

Curriculum Vitae

Robert F Cooper, PhD

Assistant Professor
Joint Department of Biomedical Engineering
Department of Ophthalmology
Marquette University and Medical College of Wisconsin

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EDUCATION:

- 9/2005 – 5/2009 **Marquette University**, Milwaukee, WI
B.S. in Biomedical Engineering
- 1/2010 – 1/2016 **Marquette University**, Milwaukee WI
Ph.D. in Biomedical Engineering, titled: “**Noninvasive Assessment of Photoreceptor Structure and Function in the Human Retina**”, under mentors Joseph Carroll and Kristina Ropella
- 10/2015 – 06/2019 **University of Pennsylvania**, Philadelphia PA
Postdoctoral Fellowship, under mentors Jessica IW Morgan and David Brainard

HONORS:

- 2011: National Eye Institute Travel Grant**, Association for Research in Vision and Ophthalmology Annual Meeting
- 2014: Research Assistant Honors**, Marquette University
- 2016: Young Investigator Award**, Optical Society of America Fall Vision Meeting

JOURNAL PUBLICATIONS:

47. Gaffney M, **Cooper RF**, Cava JA, Follett HM, Salmon A, Freling S, Yu CT, Merriman D, Carroll J. “Cone photoreceptor reflectance variation in the northern tree shrew and thirteen-lined ground squirrel”. *Exp Biol Med*. 2021; *In Press*.
46. Salmon AE, **Cooper RF**, Chen M, Huggins B, Java JA, Chen N, Follett HM, Gaffney M, Heitkotter H, Heffernan E, Schmidt TG, Carroll J. “Automated image processing pipeline for adaptive optics scanning light ophthalmoscopy”. *Biomed Opt Express*. 2021 12 (6), 3142-3168

45. **Cooper RF**, Brainard DH, Morgan JIW. "Optoretinography of individual human cone photoreceptors" *Opt Express*. 2020 28 (26), 39326-39339.
44. Cava JA, Allphin MT, Mastey RR, Gaffney M, Linderman RE, **Cooper RF**, J Carroll. "Assessing interocular symmetry of the foveal cone mosaic" *Invest Ophthalmol Vis Sci*. 2020 61 (14), 23.
43. Morgan JIW, Chen M, Huang AM, Jiang YY, **Cooper RF**. "Cone identification in choroideremia: repeatability, reliability, and automation through use of a convolutional neural network" *Transl Vis Sci Technol*. 2020 9 (2), 40.
42. Chen M, **Cooper RF**, Gee JC, Brainard DH, Morgan JIW. "Automatic longitudinal montaging of adaptive optics retinal images using constellation matching" *Biomed Opt Express*. 2019 10 (12), 6476-6496.
41. **Cooper RF**, Aguirre GK, Morgan JIW. "Fully Automated Estimation of Spacing and Density for Retinal Mosaics" *Transl Vis Sci Technol*. 2019 8 (5), 26-26
40. Ammar MJ, Scavelli KT, Uyhazi KE, Bedoukian EC, Serrano LW, Edelstein ID, Vergilio GK, **Cooper RF**, Morgan JIW, Kumar P, Aleman TS. "Enhanced S-cone syndrome: Visual function, cross-sectional imaging, and cellular structure with adaptive optics ophthalmoscopy" *Retinal Cases Brief Rep*. 2019
39. Jackson K, Vergilio GK, **Cooper RF**, Ying GS, Morgan JIW. "A 2-Year longitudinal study of normal cone photoreceptor density" *Invest Ophthalmol Vis Sci*. 2019 60(5): 1420-1430.
38. Young JB, Godara P, Williams V, Summerfelt P, Connor TB, Tarima S, Visotcky A, **Cooper RF**, Blindauer K, Carroll JC. "Assessing retinal structure in patients with Parkinson's disease" *J Neurol Neurophysiol*. 2019 10(1).
37. Tuten WS, **Cooper RF**, Tiruveedhula P, Dubra A, Roorda A, Cottaris NP, Brainard DH, Morgan JIW. "Spatial summation in the human fovea: Do normal optical aberrations and fixational eye movements have an effect?" *J Vis*. 2018 18(8): 6.
36. Morgan JIW, Vergilio GK, Hsu J, Dubra A, **Cooper RF**. "The reliability of cone density measurements in the presence of rods." *Transl Vis Sci Technol*. 2018 7(3): 21.
35. **Cooper RF**, Tuten WS, Dubra A, Brainard DH, Morgan JIW. "Non-invasive assessment of human cone photoreceptor function." *Biomed Opt Express*. 2017 8(11): 5098-5112.
34. Litts KM, **Cooper RF**, Duncan JL, Carroll J. "Photoreceptor-based biomarkers in AOSLO retinal imaging." *Invest Ophthalmol Vis Sci*. 2017 58(6):BIO255-BIO267.
33. Salmon AE, **Cooper RF**, Langlo CS, Baghaie A, Dubra A, Carroll J. "An automated reference frame selection (ARFS) algorithm for cone imaging with adaptive optics scanning light ophthalmoscopy." *Transl Vis Sci Technol*. 2017 6(2): 9.
32. Cunefare D, Fang L, **Cooper RF**, Dubra A, Carroll J, Farsiu S. "Open source software for automatic detection of cone photoreceptors in adaptive optics ophthalmoscopy using convolutional neural networks." 2017 *Sci Rep*. 7(1): 6620.

31. Scoles D, Sulai YN, **Cooper RF**, Higgins BP, Johnson RD, Carroll J, Dubra A, Stepien KE. "Photoreceptor inner segment morphology in Best Vitelliform Macular Dystrophy." *Retina*. 2017 37(4):741-748.
30. Wilk MA, Dubis AM, **Cooper RF**, Summerfelt P, Dubra A, Carroll J. "Assessing the spatial relationship between fixation and foveal specializations." *Vision Res*. 2017 132:53-61.
29. Wilk MA, Wilk BM, Langlo CS, **Cooper RF**, J Carroll. "Evaluating outer segment length as a surrogate measure of peak foveal cone density." *Vision Res*. 130:57-66.
28. **Cooper RF**, Sulai YN, Dubis AM, Chui TY, Rosen RB, Michaelides M, Dubra A, Carroll J. "Effects of intra-frame distortion on measures of cone mosaic geometry from adaptive optics scanning light ophthalmoscopy." *Transl Vis Sci Technol*. 2016 5(1):10
27. **Cooper RF**, Wilk MA, Tarima S, Dubra A, Carroll J. "Evaluating descriptive metrics of the human cone mosaic." *Invest Ophthalmol Vis Sci*. 2016 57(7): 2993
26. **Cooper RF**, Lombardo M, Carroll J, Sloan KR, Lombardo G. 2015 "Methods for investigating the local spatial anisotropy and the preferred orientation of cones in adaptive optics retinal images." *Visual Neurosci*. 2016 33:E005
25. Chen M, **Cooper RF**, Han GK, Gee J, Brainard DH, Morgan JIW "Multi-modal automatic montaging of adaptive optics retinal images." *Biomed Opt Express*. 2016 7(12):4899-4918.
24. Cunefare D, **Cooper RF**, Higgins B, Katz DF, Dubra A, Carroll J, Farsiu S. "Automatic detection of cone photoreceptors in split detector adaptive optics scanning light ophthalmoscope images." *Biomed Opt Express*. 2016 7(5): 2036-2050
23. Razeen MM, **Cooper RF**, Langlo CS, Goldberg MR, Wilk MA, Han DP, Connor TB Jr, Fishman GA, Collison FT, Sulai YN, Dubra A, Carroll J, Stepien KE "Correlating photoreceptor mosaic structure to clinical findings in Stargardt disease" *Transl Vis Sci Technol*. 2016 5(2):6 eCollection.
22. Sun LW, Johnson RD, Langlo CS, **Cooper RF**, Razeen MM, Russillo MC, Dubra A, Connor TB Jr, Han DP, Pennesi ME, Kay CN, Weinberg DV, Stepien KE, Carroll J "Assessing photoreceptor structure in retinitis pigmentosa and usher syndrome" *Invest Ophthalmol Vis Sci*. 2016 57(6):2428-2442
21. Scoles, D, Flatter JA, **Cooper RF**, Langlo CS, Robison S, Neitz M, Weinberg DV, Pennesi ME, Han DP, Dubra A, Carroll J. "Assessing photoreceptor structure associated with ellipsoid zone disruptions visualized with optical coherence tomography" *Retina*. 2016 36(1):91-103
20. Strauss RW, Dubis AM, **Cooper RF**, Ba-Abbad R, Moore AT, Webster AR, Dubra A, Carroll J, Michaelides M. "Retinal architecture in R9AP- and RGS9- associated retinal dysfunction (Bradyopsia)" *Am J Ophthalmol*. 2015 160(6):1269-1275
19. Hansen S, Batson S, Weinlander KM, **Cooper RF**, Scoles DH, Karth PA, Weinberg DV, Dubra A, Kim JE, Carroll J, Wirostko WJ. "Assessing Photoreceptor Structure Following Macular Hole Closure"

18. Lujan BJ, Roorda A, Croskrey JA, Dubis AM, **Cooper RF**, Bayabo J, Duncan JL, Antony BJ, Carroll J. “Directional optical coherence tomography provides true outer nuclear layer and Henle fiber layer measurements” *Retina*. 2015 35(8): 1511-1520.
17. Flatter JA, **Cooper RF**, Dubow MJ, Pinhas A, Singh RS, Kapur R, Shah N, Walsh RD, Hong SH, Weinberg DV, Stepien KE, Wirostko WJ, Robison S, Dubra A, Rosen RB, Connor TB, Carroll J. “Outer retinal structure following closed globe blunt ocular trauma” *Retina*. 2014 34(10): 2133-2146.
16. Dubis AM, **Cooper RF**, Aboshiha J, Langlo C, Sundaram V, Liu BS, Collison F, Fishman GA, Moore AT, Webster AR, Dubra A, Carroll J, Michaelides M. “Genotype-Dependent Variability in Residual Cone Structure in Achromatopsia: Towards Developing Metrics for Assessing Cone Health” *Invest Ophthalmol Vis Sci*. 2014 55(11): 7303-7311.
15. Land ME, **Cooper RF**, Young J, Berg E, Kitchner T, Xiang Q, Szabo A, Ivacic LC, Stepien KE, Page, CD, Carroll J, Connor TB, Brilliant M. “Cone structure in subjects with known genetic relative risk for AMD” *Optom Vis Sci*. 2014 91(8): 939-949.
14. Wilk MA, McAllister JT, **Cooper RF**, Dubis AM, Patitucci TN, Summerfelt P, Anderson JL, Stepien, KE, Costakos DM, Connor TB, Wirostko WJ, Chiang PW, Dubra A, Curcio CA, Brilliant M, Summers CG, Carroll J. “Relationship between foveal cone specialization and pit morphology in albinism” *Invest Ophthalmol Vis Sci*. 2014 55(7): 4186-4198.
13. Scoles D, Higgins BP, **Cooper RF**, Dubis AM, Summerfelt P, Weinberg DV, Kim JE, Stepien KE, Carroll J, Dubra A. “Microscopic inner retinal hyper-reflective phenotypes in retinal and neurologic disease” *Invest Ophthalmol Vis Sci*. 2014 55(7): 4015-4029.
12. Liu BS, Tarima S, Visotcky A, Pechauer A, **Cooper RF**, Landsem L, Wilk MA, Godara P, Makhijani V, Sulai YN, Syed N, Yasumura G, Garg AK, Pennesi ME, Lujan BJ, Dubra A, Duncan JL, Carroll J. “The reliability of parafoveal cone density measurements” *British Journal of Ophthalmology*. 2014 98(8): 1126-1131.
11. Dubow M, Pinhas A, Shah N, **Cooper RF**, Gan A, Gentile RC, Hendrix V, Sulai YN, Carroll J, Chui TY, Walsh JB, Weitz R, Dubra A, Rosen RB. “Classification of human retinal microaneurysms using adaptive optics scanning light ophthalmoscope fluorescein angiography.” *Invest Ophthalmol Vis Sci*. 2014 55(3):1299-1309.
10. **Cooper RF**, Langlo CS, Dubra A, Carroll J. “Automatic detection of modal spacing (Yellott's ring) in adaptive optics scanning light ophthalmoscope images.” *Ophthalmic Physiol Opt*. 2013 33(4):540-549
9. Hansen SO, **Cooper RF**, Dubra A, Carroll J, Weinberg DV. “Selective cone photoreceptor injury in acute macular neuroretinopathy. “ *Retina*. 2013 33(8):1650-1658.
8. Kay DB, Land ME, **Cooper RF**, Dubis AM, Godara P, Dubra A, Carroll J, Stepien KE. “Outer retinal structure in best vitelliform macular dystrophy.” *JAMA Ophthalmol*. 2013 131(9):1207-1215.
7. Godara P, **Cooper RF**, Sergouniotis PI, Diederichs MA, Streb MR, Genead MA, McAnany JJ, Webster AR, Moore AT, Dubis AM, Neitz M, Dubra A, Stone EM, Fishman GA, Han DP, Michaelides M, Carroll J. “Assessing retinal structure in complete congenital

stationary night blindness and Oguchi disease.” Am J Ophthalmol. 2012 154(6):987-1001.e1.

6. Garrioch R, Langlo C, Dubis AM, **Cooper RF**, Dubra A, Carroll J. “Repeatability of in vivo parafoveal cone density and spacing measurements.” Optom Vis Sci. 2012 89(5):632-643

5. Stepien KE, Martinez WM, Dubis AM, **Cooper RF**, Dubra A, Carroll J. “Subclinical photoreceptor disruption in response to severe head trauma.” Arch Ophthalmol. 2012 130(3):400-402.

4. Carroll J, Dubra A, Gardner JC, Mizrahi-Meissonnier L, **Cooper RF**, Dubis AM, Nordgren R, Genead M, Connor TB Jr, Stepien KE, Sharon D, Hunt DM, Banin E, Hardcastle AJ, Moore AT, Williams DR, Fishman G, Neitz J, Neitz M, Michaelides M. “The effect of cone opsin mutations on retinal structure and the integrity of the photoreceptor mosaic.” Invest Ophthalmol Vis Sci. 2012 53(13):8006-8015.

3. Dubis AM, Hansen BR, **Cooper RF**, Beringer J, Dubra A, Carroll J. “Relationship between the foveal avascular zone and foveal pit morphology.” Invest Ophthalmol Vis Sci. 2012 53(3):1628-1636.

2. **Cooper RF**, Dubis AM, Pavaskar A, Rha J, Dubra A, Carroll J. “Spatial and temporal variation of rod photoreceptor reflectance in the human retina.” Biomed Opt Express. 2011 2(9):2577-2589.

1. Dubra A, Sulai Y, Norris JL, **Cooper RF**, Dubis AM, Williams DR, Carroll J. “Noninvasive imaging of the human rod photoreceptor mosaic using a confocal adaptive optics scanning ophthalmoscope.” Biomed Opt Express. 2011 2(7):1864-1876.

INVITED TALKS:

Cooper RF. “Examining the health of individual photoreceptors in the living eye” Presented during the Rank Prize Funds symposium on Adaptive Optics, August 13, 2019

Cooper RF. “Examining the health of individual photoreceptors in the living eye” Presented during the International OSA Webinar “Functional Imaging: Eliciting, Measuring and Interpreting Intrinsic Signals in the Retina”, December 12, 2018

Cooper RF. “Examining the health of the retina with adaptive optics: where have we been, and where are we going?” Presented at the Medical College of Wisconsin, March 3, 2018.

Cooper RF. “Deriving Metrics From AO Images of the Cone Mosaic: Beyond Counting Cones” Presented at the PSI Workshop “AO Retinal Imaging - Road map to Clinical Translation”, 2016

Cooper RF. “Noninvasive Assessment of Photoreceptor Structure Function in the Human Retina” Presented at the National Institutes of Health, 2015

Cooper RF. “Assessing the reflectance of rods and cones in the living human retina.” Presented at the Center for Adaptive Optics Fall Retreat, 2011.

Cooper RF. “Raw OCT processing – when rigid body transforms aren’t enough.” Presented at the Center for Adaptive Optics Fall Retreat 2011.

CONFERENCE PRESENTATIONS:

53. Morgan JIW, Brainard DH, **Cooper RF** “Optical assessment of cone function through adaptive optics scanning laser ophthalmoscopy- the cone optoretinogram”. 2020 OTh5B.2

52. Gaffney M, **Cooper RF**, Cava J, Follett HM, Salmon AE, Freling S, Yu CT, Merriman DK, Fitzpatrick D, Carroll J. “Assessing the variation of photoreceptor reflectance in cone dominant species”. 2020 61(7):4506

51. Allphin, M, Cava J, **Cooper RF**, Carroll J “Reevaluating outer segment length as a surrogate for peak cone density” Invest Ophthalmol Vis Sci. 2020 61(7):204

50. Wynne NC, Heitkotter H, Woertz EN, Cava J, Buckland E, **Cooper RF**, Carroll J. “Comparison of cone metrics between the Spectralis high magnification module (HMM) and adaptive optics scanning light ophthalmoscopy (AOSLO)”. 2020 61(9):PB0064

49. **Cooper RF**, Aguirre GK, Morgan JIW. “Fully-automated estimation of cone metrics in adaptive optics retinal images” Invest Ophthalmol Vis Sci. 2019 60(9):1427-1427

48. Morgan JIW, Chen M, Vergilio GK, Huang AM, Bennett J, Maguire AM, Aleman TS, **Cooper RF**. “Automated cone identification in adaptive optics retinal images of choroideremia using a convolutional neural network” Invest Ophthalmol Vis Sci. 2019 60(9): 1431-1431

47. Salmon AE, **Cooper RF**, Carroll JC. “Effect of intraframe motion correction on residual distortion in AOSLO images” Invest Ophthalmol Vis Sci. 2019 60(9): 4606-4606

46. Cava J, Mastey R, Allphin M, **Cooper RF**, Carroll JC. “Assessing interocular symmetry of foveal cone density” Invest Ophthalmol Vis Sci. 2019 60(9): 4578-4578

45. Kalaparambath S, **Cooper RF**, Vergilio GK, Aguirre GK, Morgan JIW. “Normative database of cone spacing and density from adaptive optics montage” Invest Ophthalmol Vis Sci. 2019 60(9): 1428-1428

44. Huang, AM, **Cooper RF**, Vergilio GK, Bennett J, Maguire AM, Aleman TS, Morgan JIW. “Cone outer segment reflectance entropy in choroideremia” Invest Ophthalmol Vis Sci. 2019 60(9): 1030-1030

43. **Cooper RF**, Tuten WS, Brainard DH, Morgan JIW “Optophysiological function of individual cones.” Invest Ophthalmol Vis Sci. 2018 59 (9): 650-650

42. Chen M, **Cooper RF**, Han GK, Gee J, Brainard DH, Morgan JIW. “Toward Automated Alignment of Longitudinally-Acquired Adaptive Optics Retinal Images: Constellation Features.” Invest Ophthalmol Vis Sci. 2018 59 (9): 658-658

41. EJ Patterson, Langlo CS, **Cooper RF**, Carroll J. “Comparing metrics for quantifying the human rod photoreceptor mosaic.” Invest Ophthalmol Vis Sci. 2018 59 (9): 652-652

40. Morgan JIW, Tuten WS, **Cooper RF**, Han GK, Young G, Bennett J. "Cellular-scale assessment of visual function in Choroideremia." *Invest Ophthalmol Vis Sci*. 2018 59 (9): 1151-1151
39. **Cooper RF**, Tuten WS, Dubra A, Brainard DH, Morgan JIW. "Spectral sensitivity of the cone photoreceptor intrinsic reflectance response." *Invest Ophthalmol Vis Sci*. 2017 58(8):E-Abstract 3432.
38. **Cooper RF**, Tuten WS, Brainard DH, Morgan JIW. "Irradiance and duration dependence of the cone photoreceptor intrinsic reflectance response." *J Vis*. 2017 17(7):32.
37. Tuten WS, **Cooper RF**, Tiruveedhula P, Dubra A, Roorda A, Brainard DH, Morgan JIW. "Photopic spatial summation in the central retina assessed with adaptive optics." *Invest Ophthalmol Vis Sci*. 2017 58(8):E-Abstract 2493.
36. Han GK, **Cooper RF**, Scoles D, Bennett J, Maguire AM, Aleman TS, Morgan, JIW. "Reliability of Counting Cone Inner Segments in Choroideremia." *Invest Ophthalmol Vis Sci*. 2017 58(8):E-Abstract 1258.
35. Rinella N, Qin J, Roorda A, Chung MM, Hongxin Song, Carroll J, Sun LW, Morgan JIW, **Cooper RF**, Chui TYP, Rosen RB, Blodi BA, Scott IU, Porco TC, Duncan JL. "Longitudinal Analysis of Cone Structure in Patients with Central Retinal Vein Occlusion (CRVO) and Cystoid Macular Edema (CME)." *Invest Ophthalmol Vis Sci*. 2017 58(8):E-Abstract 306.
34. **Cooper RF**, Tuten ST, Brainard DH, Morgan JI "Irradiance and duration dependence of the cone photoreceptor intrinsic reflectance response." Presented at the OSA Fall Vision Meeting, 2016
33. **Cooper RF**, Tuten ST, Brainard DH, Morgan JI "Intensity dependence of the cone photoreceptor intrinsic reflectance response." Presented at the ARVO Imaging the Eye Conference, 2016.
32. Chen M, **Cooper RF**, Grace HK, Gee J, Brainard DH, Morgan JI "Multi-modal Automatic Montaging of Adaptive Optics Retinal Images" *Invest Ophthalmol Vis Sci*. 2016. 57:E-Abstract.
31. Cunefare D, **Cooper RF**, Higgins BP, Dubra A, Carroll J, Farsiu S "Automated detection of cone photoreceptors in split detector adaptive optics scanning light ophthalmoscope images" *Invest Ophthalmol Vis Sci*. 2016 57:E-Abstract 61 .
30. Huckenpahler A, Wilk MA, **Cooper RF**, Carroll J, Link B, Collery RF "Imaging the adult zebrafish cone photoreceptor mosaic using optical coherence tomography (OCT)" *Invest Ophthalmol Vis Sci*. 2016 57:E-Abstract 2196.
29. Wilk MA, **Cooper RF**, Wilk BM, Langlo CS, Carroll J "Modeling the relationship between foveal cone density and outer segment length" *Invest Ophthalmol Vis Sci*. 2016 57:E-Abstract 2802.
28. Han GK, **Cooper RF**, Hsu JC, Chen M, Carroll J, Morgan JI "Counting cones in the presence of rods: a reliability study" *Invest Ophthalmol Vis Sci*. 2016 57:E-Abstract 4640.

27. Morgan JI, Han GK, **Cooper RF**, Pearson D, Serrano L, Bennett J, Maguire AM, Dubra, A, Aleman, TS “Cone photoreceptor inner and outer segment mosaic abnormalities in choroideremia” *Invest Ophthalmol Vis Sci.* 2016 57:E-Abstract 5112.
26. Phillips E, Langlo CS, **Cooper RF**, Wilk MA, Linderman, R, Khan, J, Russillo, M, Rosen, RB, Carroll, J “Development and application of a normative database for OCTA retinal vasculature measurements” *Invest Ophthalmol Vis Sci.* 2016 57:E-Abstract 5461.
25. Salmon AE, **Cooper RF**, Langlo CS, Sajdak BS, Razeen MM, Dubra A, Carroll J “Automated reference frame selection (ARFS) for registration of scanning ophthalmoscope image sequences” *Invest Ophthalmol Vis Sci.* 2016 57:E-Abstract 5971.
24. **Cooper RF**, Wilk MA, Dubra A, Carroll J. “Evaluating descriptive metrics of the human photoreceptor mosaic.” *Invest Ophthalmol Vis Sci.* 2015 56(7): 4938.
23. Razeen MM, Goldberg MR, Langlo CS, **Cooper RF**, Wilk MA, Stepien KE, Han DP, Connor TB, Dubra A, Carroll J. “Correlating photoreceptor abnormalities on adaptive optics scanning light ophthalmoscopy to conventional clinical findings in patients with stargardt disease.” *Invest Ophthalmol Vis Sci.* 2015 56(7): 2781.
22. Sajdak BS, Langlo CS, Sulai YN, **Cooper RF**, Merriman DK, Carroll J, Dubra A. “Non-invasive adaptive optics imaging of the ground squirrel retina.” *Invest Ophthalmol Vis Sci.* 2015 56(7): 4099.
21. Smith ES, Chui TY, Chen CL, Carroll J, Dubra A, **Cooper RF**, Rosen RB, Hood D, Greenstein VC “Analysis of the photoreceptor mosaic within, on and outside the borders of hyperautofluorescent rings in retinitis pigmentosa using adaptive optics scanning light ophthalmoscopy.” *Invest Ophthalmol Vis Sci.* 2015 56(7): 4925.
20. **Cooper RF**, Langlo CS, Scoles D, Stepien KS, Connor TB, Dubra A, Carroll J. “Assessing photoreceptor reflectance changes in retinitis pigmentosa.” *Invest Ophthalmol Vis Sci.* 2014 55(13):2617.
19. Dubis AM, **Cooper RF**, Carroll J, Dubra A, Michaelides M. “Quantifying photoreceptor reflectance: when density is not enough.” *Invest Ophthalmol Vis Sci.* 2014 55(13): 5201.
18. Liyanage SE, **Cooper RF**, Ba-Abbad R, Sulai YN, Dubra A, Dubis AM, Carroll J, Michaelides M “Imaging photoreceptor structure in subjects with R9AP- and RGS9-associated retinal dysfunction (bradyopsia).” *Invest Ophthalmol Vis Sci.* 2014 55(13): 259.
17. Collery RF, Moehring F, **Cooper RF**, Dubis AM, Carroll J, Link BA “Zebrafish as a model to study emmetropization, refractive error, and retinal substructure using spectral domain-optical coherence tomography.” *Invest Ophthalmol Vis Sci.* 2014 55(13): 3035.
16. **Cooper RF**, Harvey Z, Dubow M, Sulai YN, Pinhas A, Scoles DH, Shah N, Rosen RB, Dubra A, Carroll, J. “The effect of AOSLO image distortion on metrics of mosaic geometry.” *Invest Ophthalmol Vis Sci.* Supplement 2013 54:E-Abstract 5546.
15. Scoles DH, **Cooper RF**, Dubis AM, Higgins BP, Carroll J, Dubra A. “In vivo microscopic inner retinal phenotypes of retinal and neurologic disease.” *Invest Ophthalmol Vis Sci.* Supplement 2013 54:E-Abstract 1434.

14. Kay, D.B., **Cooper RF**, Scoles DH, Zakka FR, Williams V, Dubra A, Carroll J, Stepien KE. "Photoreceptor Structure in Presumed Non-Neoplastic Autoimmune Retinopathy." Invest Ophthalmol Vis Sci. Supplement 2013 54:E-Abstract 3451.
13. Land ME, **Cooper RF**, Berg E, Kitchner T, Young J, Stepien KE, Connor TB, Page D, Brilliant M, Carroll J. "Photoreceptor structure in patients with increased genetic risk for age-related macular degeneration." Invest Ophthalmol Vis Sci. Supplement 2013 54:E-Abstract 6283.
12. Langlo CS, Denney D, **Cooper RF**, Han DP, Weinberg, DV, Kim JE, Dubra A, Stepien KE, Connor TB, Carroll J. "High-resolution Imaging of Retinal Structure in Retinitis Pigmentosa and Usher Syndrome." Invest Ophthalmol Vis Sci. Supplement 2013 54:E-Abstract 655.
11. Batson S, Hansen S, Karth PA, **Cooper RF**, Scoles, DH, Weinberg DV, Dubra A, Kim, JE, Carroll J, Wirostko W. "Assessing Photoreceptor Structure Following Macular Hole Closure." Invest Ophthalmol Vis Sci. Supplement 2013 54:E-Abstract 2839.
10. **Cooper RF**, Rha J, Dubis AM, Dubra A, Carroll J. "The repeatability of photoreceptor reflectance changes in the living human retina." Invest Ophthalmol Vis Sci. Supplement 2012 53:E-Abstract 5669.
9. Land ME, Kay D, Dubis AM, **Cooper RF**, Dubra A, Carroll J, Stepien KE. "Photoreceptor structure in the spectrum of Best vitelliform macular dystrophy." Invest Ophthalmol Vis Sci. Supplement 2012 53:E-Abstract 5209.
8. Godara P, **Cooper RF**, Diederichs MA, Sergouniotis P, Genead MA, Webster AR, Fishman GA, Han DP, Michaelides M, Carroll J. "Assessing photoreceptor reflectance and structure in congenital stationary night blindness." Invest Ophthalmol Vis Sci. Supplement 2012 53:E-Abstract 5256.
7. Lujan BJ, Bayabo JKT, Croskrey J, **Cooper RF**, Dubis AM, Carroll J, Roorda, A. "Interpretation of SDOCT photoreceptor bands sometimes depends on how you look at them." Invest Ophthalmol Vis Sci. Supplement 2012 53:E-Abstract 3169.
6. Carroll J, Garrioch R, Langlo CS, **Cooper RF**, Williams, V., Croskrey JA, Dubra A, Dubis AM. "The repeatability of in vivo cone density measurements." Invest Ophthalmol Vis Sci. Supplement 2012 53:E-Abstract 4644.
5. **Cooper RF**, Dubis AM, Pavaskar A, Dubra A, Carroll J. "Temporal variation of rod photoreceptor reflectance in the human retina." Presented at Engineering the Eye III 2011.
4. **Cooper RF**, Rha J, Dubra A, Carroll J. "Examining FFT and direct counting estimates of photoreceptor density in adaptive optics retinal images." Invest Ophthalmol Vis Sci. Supplement, 2011 52:E-Abstract 1321.
3. Dubis AM, Hansen BR, **Cooper RF**, Beringer J, Sulai Y, Dubra A, Carroll J. "The relationship between the foveal avascular zone and foveal pit morphology." Invest Ophthalmol Vis Sci. Supplement 2011 52:E-Abstract 1045.
2. Stepien KE, Martinez WM, Dubis AM, **Cooper RF**, Dubra A, Carroll J. "Detection of photoreceptor disruption after commotio retinae using adaptive optics scanning laser ophthalmoscopy." Invest Ophthalmol Vis Sci. Supplement 2011 52:E-Abstract 6657.

1. Dubis AM, Hansen BR, **Cooper RF**, Beringer J, Carroll J. “Understanding foveal development: the relationship between the avascular zone and pit morphology.” J Vis 2010 10(15):57, 57a.

TEACHING:

2019 – Current: Instructor, Marquette University

2011 – 2013: Teaching Assistant, Marquette University

Instructor, Marquette Engineering Pre-College Outreach

Instructor, Milwaukee Public Schools Health Science Career Fair

MENTORING:

- *As PhD Candidate*: Savannah Anderson (2010, SPUR student), Benjamin Hansen (2011, MSOE senior design team), Kathleen Bazan (2013, MSOE senior design team), Jonathon Young (2013, SPUR student), Samantha Chou (2015, MCW rotating graduate student)
- *As Postdoctoral Fellow*: Kevin Jackson (2018 Medical student), Andrew Huang (2018 Medical student)
- *As Faculty*:
 - Ashley Toll (2018-2019, Master’s student; committee member)
 - Heather Heitkotter (2019- , Ph.D. student; committee member)
 - Mina Gaffney (2021- , Ph.D. student; primary faculty mentor)
 - Brea Brennan (2021- , M.S. student; primary faculty mentor)

SERVICE:

Member, Association for Research in Vision and Ophthalmology (2010-present); Member, Biomedical Engineering Undergraduate Committee (2019-present); Member, Optical Society of America (2010-2012; 2020-present); Member, Institute of Electrical and Electronics Engineers (2011-2012)

JOURNAL SERVICE:

Reviewer, Investigative Ophthalmology & Visual Science (2010-present); Reviewer, Translational Vision Science and Technology (2013-present); Reviewer, Biomedical Optics Express (2012-present); Reviewer, Ophthalmology (2018); Reviewer, Optica (2019-present); Grant Reviewer, Fighting Blindness (2020)

INTELLECTUAL PROPERTY:

US Patent Application, 16/389,942 for “METHODS AND SYSTEMS FOR ASSESSING PHOTORECEPTOR FUNCTION”

Lead developer of “Mosaic Analytics”- Data analysis software for adaptive optics ophthalmoscope images, currently licensed by Translational Imaging Innovations, LLC.