., Hirji, N., Webster, A. R., Dubra, A., Carroll, J., Michaelides, M.
2020; 61 (3): 40
 - **Dynamic distortion in resonant galvanometric optical scanners** *Optica*
Akondi, V., Kowalski, B., Burns, S. A., Dubra, A.
2020; 7 (11): 1506-1513
 - **ANATOMIC, GENETIC AND FUNCTIONAL PROPERTIES OF THE RETINAL CIRCULATION IN PULMONARY HYPERTENSION** *Pulmonary Circulation*
Nickel, N. P., Shamskhov, E. A., Razeen, M., Condon, D., Messentier, L., Dubra, A., Liao, Y., Zamanian, R. T., Yuan, K., de Jesus Perez, V. A.
2020
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- **Average gradient of Zernike polynomials over polygons** *Optics Express*
Akondi, V., Dubra, A.
2020; 28 (13): 18876-18886
- **Advances in Retinal Imaging** *NEUROPHOTONICS*
Yi, J., Dubra, A., Farsiu, S.
2019; 6 (4)
- **Special Section Guest Editorial: Advances in Retinal Imaging.** *Neurophotonics*
Yi, J., Dubra, A., Farsiu, S.
2019; 6 (4): 041101
- **RAC-CNN: multimodal deep learning based automatic detection and classification of rod and cone photoreceptors in adaptive optics scanning light ophthalmoscope images** *BIOMEDICAL OPTICS EXPRESS*
Cunefare, D., Huckenpahler, A. L., Patterson, E. J., Dubra, A., Carroll, J., Farsiu, S.
2019; 10 (8): 3815-32
- **Near infrared fluorescence detection and evaluation in an adaptive optics scanning laser ophthalmoscope**
Liu, T., Cornelissen, S., Dubra, A., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **RAC-CNN: multimodal deep learning based automatic detection and classification of rod and cone photoreceptors in adaptive optics scanning light ophthalmoscope images.** *Biomedical optics express*
Cunefare, D., Huckenpahler, A. L., Patterson, E. J., Dubra, A., Carroll, J., Farsiu, S.
2019; 10 (8): 3815-3832
- **Quantifying nystagmus in patients with Achromatopsia using image-based tracking with AOSLO**
Kane, T., Singh, N., Georgiou, M., Dubra, A., Michaelides, M., Kalitzeos, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Reflectance adaptive optics scanning light ophthalmoscopy of epiretinal membranes**
Razeen, M. M., Leng, T., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Shack-Hartmann wavefront sensor bias at the pupil boundary: problem and solution**
Akondi, V., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Chromatic Shack-Hartmann wavefront sensor with adaptive optics correction of monochromatic aberrations**
Steven, S., Akondi, V., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Deep learning multimodal detection and classification of cone and rod photoreceptors in adaptive optics scanning light ophthalmoscope images**
Cunefare, D., Huckenpahler, A. L., Patterson, E. J., Dubra, A., Carroll, J., Farsiu, S.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Adaptive Optics Findings in Vogt-Koyanagi-Harada Disease**
Pham, A., Halim, M., Razeen, M. M., Hassan, M., Ormaechea, M., Razeen, E., Uludag, G., Anh Ngoc Tram Tran, Al-Kirwi, K., Mahajan, S., Afridi, R., Dubra, A., Quan Dong Nguyen
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Natural history of foveal cone structure in RPE65-associated Leber congenital amaurosis (LCA)**
Kalitzeos, A., Kumaran, N., Georgiou, M., Singh, N., Kane, T., Kasilian, M., Dubra, A., Carroll, J., Michaelides, M.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Deep Phenotyping of PDE6C-Associated Retinopathy**
Georgiou, M., Robson, A. G., Hirji, N., Singh, N., Kane, T., Dubra, A., Carroll, J., Webster, A., Kalitzeos, A., Michaelides, M.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Evaluating seasonal changes of cone photoreceptor structure in the 13-lined ground squirrel** *VISION RESEARCH*

- Sajdak, B. S., Salmon, A. E., Litts, K. M., Wells, C., Allen, K. P., Dubra, A., Merriman, D. K., Carroll, J.
2019; 158: 90–99
- **Design of two spherical mirror unobscured relay telescopes using nodal aberration theory** *OPTICS EXPRESS*
Steven, S., Bentley, J., Dubra, A.
2019; 27 (8): 11205–26
 - **CELLULAR IMAGING OF THE TAPETAL-LIKE REFLEX IN CARRIERS OF RPGR-ASSOCIATED RETINOPATHY** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Kalitzeos, A., Samra, R., Kasilian, M., Tee, J. L., Strampe, M., Langlo, C., Webster, A. R., Dubra, A., Carroll, J., Michaelides, M.
2019; 39 (3): 570–80
 - **Evaluating Seasonal Changes of Cone Photoreceptor Structure in the 13-Lined Ground Squirrel.** *Vision research*
Sajdak, B. S., Salmon, A. E., Litts, K. M., Wells, C., Allen, K. P., Dubra, A., Merriman, D. K., Carroll, J.
2019
 - **Adaptive Optics Retinal Imaging in CNGA3-Associated Achromatopsia: Retinal Characterization, Interocular Symmetry, and Intrafamilial Variability.** *Investigative ophthalmology & visual science*
Georgiou, M., Litts, K. M., Kalitzeos, A., Langlo, C. S., Kane, T., Singh, N., Kassilian, M., Hirji, N., Kumaran, N., Dubra, A., Carroll, J., Michaelides, M.
2019; 60 (1): 383–96
 - **Deep Phenotyping of PDE6C-Associated Achromatopsia.** *Investigative ophthalmology & visual science*
Georgiou, M. n., Robson, A. G., Singh, N. n., Pontikos, N. n., Kane, T. n., Hirji, N. n., Ripamonti, C. n., Rotsos, T. n., Dubra, A. n., Kalitzeos, A. n., Webster, A. R., Carroll, J. n., Michaelides, et al
2019; 60 (15): 5112–23
 - **Adaptive Optics Retinal Imaging in CNGA3-Associated Achromatopsia: Retinal Characterization, Interocular Symmetry, and Intrafamilial Variability** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Georgiou, M., Litts, K. M., Kalitzeos, A., Langlo, C. S., Kane, T., Singh, N., Kassilian, M., Hirji, N., Kumaran, N., Dubra, A., Carroll, J., Michaelides, M.
2019; 60 (1): 383-396
 - **Centroid error due to non-uniform lenslet illumination in the Shack-Hartmann wavefront sensor** *Optics Letters*
Akondi, V., Steven, S., Dubra, A.
2019; 44 (17): 4167-4170
 - **Accounting for focal shift in the Shack-Hartmann wavefront sensor** *Optics Letters*
Akondi, V., Dubra, A.
2019; 44 (17): 4151-4154
 - **Long eye relief fundus camera and fixation target with partial correction of ocular longitudinal chromatic aberration** *BIOMEDICAL OPTICS EXPRESS*
Steven, S., Sulai, Y. N., Cheong, S. K., Bentley, J., Dubra, A.
2018; 9 (12): 6017–37
 - **Long eye relief fundus camera and fixation target with partial correction of ocular longitudinal chromatic aberration.** *Biomedical optics express*
Steven, S., Sulai, Y. N., Cheong, S. K., Bentley, J., Dubra, A.
2018; 9 (12): 6017-6037
 - **Cone Photoreceptor Cell Segmentation and Diameter Measurement on Adaptive Optics Images Using Circularly Constrained Active Contour Model.** *Investigative ophthalmology & visual science*
Liu, J., Jung, H., Dubra, A., Tam, J.
2018; 59 (11): 4639-4652
 - **Fast adaptive optics scanning light ophthalmoscope retinal montaging** *BIOMEDICAL OPTICS EXPRESS*
Davidson, B., Kalitzeos, A., Carroll, J., Dubra, A., Ourselin, S., Michaelides, M., Bergeles, C.
2018; 9 (9): 4317–28
 - **Cone Photoreceptor Cell Segmentation and Diameter Measurement on Adaptive Optics Images Using Circularly Constrained Active Contour Model** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Liu, J., Jung, H., Dubra, A., Tam, J.
2018; 59 (11): 4639–52

- **Fast adaptive optics scanning light ophthalmoscope retinal montaging.** *Biomedical optics express*
Davidson, B., Kalitzeos, A., Carroll, J., Dubra, A., Ourselin, S., Michaelides, M., Bergeles, C.
2018; 9 (9): 4317-4328
- **Spatial summation in the human fovea: Do normal optical aberrations and fixational eye movements have an effect?** *JOURNAL OF VISION*
Tuten, W. S., Cooper, R. F., Tiruveedhula, P., Dubra, A., Roorda, A., Cottaris, N. P., Brainard, D. H., Morgan, J. W.
2018; 18 (8): 6
- **Deep learning based detection of cone photoreceptors with multimodal adaptive optics scanning light ophthalmoscope images of achromatopsia.** *Biomedical optics express*
Cunefare, D., Langlo, C. S., Patterson, E. J., Blau, S., Dubra, A., Carroll, J., Farsiu, S.
2018; 9 (8): 3740-3756
- **Adaptive optics imaging of inherited retinal diseases** *BRITISH JOURNAL OF OPHTHALMOLOGY*
Georgiou, M., Kalitzeos, A., Patterson, E. J., Dubra, A., Carroll, J., Michaelides, M.
2018; 102 (8): 1028-35
- **Deep learning based detection of cone photoreceptors with multimodal adaptive optics scanning light ophthalmoscope images of achromatopsia** *BIOMEDICAL OPTICS EXPRESS*
Cunefare, D., Langlo, C. S., Patterson, E. J., Blau, S., Dubra, A., Carroll, J., Farsiu, S.
2018; 9 (8)
- **High resolution imaging of retinal detachment in the cone-dominant ground squirrel**
Salmon, A. E., Sajdak, B. S., Connor, T. B., Dubra, A., Carroll, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Characterization of Retinal Structure in CNGA3-associated Achromatopsia**
Georgiou, M., Langlo, C. S., Kalitzeos, A., Hirji, N., Kumaran, N., Dubra, A., Carroll, J., Michaelides, M.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Interocular symmetry of foveal cone topography in achromatopsia (ACHM)**
Litts, K. M., Langlo, C. S., Patterson, E. J., Mastey, R., Cava, J. A., May, P., Lam, B. L., Fishman, G. A., Pennesi, M. E., Kay, C. N., Dubra, A., Hauswirth, W. W., Beasley, et al
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Non-confocal quad-detection adaptive optics scanning light ophthalmoscopy of the photoreceptor mosaic**
Sredar, N., Kowalski, B., Razeen, M. M., Steven, S., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **High Resolution Imaging of Inner Retinal Microcystic Changes in Glaucoma**
Razeen, M. M., Steven, S., Sredar, N., Cheong, S., Yarp, J., Nunez, M., Goldberg, J. L., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Convolutional neural network based detection of cones in multimodal adaptive optics scanning light ophthalmoscope images of achromatopsia**
Cunefare, D., Patterson, E. J., Blau, S., Langlo, C. S., Dubra, A., Carroll, J., Farsiu, S.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Achromatized visible light OCT for ultrahigh resolution retinal imaging**
Zhang, T., Chong, S., Kho, A., Bernucci, M., Dubra, A., Srinivasan, V.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Adaptive optics retinal imaging in glaucoma**
Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Automatic Cone Photoreceptor Localisation in Healthy and Stargardt Afflicted Retinas Using Deep Learning** *SCIENTIFIC REPORTS*
Davidson, B., Kalitzeos, A., Carroll, J., Dubra, A., Ourselin, S., Michaelides, M., Bergeles, C.
2018; 8: 7911
- **The Reliability of Cone Density Measurements in the Presence of Rods** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*

- Morgan, J. W., Vergilio, G. K., Hsu, J., Dubra, A., Cooper, R. F.
2018; 7 (3): 21
- **Non-invasive assessment of human cone photoreceptor function (vol 8, pg 5098, 2017) BIOMEDICAL OPTICS EXPRESS**
Cooper, R. F., Tuten, W. S., Dubra, A., Brainard, D. H., Morgan, J. W.
2018; 9 (4): 1842
 - **Ultra-high resolution retinal imaging by visible light OCT with longitudinal achromatization BIOMEDICAL OPTICS EXPRESS**
Chong, S., Zhang, T., Kho, A., Bernucci, M. T., Dubra, A., Srinivasan, V. J.
2018; 9 (4): 1477–91
 - **Sub-Airy Confocal Adaptive Optics Scanning Ophthalmoscopy TRANSLATIONAL VISION SCIENCE & TECHNOLOGY**
Sredar, N., Fagbemi, O. E., Dubra, A.
2018; 7 (2): 17
 - **Phenotypic diversity in autosomal-dominant cone-rod dystrophy elucidated by adaptive optics retinal imaging. The British journal of ophthalmology**
Song, H. n., Rossi, E. A., Stone, E. n., Latchney, L. n., Williams, D. n., Dubra, A. n., Chung, M. n.
2018; 102 (1): 136–41
 - **Visible Light Optical Coherence Microscopy Imaging of the Mouse Cortex with Femtoliter Volume Resolution**
Merkle, C. W., Chong, S., Kho, A. M., Zhu, J., Kholiqov, O., Dubra, A., Srinivasan, V. J., Izatt, J. A., Fujimoto, J. G., Tuchin, V. V.
SPIE-INT SOC OPTICAL ENGINEERING.2018
 - **New Clinical Opportunities for Retinal Vascular Imaging Adaptive Optics to OCT Angiography**
Rosen, R., Chui, T., Weitz, R., Dubra, A., Carroll, J., Garcia, P., Pinhas, A., Scripsema, N., Mo, S., Agemy, S., Krawitz, B., Podoleanu, A., Bang, et al
SPIE-INT SOC OPTICAL ENGINEERING.2018
 - **Multimodal imaging of small hard retinal drusen in young healthy adults. The British journal of ophthalmology**
Pedersen, H. R., Gilson, S. J., Dubra, A. n., Munch, I. C., Larsen, M. n., Baraas, R. C.
2018; 102 (1): 146–52
 - **Visible light optical coherence microscopy of the brain with isotropic femtoliter resolution in vivo. Optics letters**
Merkle, C. W., Chong, S. P., Kho, A. M., Zhu, J. n., Dubra, A. n., Srinivasan, V. J.
2018; 43 (2): 198–201
 - **Spectral sensitivity of the cone photoreceptor intrinsic reflectance response**
Cooper, R. F., Tuten, W., Dubra, A., Brainard, D. H., Morgan, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **Photopic spatial summation in the central retina assessed with adaptive optics**
Tuten, W., Cooper, R. F., Tiruveedhula, P., Dubra, A., Roorda, A., Brainard, D. H., Morgan, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **Automatic detection of cones in multi-modal adaptive optics scanning light ophthalmoscope images of achromatopsia**
Cunefare, D., Langlo, C. S., Dubra, A., Carroll, J., Farsiu, S.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **Imaging the porcine retina using adaptive optics scanning light ophthalmoscopy**
Huckenpahler, A. L., Salmon, A. E., Sajdak, B. S., Dubra, A., Carroll, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **Adaptive Optics Reflectance Confocal Scanning Light Ophthalmoscopy with Sub-Airy Disk Detectors**
Sredar, N., Fagbemi, O., Dubra, A.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **In vivo imaging of the choriocapillaris using adaptive optics enhanced indocyanine green ophthalmoscopy**
Jung, H., Liu, J., Dubra, A., Tam, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
 - **An Automated Reference Frame Selection (ARFS) Algorithm for Cone Imaging with Adaptive Optics Scanning Light Ophthalmoscopy. Translational vision science & technology**

- Salmon, A. E., Cooper, R. F., Langlo, C. S., Baghaie, A., Dubra, A., Carroll, J.
2017; 6 (2): 9-?
- **PHOTORECEPTOR INNER SEGMENT MORPHOLOGY IN BEST VITELLIFORM MACULAR DYSTROPHY.** *Retina (Philadelphia, Pa.)*
Scoles, D., Sulai, Y. N., Cooper, R. F., Higgins, B. P., Johnson, R. D., Carroll, J., Dubra, A., Stepien, K. E.
2017; 37 (4): 741-748
 - **Assessing the spatial relationship between fixation and foveal specializations.** *Vision research*
Wilk, M. A., Dubis, A. M., Cooper, R. F., Summerfelt, P., Dubra, A., Carroll, J.
2017; 132: 53-61
 - **Vision science and adaptive optics, the state of the field.** *Vision research*
Marcos, S., Werner, J. S., Burns, S. A., Merigan, W. H., Artal, P., Atchison, D. A., Hampson, K. M., Legras, R., Lundstrom, L., Yoon, G., Carroll, J., Choi, S. S., Doble, et al
2017
 - **REPEATABILITY AND LONGITUDINAL ASSESSMENT OF FOVEAL CONE STRUCTURE IN CNGB3-ASSOCIATED ACHROMATOPSIA.** *Retina (Philadelphia, Pa.)*
Langlo, C. S., Erker, L. R., Parker, M., Patterson, E. J., Higgins, B. P., Summerfelt, P., Razeen, M. M., Collison, F. T., Fishman, G. A., Kay, C. N., Zhang, J., Weleber, R. G., Yang, et al
2017
 - **Reliability and Repeatability of Cone Density Measurements in Patients With Stargardt Disease and RPGR-Associated Retinopathy.** *Investigative ophthalmology & visual science*
Tanna, P. n., Kasilian, M. n., Strauss, R. n., Tee, J. n., Kalitzeos, A. n., Tarima, S. n., Visotcky, A. n., Dubra, A. n., Carroll, J. n., Michaelides, M. n.
2017; 58 (9): 3608–15
 - **Open source software for automatic detection of cone photoreceptors in adaptive optics ophthalmoscopy using convolutional neural networks.** *Scientific reports*
Cunefare, D. n., Fang, L. n., Cooper, R. F., Dubra, A. n., Carroll, J. n., Farsiu, S. n.
2017; 7 (1): 6620
 - **Non-invasive assessment of human cone photoreceptor function.** *Biomedical optics express*
Cooper, R. F., Tuten, W. S., Dubra, A. n., Brainard, D. H., Morgan, J. I.
2017; 8 (11): 5098–5112
 - **CELLULAR IMAGING OF THE TAPETAL-LIKE REFLEX IN CARRIERS OF RPGR-ASSOCIATED RETINOPATHY.** *Retina (Philadelphia, Pa.)*
Kalitzeos, A. n., Samra, R. n., Kasilian, M. n., Tee, J. J., Strampe, M. n., Langlo, C. n., Webster, A. R., Dubra, A. n., Carroll, J. n., Michaelides, M. n.
2017
 - **Automated Photoreceptor Cell Identification on Nonconfocal Adaptive Optics Images Using Multiscale Circular Voting.** *Investigative ophthalmology & visual science*
Liu, J. n., Jung, H. n., Dubra, A. n., Tam, J. n.
2017; 58 (11): 4477–89
 - **Unsupervised identification of cone photoreceptors in non-confocal adaptive optics scanning light ophthalmoscope images.** *Biomedical optics express*
Bergeles, C. n., Dubis, A. M., Davidson, B. n., Kasilian, M. n., Kalitzeos, A. n., Carroll, J. n., Dubra, A. n., Michaelides, M. n., Ourselin, S. n.
2017; 8 (6): 3081–94
 - **Progression of Local Glaucomatous Damage Near Fixation as Seen with Adaptive Optics Imaging.** *Translational vision science & technology*
Hood, D. C., Lee, D. n., Jarukasetphon, R. n., Nunez, J. n., Mavrommatis, M. A., Rosen, R. B., Ritch, R. n., Dubra, A. n., Chui, T. Y.
2017; 6 (4): 6
 - **Multimodal Imaging of Photoreceptor Structure in Choroideremia** *PLOS ONE*
Sun, L. W., Johnson, R. D., Williams, V., Summerfelt, P., Dubra, A., Weinberg, D. V., Stepien, K. E., Fishman, G. A., Carroll, J.
2016; 11 (12)
 - **Noninvasive imaging of the photoreceptor mosaic response to light stimulation.** *Proceedings of the National Academy of Sciences of the United States of America*
Srinivasan, V. J., Dubra, A.
2016

- **Imaging Foveal Microvasculature: Optical Coherence Tomography Angiography Versus Adaptive Optics Scanning Light Ophthalmoscope Fluorescein Angiography** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Mo, S., Krawitz, B., Efstathiadis, E., Geyman, L., Weitz, R., Chui, T. P., Carroll, J., Dubra, A., Rosen, R. B.
2016; 57 (9): OCT130–OCT140
- **Residual Foveal Cone Structure in CNGB3-Associated Achromatopsia** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Langlo, C. S., Patterson, E. J., Higgins, B. P., Summerfelt, P., Razeen, M. M., Erker, L. R., Parker, M., Collison, F. T., Fishman, G. A., Kay, C. N., Zhang, J., Weleber, R. G., Yang, et al
2016; 57 (10): 3984–3995
- **In Vivo Imaging of the Human Retinal Pigment Epithelial Mosaic Using Adaptive Optics Enhanced Indocyanine Green Ophthalmoscopy** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Tam, J., Liu, J., Dubra, A., Fariss, R.
2016; 57 (10): 4376–4384
- **Cone Photoreceptor Structure in Patients With X-Linked Cone Dysfunction and Red-Green Color Vision Deficiency** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Patterson, E. J., Wilk, M., Langlo, C. S., Kasilian, M., Ring, M., Hufnagel, R. B., Dubis, A. M., Tee, J. J., Kalitzeos, A., Gardner, J. C., Ahmed, Z. M., Sisk, R. A., Larsen, et al
2016; 57 (8): 3853–3863
- **Assessing Photoreceptor Structure in Retinitis Pigmentosa and Usher Syndrome** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Sun, L. W., Johnson, R. D., Langlo, C. S., Cooper, R. F., Razeen, M. M., Russillo, M. C., Dubra, A., Connor, T. B., Han, D. P., Pennesi, M. E., Kay, C. N., Weinberg, D. V., Stepien, et al
2016; 57 (6): 2428–2442
- **Longitudinal imaging of microvascular remodelling in proliferative diabetic retinopathy using adaptive optics scanning light ophthalmoscopy** *OPHTHALMIC AND PHYSIOLOGICAL OPTICS*
Chui, T. Y., Pinhas, A., Gan, A., Razeen, M., Shah, N., Cheang, E., Liu, C. L., Dubra, A., Rosen, R. B.
2016; 36 (3): 290–302
- **Automatic detection of cone photoreceptors in split detector adaptive optics scanning light ophthalmoscope images.** *Biomedical optics express*
Cunefare, D., Cooper, R. F., Higgins, B., Katz, D. F., Dubra, A., Carroll, J., Farsiu, S.
2016; 7 (5): 2036–2050
- **Correlating Photoreceptor Mosaic Structure to Clinical Findings in Stargardt Disease** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*
Razeen, M. M., Cooper, R. F., Langlo, C. S., Goldberg, M. R., Wilk, M. A., Han, D. P., Connor, T. B., Fishman, G. A., Collison, F. T., Sulai, Y. N., Dubra, A., Carroll, J., Stepien, et al
2016; 5 (2): 6
- **ASSESSING PHOTORECEPTOR STRUCTURE ASSOCIATED WITH ELLIPSOID ZONE DISRUPTIONS VISUALIZED WITH OPTICAL COHERENCE TOMOGRAPHY** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Scoles, D., Flatter, J. A., Cooper, R. F., Langlo, C. S., Robison, S., Neitz, M., Weinberg, D. V., Pennesi, M. E., Han, D. P., Dubra, A., Carroll, J.
2016; 36 (1): 91–103
- **Effects of Intraframe Distortion on Measures of Cone Mosaic Geometry from Adaptive Optics Scanning Light Ophthalmoscopy** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*
Cooper, R. F., Sulai, Y. N., Dubis, A. M., Chui, T. Y., Rosen, R. B., Michaelides, M., Dubra, A., Carroll, J.
2016; 5 (1): 10
- **Noninvasive imaging of the thirteen-lined ground squirrel photoreceptor mosaic** *VISUAL NEUROSCIENCE*
Sajdak, B., Sulai, Y. N., Langlo, C. S., Luna, G., Fisher, S. K., Merriman, D. K., Dubra, A.
2016; 33: e003
- **Retinal Architecture in RGS9- and R9AP-Associated Retinal Dysfunction (Bradyopsia)** *AMERICAN JOURNAL OF OPHTHALMOLOGY*
Strauss, R. W., Dubis, A. M., Cooper, R. F., Ba-Abbad, R., Moore, A. T., Webster, A. R., Dubra, A., Carroll, J., Michaelides, M.
2015; 160 (6): 1269–75
- **FELLOW EYE CHANGES IN PATIENTS WITH NONISCHEMIC CENTRAL RETINAL VEIN OCCLUSION Assessment of Perfused Foveal Microvascular Density and Identification of Nonperfused Capillaries** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Pinhas, A., Dubow, M., Shah, N., Cheang, E., Liu, C. L., Razeen, M., Gan, A., Weitz, R., Sulai, Y. N., Chui, T. Y., Dubra, A., Rosen, R. B.

2015; 35 (10): 2028-2036

- **Details of Glaucomatous Damage Are Better Seen on OCT En Face Images Than on OCT Retinal Nerve Fiber Layer Thickness Maps** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Hood, D. C., Fortune, B., Mavrommatis, M. A., Reynaud, J., Ramachandran, R., Ritch, R., Rosen, R. B., Muhammad, H., Dubra, A., Chui, T. P.
2015; 56 (11): 6208–16
- **Confocal Adaptive Optics Imaging of Peripapillary Nerve Fiber Bundles: Implications for Glaucomatous Damage Seen on Circumpapillary OCT Scans** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*
Hood, D. C., Chen, M. F., Lee, D., Epstein, B., Alhadeff, P., Rosen, R. B., Ritch, R., Dubra, A., Chui, T. P.
2015; 4 (2): 12
- **Adaptive Optics Imaging of Healthy and Abnormal Regions of Retinal Nerve Fiber Bundles of Patients With Glaucoma** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Chen, M. F., Chui, T. P., Alhadeff, P., Rosen, R. B., Ritch, R., Dubra, A., Hood, D. C.
2015; 56 (1): 674–81
- **Assessing photoreceptor structure after macular hole closure.** *Retinal cases & brief reports*
Hansen, S., Batson, S., Weinlander, K. M., Cooper, R. F., Scoles, D. H., Karth, P. A., Weinberg, D. V., Dubra, A., Kim, J. E., Carroll, J., Wirostko, W. J.
2015; 9 (1): 15-20
- **Assessment of Perfused Foveal Microvascular Density and Identification of Nonperfused Capillaries in Healthy and Vasculopathic Eyes** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Pinhas, A., Razeen, M., Dubow, M., Gan, A., Chui, T. Y., Shah, N., Mehta, M., Gentile, R. C., Weitz, R., Walsh, J. B., Sulai, Y. N., Carroll, J., Dubra, et al
2014; 55 (12): 8056–66
- **Genotype-Dependent Variability in Residual Cone Structure in Achromatopsia: Toward Developing Metrics for Assessing Cone Health** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Dubis, A. M., Cooper, R. F., Aboshiha, J., Langlo, C. S., Sundaram, V., Liu, B., Collison, F., Fishman, G. A., Moore, A. T., Webster, A. R., Dubra, A., Carroll, J., Michaelides, et al
2014; 55 (11): 7303–11
- **OUTER RETINAL STRUCTURE AFTER CLOSED-GLOBE BLUNT OCULAR TRAUMA** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Flatter, J. A., Cooper, R. F., Dubow, M. J., Pinhas, A., Singh, R. S., Kapur, R., Shah, N., Walsh, R. D., Hong, S. H., Weinberg, D. V., Stepien, K. E., Wirostko, W. J., Robison, et al
2014; 34 (10): 2133–46
- **A Prospective Longitudinal Study of Retinal Structure and Function in Achromatopsia** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Aboshiha, J., Dubis, A. M., Cowing, J., Fahy, R. A., Sundaram, V., Bainbridge, J. W., Ali, R. R., Dubra, A., Nardini, M., Webster, A. R., Moore, A. T., Rubin, G., Carroll, et al
2014; 55 (9): 5733–43
- **Non-common path aberration correction in an adaptive optics scanning ophthalmoscope** *BIOMEDICAL OPTICS EXPRESS*
Sulai, Y. N., Dubra, A.
2014; 5 (9): 3059–73
- **The reliability of parafoveal cone density measurements** *BRITISH JOURNAL OF OPHTHALMOLOGY*
Liu, B. S., Tarima, S., Visotcky, A., Pechauer, A., Cooper, R. F., Landsem, L., Wilk, M. A., Godara, P., Makhijani, V., Sulai, Y. N., Syed, N., Yasumura, G., Garg, et al
2014; 98 (8): 1126–31
- **Microscopic Inner Retinal Hyper-Reflective Phenotypes in Retinal and Neurologic Disease** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Scoles, D., Higgins, B. P., Cooper, R. F., Dubis, A. M., Summerfelt, P., Weinberg, D. V., Kim, J. E., Stepien, K. E., Carroll, J., Dubra, A.
2014; 55 (7): 4015–29
- **Relationship Between Foveal Cone Specialization and Pit Morphology in Albinism** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Wilk, M. A., McAllister, J. T., Cooper, R. F., Dubis, A. M., Patitucci, T. N., Summerfelt, P., Anderson, J. L., Stepien, K. E., Costakos, D. M., Connor, T. B., Wirostko, W. J., Chiang, P., Dubra, et al
2014; 55 (7): 4186–98

- **In Vivo Imaging of Human Cone Photoreceptor Inner Segments** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Scoles, D., Sulai, Y. N., Langlo, C. S., Fishman, G. A., Curcio, C. A., Carroll, J., Dubra, A.
2014; 55 (7): 4244–51
- **Comparison of adaptive optics scanning light ophthalmoscopic fluorescein angiography and offset pinhole imaging** *BIOMEDICAL OPTICS EXPRESS*
Chui, T. P., Dubow, M., Pinhas, A., Shah, N., Gan, A., Weitz, R., Sulai, Y. N., Dubra, A., Rosen, R. B.
2014; 5 (4): 1173–89
- **Classification of Human Retinal Microaneurysms Using Adaptive Optics Scanning Light Ophthalmoscope Fluorescein Angiography** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Dubow, M., Pinhas, A., Shah, N., Cooper, R. F., Gan, A., Gentile, R. C., Hendrix, V., Sulai, Y. N., Carroll, J., Chui, T. P., Walsh, J. B., Weitz, R., Dubra, et al
2014; 55 (3): 1299–1309
- **Visualization of retinal vascular structure and perfusion with a nonconfocal adaptive optics scanning light ophthalmoscope** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*
Sulai, Y. N., Scoles, D., Harvey, Z., Dubra, A.
2014; 31 (3): 569–79
- **A Lensing Effect of Inner Retinal Cysts on Images of the Photoreceptor Mosaic** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Langlo, C. S., Flatter, J. A., Dubra, A., Wirostko, W. J., Carroll, J.
2014; 34 (2): 421–22
- **Retinal Structure and Function in Achromatopsia Implications for Gene Therapy** *OPHTHALMOLOGY*
Sundaram, V., Wilde, C., Aboshiha, J., Cowing, J., Han, C., Langlo, C. S., Chana, R., Davidson, A. E., Sergouniotis, P. I., Bainbridge, J. W., Ali, R. R., Dubra, A., Rubin, et al
2014; 121 (1): 234–45
- **Human Cone Visual Pigment Deletions Spare Sufficient Photoreceptors to Warrant Gene Therapy** *HUMAN GENE THERAPY*
Cideciyan, A. V., Hufnagel, R. B., Carroll, J., Sumaroka, A., Luo, X., Schwartz, S. B., Dubra, A., Land, M., Michaelides, M., Gardner, J. C., Hardcastle, A. J., Moore, A. T., Sisk, et al
2013; 24 (12): 993–1006
- **In vivo imaging of retinal pigment epithelium cells in age related macular degeneration** *BIOMEDICAL OPTICS EXPRESS*
Rossi, E. A., Rangel-Fonseca, P., Parkins, K., Fischer, W., Latchney, L. R., Folwell, M. A., Williams, D. R., Dubra, A., Chung, M. M.
2013; 4 (11): 2527–39
- **In vivo dark-field imaging of the retinal pigment epithelium cell mosaic** *BIOMEDICAL OPTICS EXPRESS*
Scoles, D., Sulai, Y. N., Dubra, A.
2013; 4 (9): 1710–23
- **SELECTIVE CONE PHOTORECEPTOR INJURY IN ACUTE MACULAR NEURORETINOPATHY** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
Hansen, S. O., Cooper, R. F., Dubra, A., Carroll, J., Weinberg, D. V.
2013; 33 (8): 1650–58
- **Outer Retinal Structure in Best Vitelliform Macular Dystrophy** *JAMA OPHTHALMOLOGY*
Kay, D. B., Land, M. E., Cooper, R. F., Dubis, A. M., Godara, P., Dubra, A., Carroll, J., Stepien, K. E.
2013; 131 (9): 1207–15
- **In vivo imaging of human retinal microvasculature using adaptive optics scanning light ophthalmoscope fluorescein angiography** *BIOMEDICAL OPTICS EXPRESS*
Pinhas, A., Dubow, M., Shah, N., Chui, T. Y., Scoles, D., Sulai, Y. N., Weitz, R., Walsh, J. B., Carroll, J., Dubra, A., Rosen, R. B.
2013; 4 (8): 1305–17
- **Automatic detection of modal spacing (Yellott's ring) in adaptive optics scanning light ophthalmoscope images** *OPHTHALMIC AND PHYSIOLOGICAL OPTICS*
Cooper, R. F., Langlo, C. S., Dubra, A., Carroll, J.
2013; 33 (4): 540–49
- **Adaptive Optics Retinal Imaging - Clinical Opportunities and Challenges** *CURRENT EYE RESEARCH*
Carroll, J., Kay, D. B., Scoles, D., Dubra, A., Lombardo, M.

2013; 38 (7): 709-721

- **Automatic cone photoreceptor segmentation using graph theory and dynamic programming** *BIOMEDICAL OPTICS EXPRESS*
Chiu, S. J., Lokhnygina, Y., Dubis, A. M., Dubra, A., Carroll, J., Izatt, J. A., Farsiu, S.
2013; 4 (6): 924-37
- **The Effect of Cone Opsin Mutations on Retinal Structure and the Integrity of the Photoreceptor Mosaic** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Carroll, J., Dubra, A., Gardner, J. C., Mizrahi-Meissonnier, L., Cooper, R. F., Dubis, A. M., Nordgren, R., Genead, M., Connor, T. B., Stepien, K. E., Sharon, D., Hunt, D. M., Banin, et al
2012; 53 (13): 8006-15
- **Assessing Retinal Structure in Complete Congenital Stationary Night Blindness and Oguchi Disease** *AMERICAN JOURNAL OF OPHTHALMOLOGY*
Godara, P., Cooper, R. F., Sergouniotis, P. I., Diederichs, M. A., Streb, M. R., Genead, M. A., McAnany, J., Webster, A. R., Moore, A. T., Dubis, A. M., Neitz, M., Dubra, A., Stone, et al
2012; 154 (6): 987-1001
- **First-order design of a reflective viewfinder for adaptive optics ophthalmoscopy** *OPTICS EXPRESS*
Dubra, A., Sulai, Y. N.
2012; 20 (24): 26596-605
- **Adaptive optics scanning ophthalmoscopy with annular pupils** *BIOMEDICAL OPTICS EXPRESS*
Sulai, Y. N., Dubra, A.
2012; 3 (7): 1647-1661
- **Repeatability of In Vivo Parafoveal Cone Density and Spacing Measurements** *OPTOMETRY AND VISION SCIENCE*
Garrioch, R., Langlo, C., Dubis, A. M., Cooper, R. F., Dubra, A., Carroll, J.
2012; 89 (5): 632-43
- **Adaptive optics retinal imaging in the living mouse eye** *BIOMEDICAL OPTICS EXPRESS*
Geng, Y., Dubra, A., Yin, L., Merigan, W. H., Sharma, R., Libby, R. T., Williams, D. R.
2012; 3 (4): 715-34
- **Relationship between the Foveal Avascular Zone and Foveal Pit Morphology** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Dubis, A. M., Hansen, B. R., Cooper, R. F., Beringer, J., Dubra, A., Carroll, J.
2012; 53 (3): 1628-36
- **Subclinical Photoreceptor Disruption in Response to Severe Head Trauma** *ARCHIVES OF OPHTHALMOLOGY*
Stepien, K. E., Martinez, W. M., Dubis, A. M., Cooper, R. F., Dubra, A., Carroll, J.
2012; 130 (3): 400-402
- **Retinal Crystals in Type 2 Idiopathic Macular Telangiectasia** *OPHTHALMOLOGY*
Sallo, F. B., Leung, I., Chung, M., Wolf-Schnurrbusch, U. K., Dubra, A., Williams, D. R., Clemons, T., Pauleikhoff, D., Bird, A. C., Peto, T., MacTel Study Grp
2011; 118 (12): 2461-67
- **Spatial and temporal variation of rod photoreceptor reflectance in the human retina** *BIOMEDICAL OPTICS EXPRESS*
Cooper, R. F., Dubis, A. M., Pavaskar, A., Rha, J., Dubra, A., Carroll, J.
2011; 2 (9): 2577-89
- **Photoreceptor Structure and Function in Patients with Congenital Achromatopsia** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Genead, M. A., Fishman, G. A., Rha, J., Dubis, A. M., Bonci, D. O., Dubra, A., Stone, E. M., Neitz, M., Carroll, J.
2011; 52 (10): 7298-7308
- **Noninvasive imaging of the human rod photoreceptor mosaic using a confocal adaptive optics scanning ophthalmoscope** *BIOMEDICAL OPTICS EXPRESS*
Dubra, A., Sulai, Y., Norris, J. L., Cooper, R. F., Dubis, A. M., Williams, D. R., Carroll, J.
2011; 2 (7): 1864-76
- **Reflective afocal broadband adaptive optics scanning ophthalmoscope** *BIOMEDICAL OPTICS EXPRESS*
Dubra, A., Sulai, Y.
2011; 2 (6): 1757-68

- **Variability in parafoveal cone mosaic in normal trichromatic individuals** *BIOMEDICAL OPTICS EXPRESS*
Dees, E. W., Dubra, A., Baraas, R. C.
2011; 2 (5): 1351–58
- **Optical properties of the mouse eye** *BIOMEDICAL OPTICS EXPRESS*
Geng, Y., Schery, L., Sharma, R., Dubra, A., Ahmad, K., Libby, R. T., Williams, D. R.
2011; 2 (4): 717–38
- **Imaging retinal mosaics in the living eye**
Rossi, E. A., Chung, M., Dubra, A., Hunter, J. J., Merigan, W. H., Williams, D. R.
NATURE PUBLISHING GROUP.2011: 301-308
- **Race- and Sex-Related Differences in Retinal Thickness and Foveal Pit Morphology**
Wagner-Schuman, M., Dubis, A. M., Nordgren, R. N., Lei, Y., Odell, D., Chiao, H., Weh, E., Fischer, W., Sulai, Y., Dubra, A., Carroll, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2011: 625–34
- **Images of photoreceptors in living primate eyes using adaptive optics two-photon ophthalmoscopy** *BIOMEDICAL OPTICS EXPRESS*
Hunter, J. J., Masella, B., Dubra, A., Sharma, R., Yin, L., Merigan, W. H., Palczewska, G., Palczewski, K., Williams, D. R.
2011; 2 (1): 139–48
- **Registration of 2D Images from Fast Scanning Ophthalmic Instruments**
Dubra, A., Harvey, Z., Fischer, B., Dawant, B. M., Lorenz, C.
SPRINGER-VERLAG BERLIN.2010: 60–71
- **In Vivo Imaging of Microscopic Structures in the Rat Retina** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Geng, Y., Greenberg, K. P., Wolfe, R., Gray, D. C., Hunter, J. J., Dubra, A., Flannery, J. G., Williams, D. R., Porter, J.
2009; 50 (12): 5872–79
- **First-order design of off-axis reflective ophthalmic adaptive optics systems using afocal telescopes** *OPTICS EXPRESS*
Gomez-Vieyra, A., Dubra, A., Malacara-Hernandez, D., Williams, D. R.
2009; 17 (21): 18906–19
- **In Vivo Autofluorescence Imaging of the Human and Macaque Retinal Pigment Epithelial Cell Mosaic** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Morgan, J. W., Dubra, A., Wolfe, R., Merigan, W. H., Williams, D. R.
2009; 50 (3): 1350–59
- **In vivo imaging of the fine structure of rhodamine-labeled macaque retinal ganglion cells**
Gray, D. C., Wolfe, R., Gee, B. P., Scoles, D., Geng, Y., Masella, B. D., Dubra, A., Luque, S., Williams, D. R., Merigan, W. H.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2008: 467–73
- **Wavefront sensor and wavefront corrector matching in adaptive optics** *OPTICS EXPRESS*
Dubra, A.
2007; 15 (6): 2762–69
- **In vivo fluorescence imaging of primate retinal ganglion cells and retinal pigment epithelial cells** *OPTICS EXPRESS*
Gray, D. C., Merigan, W., Wolfing, J. I., Gee, B. P., Porter, J., Dubra, A., Twietmeyer, T. H., Ahmad, K., Tumber, R., Reinholz, F., Williams, D. R.
2006; 14 (16): 7144–58
- **Preisach classical and nonlinear modeling of hysteresis in piezoceramic deformable mirrors** *OPTICS EXPRESS*
Dubra, A., Massa, J. S., Paterson, C.
2005; 13 (22): 9062–70
- **Double lateral shearing interferometer for the quantitative measurement of tear film topography** *APPLIED OPTICS*
Dubra, A., Paterson, C., Dainty, C.
2005; 44 (7): 1191–99
- **Study of the tear topography dynamics using a lateral shearing interferometer** *OPTICS EXPRESS*
Dubra, A., Paterson, C., Dainty, C.
2004; 12 (25): 6278–88

- **Wave-front reconstruction from shear phase maps by use of the discrete Fourier transform** *APPLIED OPTICS*
Dubra, A., Paterson, C., Dainty, C.
2004; 43 (5): 1108–13
- **Axial irradiance distribution throughout the whole space behind an annular aperture: comments** *APPLIED OPTICS*
Ferrari, J. A., Dubra, A.
2003; 42 (19): 3754–55
- **Visualization of phase objects using incoherent illumination** *OPTICS COMMUNICATIONS*
Perciante, C. D., Ferrari, J. A., Dubra, A.
2000; 183 (1-4): 15–18
- **Alternating current sensor with second-harmonic detection** *APPLIED OPTICS*
Ferrari, J. A., Perciante, C. D., Dubra, A., Arnaud, A., Frins, E. M.
2000; 39 (25): 4638-4640
- **Precision synchronous polarimeter with linear response for the measurement of small rotation angles** *APPLIED OPTICS*
Arnaud, A., Silveira, F., Frins, E. M., Dubra, A., Perciante, C. D., Ferrari, J. A.
2000; 39 (16): 2601–4
- **Conversion of bright nondiffracting beams into dark nondiffracting beams by use of the topological properties of polarized light** *OPTICS LETTERS*
Frins, E. M., Ferrari, J. A., Dubra, A., Perciante, D.
2000; 25 (5): 284–86
- **Fast Hankel transform of nth order** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*
Ferrari, J. A., Perciante, D., Dubra, A.
1999; 16 (10): 2581–82
- **Robust one-beam interferometer with phase-delay control** *OPTICS LETTERS*
Ferrari, J. A., Frins, E. M., Perciante, D., Dubra, A.
1999; 24 (18): 1272–74
- **Space integrating joint transform correlator using a moving grating** *OPTICAL ENGINEERING*
Ferrari, J. A., Dubra, A., Perciante, D., Rodriguez, B.
1999; 38 (7): 1211–15
- **Current sensor using heterodyne detection** *APPLIED OPTICS*
Ferrari, J. A., Dubra, A., Arnaud, A., Perciante, D.
1999; 38 (13): 2808–11
- **Diffracted field by an arbitrary aperture** *AMERICAN JOURNAL OF PHYSICS*
Dubra, A., Ferrari, J. A.
1999; 67 (1): 87–92
- **Precise polarization measurements using polarizing sheets** *APPLIED OPTICS*
Dubra, A., Ferrari, J. A.
1998; 37 (34): 8156–58
- **Nonlinear joint transform correlator using one-dimensional Fourier transformation** *OPTICAL ENGINEERING*
Rodriguez, B., Dubra, A., Martinez, C., Escuder, G., Ferrari, J. A.
1998; 37 (10): 2742–47