CURRICULUM VITÆ: DR SHABAN DEMIREL
JUNE, 2017

Name Dr Shaban Demirel BScOptom, PhD.

Current Positions
1) Senior Clinical Outcomes Research Scientist, Legacy Health.
2) Associate Scientist, Devers Eye Institute, Legacy Health.
3) Adjunct Professor, Washington State University.
4) Director, Devers Visual Field Reading Center.

Previous Positions
Assistant Scientist, Devers Eye Institute, Legacy Health. (2002–10)
Assistant Professor, Indiana University, Optometry School. (1997–2001)
Postdoctoral Research Fellow, Department of Ophthalmology, University of California, Davis. (1995–97)

Contact details

Postal address:
Legacy Research Institute
1225 NE 2nd Ave, Suite 431
Portland, OR, 97232
USA

Office: (503) 413-5018 or (503) 413-4873
Fax: (503) 413-5179
E-mail: sdemirel@deverseye.org OR sdemirel@lhs.org

ACADEMIC QUALIFICATIONS

1. BScOptom, The University of Melbourne, Department of Optometry, December 1989.
2. PhD, The University of Melbourne, November 1995.
3. Postdoctoral Fellowship, UC Davis, Department of Ophthalmology, 1995–97.

TEACHING EXPERIENCE

Optometric / Ophthalmologic Teaching

1. Teaching assistant, Laboratories in Physiological Optics, Department of Optometry, University of Melbourne, 1991–95.
2. Tutor, Clinical Methods Laboratory in Perimetry, Department of Optometry, University of Melbourne, 1993–94.
3. Lecturer, 3rd year Diseases of the Eye in Pupillary Function and Headaches, Department of Optometry, University of Melbourne, 1993.
4. Clinical Supervisor, Senior Year Optometry Clinics, Department of Optometry, University of Melbourne, 1993–94.
5. Clinical Examiner, Senior Year Optometry Clinics, Department of Optometry, University of Melbourne, 1994.
6. Instructor, Resident Orientation in Optics and Refraction, Department of Ophthalmology, University of California, Davis, 1997.
7. Examiner, Second Year Optometry Clinics, School of Optometry, Indiana University, 1998–2001.
8. Course Coordinator and Instructor, V746 Ocular Disease III, Neuro-optometry, School of Optometry, Indiana University, 1998–2001.

9. Course Coordinator and Instructor, V516 Ocular Physiology, School of Optometry, Indiana University, 1998–2001.
10. Instructor, V644 Ocular Disease II, School of Optometry, Indiana University, 1998–2001.
11. Course Coordinator and Instructor, V773 Classics in Physiological Optics, School of Optometry, Indiana University, 1998–2001.
12. Course Coordinator, V765 Visual Sciences Seminar, School of Optometry, Indiana University, spring session 1999–2001.
13. Course Coordinator and Instructor, V551 Clinical Optometry I, School of Optometry, Indiana University, spring session 1999.
14. Committee member for one PhD student in the IU Vision Sciences Graduate Program.
15. Committee member for one OD/MS student in the IU Vision Sciences / OD program.
16. Examined two masters and three PhD theses as external examiner, 2006-15.

Continuing Professional Education Presentations

1. *Anatomy of the Visual Pathways and Perimetric Methods*. The Western Victorian Division of the Australian Optometric Association 2-day continuing education program. April 1993.
2. *Basic Visual Fields.* Victorian College of Optometry, continuing education course. July 1993.
3. *Anatomy of the Visual Pathway and Perimetric Methods.* The Tasmanian Division of the Australian Optometric Association 2-day continuing education program. April 1994.
4. *Perimetry: The Next Step.* Victorian College of Optometry, continuing education course. July 1994.
5. *Reliable Clinical Perimetry.* Victorian College of Optometry, continuing education lectures. March 1995.
6. *Structure - Function Correlations in Glaucoma.* Department of Optometry and Vision Sciences, University of Melbourne, Departmental lecture series. February 1997.
7. *New Perimetric Methods*. IU School of Optometry Summer CE Series. July 1998.
8. *New Tests in Visual Field Evaluation – Do They Work and Can I Afford Them?* IU School of Optometry Summer CE Series. July 1999.
9. *Disease Detection Through Topographical Assessment of the Visual System*. Victorian College of Optometry, continuing education lectures. July 2000.
10. *The Art and Science of Perimetry: Which Test, When, Why and How Often*. Thorny Issues Technicians meeting, continuing education lectures. June 2002.
11. *Dysfunctional RGCs in Glaucoma*. Casey Eye Institute / Devers Eye Institute Grand Rounds. October 2004.
12. *Structure - Function Relationships in Clinical Glaucoma. Why Aren't They Better?* Casey Eye Institute / Devers Eye Institute Grand Rounds. March 2007.
13. *Where Could the Problem Be? Dissecting the Visual System Without a Knife.* Thorny Issues Technicians meeting, continuing education lectures. September 2008.
14. *The Basics of Color Vision: How It Works, How It Goes Wrong & How We Test It.* Thorny Issues Technicians meeting, continuing education lectures. September 2009.
15. *Doctor, Will I Go Blind From Glaucoma*? Thorny Issues in Ophthalmology Conference. Portland, OR. September 16th, 2011.
16. *Detecting Visual Field Change: Lessons from the OHTS*. PMOS monthly CE meeting. Portland, OR. September 19th, 2011.
17. *Spectralis OCT – Don't Believe Everything You See*. Thorny Issues Technicians meeting, continuing education lectures. September 2013.
18. *Predicting the Rate of Visual Field Change in Glaucoma: Novel Predictors in the Portland Progression Project*. Thorny Issues in Ophthalmology Conference. Portland, OR. September 25th, 2015.

Research Ethics

1. *The Ethical Conduct of Research.* Legacy Research Institute. April – October, 2017

CLINICAL EXPERIENCE

1. Clinical Associate, Victorian College of Optometry. 1989–1994.
2. Part-time Private Optometric Practice. Frank Keogh & Associates. 1990–1994.
3. Staff Optometrist, Department of Ophthalmology, Royal Melbourne Hospital, Parkville, Victoria, 1993.
4. Clinical Examiner, Indiana University School of Optometry student clinics. 1998–2001.

OTHER PROFESSIONAL ACTIVITIES

1. Associate Editor for the Optometric Glaucoma Society (OGS) e-Journal. 2005–2010.
2. Reviewer for Acta Ophthalmologica.
3. Reviewer for American Journal of Ophthalmology.
4. Reviewer for British Journal of Ophthalmology.
5. Reviewer for Clinical and Experimental Optometry.
6. Reviewer for Clinical and Experimental Ophthalmology.
7. Reviewer for Current Eye Research.
8. Reviewer for Investigative Ophthalmology and Vision Science.
9. Reviewer for Journal of Glaucoma.
10. Reviewer for Journal of Vision
11. Reviewer for Ophthalmic and Physiological Optics.
12. Reviewer for Optometry and Vision Science.
13. Reviewer for PeerJ.
14. Reviewer for Vision Research.
15. Central Reader for Memantine Visual Field Reading Center, 2002–2007.
16. Co-Investigator for OHTS Visual Field Reading Center, 2003–2008
17. Member of AIGS (now WGA) Consensus Panel for Structure-Function relationships in glaucoma. SWAP committee chair, December 2003.
18. Executive Committee member for the OGS, 2003–2012.
19. Web Committee Chairman and Website Maintainer for OGS, 2003–2012.
20. Co-host, International Perimetric Society (IPS) Meeting, Portland, Oregon, July 2006.
21. Executive Committee Imaging and Perimetry Society (IPS), 2006–Current.
22. Central Reader for Pfizer Asenapine Visual Field Reading Center, 2006–2009.
23. Central Reader for Pfizer Lyrica Visual Field Reading Center, 2007–Current.
24. Legacy Health IRB Committee Member, 2007–Current.
25. Vision Science Section Vice Chair, American Academy of Optometry, 2008 – 2010.
26. Vision Science Section Chair, American Academy of Optometry, 2010 – 2012.
27. Central Reader for Boehringer Ingelheim Mirapex Visual Field Reading Center, 2010.
28. NIH Study Section, Internet Review Panel, NEI, May 2011.
29. Vision Science Diplomate Vice Chair, American Academy of Optometry, 2012–2014.
30. Vision Science Diplomate Chair, American Academy of Optometry, 2014–2016.
31. NIH Study Section, Ad Hoc Reviewer, NEI, December 2015.
32. NIH Study Section, Internet Review Panel, NEI, November, 2016.

MEMBERSHIPS OF PROFESSIONAL ORGANIZATIONS

1. Fellow of the Association for Research in Vision and Ophthalmology (FARVO)
2. Fellow of the American Academy of Optometry (FAAO)
3. Optometric Glaucoma Society (OGS – Founding member)
4. World Glaucoma Association (WGA)

5. Imaging and Perimetry Society (IPS)
6. North American Perimetric Society (NAPS)
7. Glaucoma Progression Scholars (GPS)

INVITED TALKS

1. Optometric Glaucoma Society Inaugural Meeting, December 2002. *Altitudinal Asymmetry in Perimetric Thresholds: Comparison to Psychophysical Estimates of Retinal Ganglion Cell Density.*
2. Japanese Ophthalmological Society Annual Meeting. March 2004. *New Developments in the Short Wavelength Sensitive Cone System.*
3. University of Houston College of Optometry Periopsia Lecture Series, March 2005. *Dysfunctional RGCs in Glaucoma.*
4. Indiana University School of Optometry Oxyopia Lecture Series, March 2009. *Predicting Glaucoma Progression. Is It Possible?*
5. Optometric Glaucoma Society 10th Annual Meeting, October 2011. *Detecting Visual Field Change – Lessons from the OHTS.*
6. University of Alabama at Birmingham Visiting Lecture Series, April 2013. *Estimating Rates of Visual Function Change in Chronic Eye Diseases. Superior Prognostic Information Over Binary Indicators of 'Progression'.*
7. Optometric Glaucoma Society 14th Annual Meeting, October 2015. *Legacy of The OHTS: Research Regarding the Rate of Visual Field Change.*

RESEARCH EXPERIENCE

S-cone resolution measures: It is well known that the human short wavelength sensitive cone photoreceptor (s-cone) system is sparsely represented at the retinal level. The number of photoreceptors and ganglion cells devoted to processing stimuli that isolate s-cones is quite low. Consequently, if these cells are damaged during the course of retinal disease, we can expect to see functional alterations in these subjects. By using visual stimuli that isolate the s-cone system and in particular looking at the resolution acuity of this system, it should be possible to develop a functional measure of ganglion cell density as a means of following disease development and progression.

Psychophysical assessment of retinal disease: Almost all disease entities stand a better chance of successful treatment outcomes when detected earlier. This part of the research effort of my lab is directed at identifying psychophysical tests of vision that can identify retinal disease as early as possible. While glaucoma is most strongly emphasized, diabetes and other retinal diseases are also amenable to this type of investigation. In addition, corroborative evidence for functional deficits is also being sought using structural imaging procedures such as optical coherence tomography.

Mechanism of cell death in glaucoma: There is some debate about the mode of cell death in glaucoma. It is believed by many that the mode of cell death is primarily via a process known as apoptosis, or 'programmed cell death'. This process, once begun, is believed to take only a short time between a cell appearing normal and a cell being obviously dead. The focus of this research effort is to determine if the same type of scenario is evident in the functional realm. For example, if retinal nerve cells are quite normal right up until shortly before they die then there should not be functional evidence of abnormally behaving retinal nerve cells. There should, however, be evidence of a reduced number of retinal nerve cells once some have died. Through

novel stimulus combinations and mathematical modeling of how individual cell responses determine the overall performance or an individual it should be possible to shed some light on the earliest evidence of abnormal retinal nerve cell behaviour. This finding will have important implications for furthering our understanding of the glaucomatous disease process.

Detecting progressive change in glaucoma: Using novel statistical tests (classification and regression trees, conditional inference trees, random forests) we have been searching for biomarkers that place a patient with glaucoma at risk for rapid progression. Using long sequences of visual fields, optic nerve imaging studies, intraocular pressure, central corneal thickness and other ocular factors, together with systemic health (e.g. blood pressure dysregulation) and demographic factors (age, gender, race) we have been able to determine which patients progress most rapidly and then use baseline findings to predict future change. We have found that very subtle changes in the visual field can be used to predict future change in the appearance of the optic nerve. Currently we are bringing quality of life measures into this equation in an attempt to use data collected very early in a patient's disease history to predict eventual change in their quality of life. Developing better predictive methods will allow physicians to treat 'at risk' glaucoma patients earlier and more aggressively but also allow them to follow and treat more conservatively patients that are unlikely to progress. This should lead to better outcomes on a per patient basis (less visual disability in 'at risk' patients and fewer medication side effects in the 'unlikely to progress' patients) and better resource allocations within the wider ophthalmic medical system.

GRANT FUNDING (COMPLETED, CURRENT, PENDING & APPLICATIONS IN REVIEW)

1 Glaucoma Research Foundation Pilot Project Grants
Project duration: 3/1/02-2/28/03 (Complete)
Project Title: RGC dysfunction in patients with early glaucomatous visual abnormality.
Award: $27,975
Role: Principal Investigator.

2 NIH/NEI U10-EY-09307 (Keltner)
Project duration: 9/30/92-12/31/08 (Complete)
Project Title: Ocular Hypertension Treatment Study Visual Field Reading Center.
The major goals of this project are to process visual field data for the OHTS trial, analyze visual field data and prepare manuscripts for publication.
Role: Co-Investigator.

3 Pfizer research contract
Project duration: 2006 – 2008 (Complete)
Project Title: Patient Enrichment Study-Determining progression in glaucoma using structural and functional measures.
Award: $200,000
The main goals of this study were to assist the sponsor in targeting recruitment of patients with glaucoma that are most likely to progress and to determine endpoints that would be sensitive to change in a clinical drug trial.
Role: Principal Investigator.

4 NIH/NEI R21-EY-018698 (Levine)
Project duration: 7/1/09-6/30/11 (Complete)
Project Title: Measuring and predicting visual field progression with longitudinal-survival CART.
Award: $275,000

The goals of this project are to develop classification and regression tree methods for longitudinal survival data that assist in prediction of which eyes with glaucoma or high-risk ocular hypertension are likely to undergo progression.
Role: Co-Investigator.

5 CDC Comparative Effectiveness Grant (Mansberger)
Project duration: July, 2010 – July, 12 (Complete)
Project Title: The Northwest Vision Impairment Prevention Project.
Award: $1,900,000
This project will compare the effectiveness of telemedicine to traditional surveillance methods (annual eye exams in eye care provider's office) for detecting diabetic retinopathy. We will address three critical gaps in knowledge: 1) the efficacy for detecting diabetic retinopathy with telemedicine and traditional surveillance methods; 2) the health behavior factors related to receiving annual diabetic eye examinations with telemedicine and traditional surveillance methods; and 3) the cost-effectiveness of telemedicine and traditional surveillance methods.
Role: Co-Investigator.

6 Heidelberg Engineering (Demirel)
Project duration: 6/1/12-2/28/13 (Complete)
Project Title: Spectralis Normative Database Study.
Award: $34,000
A multi-center, prospective, observational (non-interventional) study to measure structural parameters of the optic nerve head, the peripapillary retinal nerve fiber layer, and the macula using the Heidelberg Spectralis OCT device. This study is conducted in normal Caucasian volunteers. The main goal of the study is to provide the range of these structural parameters in normal eyes.
Role: Principal Investigator.

7 NIH/NEI R01-EY-019674 (Demirel)
Project duration: 10/1/09-8/30/14 (Complete)
Project Title: Predicting the rate of progression in glaucoma
Award: $1,912,500
This project seeks to predict the future rate of vision loss in patients with glaucoma, both earlier and more accurately than is currently possible. If a patient is at risk of rapid disease progression, possibly resulting in eventual visual disability or blindness, this may warrant more frequent monitoring and/or more aggressive therapy. The project will also provide new information about glaucomatous pathophysiology, which can be used to direct future developments in diagnostic testing and treatment strategies.
Role: Principal Investigator.

8 NIH/NEI R01-EY-021281 (Burgoyne)
Project duration: 12/1/10-11/30/15 (Complete)
Project Title: Optic Nerve Head SDOCT Imaging in Glaucoma.
Award: $1,904,100
The clinical detection of the onset and progression of glaucomatous damage to the optic nerve head (ONH) is central to the care of every glaucoma patient. We propose to use 870 nm and 1060 nm Heidelberg Spectralis Spectral Domain Optical Coherence Tomography (SDOCT) to characterize the onset and progression of ONH structural change within pre and post- laser SDOCT ONH data sets from both eyes of 70 unilateral experimental glaucoma (EG) monkeys and 250 ocular hypertensive and early glaucoma patients. In this project we will translate 11 years of NIH-funded, post-mortem monkey work to an in-vivo imaging modality that will be shown to have important and novel clinical care applications in humans.
Role: Co-Investigator.

9 NIH/NEI R01-EY-020922 (Gardiner)
Project duration: 8/1/11-7/31/16 (Complete)
Project Title: Functional Testing for Glaucoma.
Award: $1,550,230
This project aims to explain and reduce the variability observed in functional testing of the visual field in patients with moderate and advanced glaucoma, with the long-term aim of improving functional testing. The results of this study will allow more accurate assessment of a patient's current status and response to treatment. This will improve the ability to design an appropriate and cost-efficient personalized management strategy to preserve vision, with the aim of maintaining a patient's quality of life.
Role: Co-Investigator.

VFRC CONTRACTS WHILE DIRECTOR OR CO-DIRECTOR

Pfizer Asenapine trial: $316,984.
Pfizer Lyrica trial: $1,582,177.
Boehringer Ingelheim Pharmaceuticals, Inc. Mirapex trial: $49,419.

PUBLICATIONS

Articles

1. **Demirel S**, Vingrys AJ. Fixational instability during perimetry and the blindspot monitor. In: Mills RP, ed. *Perimetry Update 92/93*. Amsterdam, Kugler Publications, 1993:515-20.
2. Vingrys AJ, **Demirel S**. The effect of fixation loss on perimetric reliability. In: Mills RP, ed. *Perimetry Update 92/93*. Amsterdam, Kugler Publications, 1993:521-6.
3. **Demirel S**, Vingrys AJ. Eye movements during perimetry and the effect that fixational instability has on perimetric outcomes. *J Glaucoma* 1994;3:28-35.
4. **Demirel S**, Vingrys AJ. Acceptable false response rates for reliable perimetric outcomes. In: Mills RP, ed. *Perimetry Update 94/95*. Amsterdam, Kugler Publications, 1995:83-8.
5. Vingrys AJ, **Demirel S** and Kalloniatis M. Multi-dimensional colour, flicker and increment perimetry. In: Mills RP, ed. *Perimetry Update 94/95*. Amsterdam, Kugler Publications, 1995:159-66.
6. Miller M, Fendrich R, Eliassen J, **Demirel S**, Gazzaniga G. Transcranial magnetic stimulation: delays in visual suppression due to luminance changes. *Neuroreport*, 1996;7:1740-4.
7. **Demirel S**, Johnson CA. Short wavelength automated perimetry (SWAP) in ophthalmic practice. *J Amer Optom Asso*, 1996;67:451-6.
8. **Demirel S**, Johnson CA. Short wavelength automated perimetry (SWAP). *Optometry Today*, 1996;4:30-2.
9. **Demirel S**, Johnson CA, Fendrich R, Vingrys AJ. The slope of frequency-of-seeing curves in normal, amblyopic and pathological vision, in *Vision Science and Its Applications,* Vol. 1, 1997 OSA Technical Digest Series (Optical Society of America, Washington DC, 1996), 244-7.
10. **Demirel S**, Johnson CA. Validation of a risk model for glaucomatous field loss: application to standard automated perimetry and SWAP. In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:275-80.
11. Johnson CA, **Demirel S**. The role of spatial and temporal factors in frequency doubling perimetry. In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:13-9.
12. Lynch S, Johnson CA, **Demirel S**. Is early damage in glaucoma selective for a particular cell type or pathway? In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:253-62.
13. Vingrys AJ, **Demirel S**. Temporal modulation thresholds isolate mechanisms with different adaptational and spatial properties, in *Vision Science and Its Applications,* Vol. 1, 1998 OSA Technical Digest Series (Optical Society of America, Washington DC, 1997), 78-81.
14. Vingrys AJ, **Demirel S**. False response monitoring during automated perimetry. *Optom Vis Sci*, 1998;75:513-7.
15. Fendrich R, **Demirel S**, Danziger S. The oculomotor gap effect without a foveal fixation point. *Vision Res*, 1999;39:833-41.
16. **Demirel S**, Johnson CA, Thibos LN. Age and eccentricity effects on grating detection and grating resolution automated perimetry. Wall M, Wild JM, Eds. *Perimetry Update 98/99*. The Hague/The Netherlands, Kugler Publications, 1999:229-39.
17. **Demirel S**, Johnson CA. Isolation of short wavelength sensitive mechanisms in normal and glaucomatous visual field regions. *J Glaucoma*, 2000;9:63-73.
18. **Demirel S**, Johnson CA. Incidence and prevalence of short wavelength automated perimetry (SWAP) deficits in ocular hypertensive patients. *Am J Ophthalmol*, 2001;139:709-15.
19. Anderson RS, Zlatkova MB, **Demirel S**. What limits detection and resolution of short-wavelength sinusoidal gratings across the retina? *Vision Res*, 2002;42:981-90.
20. Anderson RS, Coulter E, Zlatkova MB, **Demirel S**. Short-wavelength acuity: optical factors affecting detection and resolution of blue-yellow sinusoidal gratings in foveal and peripheral vision. *Vision Res*, 2003;43:101-7.
21. Beirne RO, Logan JF, Zlatkova MB, Jackson AJ, Rankin SJ, **Demirel S**, Anderson RS. Peripheral resolution for achromatic and SWS gratings in early to moderate glaucoma and the implications for selective ganglion cell density loss. *Invest Ophthalmol Vis Sci.* 2003;44:4780-6.
22. Fortune B, Goh K, **Demirel S**, Novitsky K, Mansberger S, Johnson CA, Cioffi GA. Detection of glaucomatous visual field loss using multifocal VEP. In: Henson, DB and Wall M Eds. *Perimetry Update 02/03*. The Hague/The Netherlands, Kugler Publications. 2004: 251-60.

23. **Demirel S,** Flanagan J, Sample P. Short wavelength automated perimetry. In: Weinreb RN and Greve EL Eds. *Glaucoma Diagnosis. Structure and Function*. The Hague/The Netherlands, Kugler Publications, 2004: 99-107.
24. Fortune B, Zhang X, Hood D, **Demirel S**, Johnson CA. Normative ranges and specificity of the multifocal VEP. *Doc Ophthalmol*. 2004;109:87-100.
25. Mansberger SL, **Demirel S**. Early detection of glaucomatous visual field loss: why, what, where, and how. *Ophthalmol Clin North Am*. 2005;18:365-73.
26. Fortune B, **Demirel S**, Zhang X, Hood DC, Johnson CA. Repeatability of normal multifocal VEP: implications for detecting progression. *J Glaucoma*. 2006;15:131-41.
27. Gardiner SK, **Demirel S**, Johnson CA. Modeling the sensitivity to variability relationship in perimetry. *Vision Res*. 2006;46:1732-45.
28. Levine RA, **Demirel S**, Fan J*, et al.* Asymmetries and visual field summaries as predictors of glaucoma in the ocular hypertension treatment study. *Invest Ophthalmol Vis Sci*. 2006;47:3896–903.
29. Newkirk MR, Gardiner SK, **Demirel S**, Johnson CA. Assessment of false positives with the Humphrey Field Analyzer II perimeter with the SITA algorithm. *Invest Ophthalmol Vis Sci*. 2006;47:4632-7.
30. Fortune B, **Demirel S**, Zhang X, Hood DC, Patterson E, Jamil A, Mansberger SL, Cioffi GA, Johnson CA. Comparing multifocal VEP and standard automated perimetry in high-risk ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci*. 2007;48:1173-80.
31. Fortune B, Zhang X, Hood DC, **Demirel S**, Patterson E, Jamil A, Mansberger SL, Cioffi GA, Johnson CA. Effect of Recording Duration on the Diagnostic Performance of Multifocal Visual-evoked Potentials in High-risk Ocular Hypertension and Early Glaucoma. *J Glaucoma*. 2008;17:175-82.
32. Zeppieri M, **Demirel S**, Kent K, Johnson CA. Perceived spatial frequency of sinusoidal gratings. *Optom Vis Sci.* 2008;85:318-29.
33. Gardiner SK, Swanson WH, **Demirel S**, McKendrick AM, Turpin A, Johnson CA. A two-stage neural spiking model of visual contrast detection in perimetry. *Vision Res*. 2008;48:1859-69.
34. Gardiner SK, **Demirel S**, Johnson CA. Is there evidence for continued learning over multiple years in perimetry? *Optom Vis Sci*. 2008;85:1043-8.
35. Gardiner SK, **Demirel S**. Assessment of patient opinions of different clinical tests used in the management of glaucoma. *Ophthalmology*. 2008;115:2127-31.
36. **Demirel S**, Fortune B, Fan J, Levine RA, Torres R, Nguyen H, Mansberger SL, Gardiner SK, Cioffi GA, Johnson CA. Predicting progressive glaucomatous optic neuropathy using baseline standard automated perimetry data. *Invest Ophthalmol Vis Sci.* 2009;50:674-80.
37. Fortune B, **Demirel S**, Bui BV. Multifocal visual evoked potential responses to pattern-reversal, onset, offset, and sparse pulse stimuli. *Vis Neurosci*. 2009;26:227-35.
38. Strouthidis NG, **Demirel S**, Asaoka R, Cossio-Zuniga C, Garway-Heath DF. The Heidelberg Retina Tomograph glaucoma probability score reproducibility and measurement of progression. *Ophthalmology*. 2010;117(4):724-9.
39. Eisner A, **Demirel S**. Variability in short wavelength automated perimetry: a dependence on phytoestrogen consumption? *Acta Ophthalmol*. 2011;89(3)e217:24. PMCID: PMC2888924.
40. Gardiner SK, **Demirel S**, Johnson CA. Perimetric indices as predictors of future glaucomatous functional change. *Optom Vis Sci.* 2011;88(1):56-62. PMCID: PMC3746834.
41. Gardiner SK, **Demirel S**, Johnson CA, Swanson WH. Assessment of linear-scale indices for perimetry in terms of progression in early glaucoma. *Vision Res*. 2011;51(16): 1801-10. PMCID: PMC3152648.
42. Gardiner SK, Johnson CA, **Demirel S.** Cup size predicts subsequent functional change in early glaucoma. *Optom Vis Sci.* 2011;88(12):1470-6. PMCID: PMC3223562.
43. Sigal IA, Yang H, Roberts MD, Grimm JL, Burgoyne CF, **Demirel S**, Downs JC. IOP-induced lamina cribrosa deformation and scleral canal expansion: independent or related? *Invest Ophthalmol Vis Sci*. 2011;52(12):9023-32. PMCID: PMC3231799.
44. Levine RA, Fan J, Strickland PO, **Demirel S**. Frailty modeling via the empirical Bayes Hastings sampler. 2012;56(6):1303-18. PMCID: PMC3359094.

45. **Demirel S,** De Moraes CG, Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA, for the Ocular Hypertension Treatment Study. The rate of visual field change in the Ocular Hypertension Treatment Study. *Invest Ophthalmol Vis Sci*. 2012;53(1):224-7. PMCID: PMC3292359.
46. De Moraes CG, **Demirel S,** Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA, for the Ocular Hypertension Treatment Study. Effect of treatment on the velocity of visual field progression in the Ocular Hypertension Treatment Study Observation Group. *Invest Ophthalmol Vis Sci*. 2012;53(4):1704-9. PMCID: PMC3342789.
47. **Demirel S**, Anderson RS, Dakin SC, Thibos LN. Detection and resolution of vanishing optotype letters in central and peripheral vision. *Vision Res*. 2012;59:9-16. PMID: 22406660.
48. Gardiner SK, Johnson CA, **Demirel S**. Factors predicting the rate of functional progression in early and suspected glaucoma. *Invest Ophthalmol Vis Sci*. 2012;53(7):3598-604. PMCID: PMC3406886.
49. Gardiner SK, Johnson CA, **Demirel S**. The effect of test variability on the structure-function relationship in early glaucoma. *Graefes Arch Clin Exp Ophthalmol*. 2012;250(12): 1851-61. PMCID: PMC3763816.
50. De Moraes CG, **Demirel S,** Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA, for the Ocular Hypertension Treatment Study. Rate of visual field progression in eyes with optic disc hemorrhages in the Ocular Hypertension Treatment Study. *Arch Ophthalmol*. 2012;130(12):1541-6. PMID: 22892940.
51. Gardiner SK, **Demirel S,** De Moraes CG, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA, for the Ocular Hypertension Treatment Study. Series length used during trend analysis affects sensitivity to changes in progression rate in the Ocular Hypertension Treatment Study (OHTS). *Invest Ophthalmol Vis Sci*. 2013;54:1252-9. PMCID: PMC3597197.
52. Mansberger SL, Gleitsmann K, Gardiner S, Sheppler C, **Demirel S**, Wooten K, Becker TM. Comparing the effectiveness of telemedicine and traditional surveillance in providing diabetic retinopathy screening examinations: a randomized controlled trial. *Telemed J E Health*. 2013;19(12):942-8. PMCID: PMC3850428.
53. Gardiner SK, **Demirel S,** Gordon MO, Kass MA, for the Ocular Hypertension Treatment Study. Seasonal changes in visual field sensitivity and intraocular pressure in the Ocular Hypertension Treatment Study. *Ophthalmology*. 2013;120(4):724-30. PMCID: PMC3618610.
54. Lloyd MJ, Mansberger SL, Fortune B, Nguyen H, Torres R, **Demirel S**, Gardiner SK, Johnson CA, Cioffi GA. Features of optic disc progression in patients with ocular hypertension and early glaucoma. *J Glaucoma*. 2013;22(5):343-8. PMID: 23719180.
55. Goren D, **Demirel S,** Fortune B, Gardiner SK. Correlating perimetric indices with three nerve fiber layer thickness measures. *Optom Vis Sci*. 2013;90(12):1353-60. PMID: 24121407. PMCID: PMC3895434.
56. Gardiner SK, Ren R, Yang H, Fortune F, Burgoyne CF, **Demirel S**. A method to estimate the amount of neuroretinal rim tissue in glaucoma: comparison with current methods for measuring rim area. *Am J Ophthalmol*. 2014;157(3):540-9. PMID: 24239775. PMCID: PMC3944716.
57. Gardiner SK, Fortune B, **Demirel S**. Signal-to-noise ratios for structural and functional tests in glaucoma. *Transl Vis Sci Technol*. 2013;2(6):3. PMCID: PMC3812901.
58. Pathak M, **Demirel S**, Gardiner SK. Nonlinear, multilevel mixed-effects approach for modeling longitudinal standard automated perimetry data in glaucoma. *Invest Ophthalmol Vis Sci*. 2013:54(8):5505-13. PMCID: PMC3747790.
59. Ren R, Yang H, Gardiner SK, Fortune B, Hardin C, **Demirel S**, Burgoyne CF. Anterior lamina cribrosa surface depth, age and visual field sensitivity in patients with ocular hypertension and glaucoma. *Invest Ophthalmol Vis Sci*. 2014;55(3):1531-9. PMCID: PMC3954157.

60. Gardiner SK, Swanson WH, Goren D, Mansberger SL, **Demirel S**. Assessment of the reliability of standard automated perimetry in regions of glaucomatous damage. *Ophthalmology*. 2014;121(7):1359-69. PMCID: PMC4082764.

61. He L, Ren R, Yang H, Hardin C, Reyes L, Reynaud J, Gardiner SK, Fortune B, **Demirel S**, Burgoyne CF. Anatomic vs. Acquired Image Frame Discordance in Spectral Domain Optical Coherence Tomography Minimum Rim Measurements. *PLoS One*. 2014 Mar 18;9(3):e92225. PMCID: PMC3958478.

62. Deng L, **Demirel S**, Gardiner SK. Reducing variability in visual field assessment for glaucoma through filtering that combines structural and functional information. *Invest Ophthalmol Vis Sci*. 2014;55(7):4593-602. PMCID: PMC4112605.

63. Sharpsten L, Fan, J, Barr JR, Su X, **Demirel S**, Levine RA. Predicting glaucoma progression using decision trees for clustered data by goodness of split. *Int J Semant Comput*. 2013;7(2):157-72.

64. Pathak M, **Demirel S**, Gardiner SK. Nonlinear trend analysis of longitudinal pointwise visual field sensitivity in suspected and early glaucoma. *Transl Vis Sci Technol*. 2015 Feb 10;4(1):8. PMCID: PMC4324450.

65. Mansberger SL, Sheppler C, Barker G, Gardiner SK, **Demirel S**, Wooten K, Becker TM. Long-term comparative effectiveness of telemedicine in providing diabetic retinopathy screening examinations: a randomized clinical trial. JAMA Ophthalmol. 2015;133(5):518-25. PMID: 25741666.

66. Gardiner SK, **Demirel S**, Goren D, Mansberger SL, Swanson WH. The effect of stimulus size on the reliable stimulus range of perimetry. *Transl Vis Sci Technol*. 2015;4(2):10. PMCID: PMC4378323.

67. Chauhan BC, Danthurebandara VM, Sharpe GP, **Demirel S**, Girkin CA, Mardin CY, Scheuerle AF, Burgoyne CF. Bruch's membrane opening minimum rim width and retinal nerve fiber layer thickness in a normal white population: A multicenter study. *Ophthalmology*. 2015;122(9):1786-94. PMCID: PMC4698808.

68. Gardiner SK, Boey PY, Yang H, Fortune B, Burgoyne CF, **Demirel S**. Structural measurements for monitoring change in glaucoma: Comparing retinal nerve fiber layer thickness with minimum rim width and area. *Invest Ophthalmol Vis Sci*. 2015;56(11):6886-91. PMCID: PMC4627356.

69. Gardiner SK, Swanson WH, **Demirel S**. The effect of limiting the range of perimetric sensitivities on pointwise assessment of visual field progression in glaucoma. *Invest Ophthalmol Vis Sci*. 2016;57(1):288-94. PMCID: PMC4736987.

70. Gardiner SK, **Demirel S**, Reynaud J, Fortune B. Changes in retinal nerve fiber layer reflectance intensity as a predictor of functional progression in glaucoma. *Invest Ophthalmol Vis Sci*. 2016;57(3):1221-7. PMCID: PMC4794083.

71. Alqudah A, Mansberger SL, Gardiner SK, **Demirel S**. Vision-related quality of life in glaucoma suspect or early glaucoma patients. *J Glaucoma*. 2016;25(8):629-33. PMCID: PMC4975427.

72. Gardiner SK, Fortune B, **Demirel S.** Localized changes in retinal nerve fiber layer thickness as a predictor of localized functional change in glaucoma. *Am J Ophthalmol*. 2016 Aug 1. PMCID: PMC5056143.

73. Mansberger SL, Menda SA, Fortune BA, Gardiner SK, **Demirel S**. Automated segmentation errors when using optical coherence tomography to measure retinal nerve fiber layer thickness in glaucoma. *Am J Ophthalmol*. 2017;174, EPUB ahead of print. DOI: 10.1016/j.ajo.2016.10.020. PMID: 27818206.

74. Gardiner SK, **Demirel S**. Detecting change using standard global perimetric indices in glaucoma. *Am J Ophthalmol*. 2017;176, EPUB ahead of print. DOI: 10.1016 /j.ajo.2017.01.013. PMCID: PMC5376527.

75. Gupta PR, Perkins RS, Hascall RL, Shelak CF, **Demirel S**, Buchholz MT. The effect of family presence on rounding duration in the PICU. *Hosp Pediatr.* 2017;17(2):103-107. PMID: 28104730.

Presentations at Professional and Scientific Meetings

A1. **Demirel S**, Vingrys AJ. The assessment and effects of fixation loss during perimetry. *Clin Exp Optom* 1991;74(6):219.

A2. Vingrys AJ, Kalloniatis M, **Demirel S**. Detection of colour, flicker and luminance increments. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1992;33(Suppl):S967.

A3. **Demirel S**, Vingrys AJ. Temporal modulation as a perimetric variable. *Clin Exp Optom* 1993;76(5):179.

A4. **Demirel S**, Vingrys AJ. Fixational instability during perimetry and the blindspot monitor. In: Mills RP, ed. *Perimetry Update 92/93*. Amsterdam, Kugler Publications, 1993:515-520. International Perimetric Society biannual meeting, Kyoto, Japan.

A5. Vingrys AJ, **Demirel S**. The effect of fixation loss on perimetric reliability. In: Mills RP, ed. *Perimetry Update 92/93*. Amsterdam, Kugler Publications, 1993:521-526. International Perimetric Society biannual meeting, Kyoto, Japan.

A6. **Demirel S**, Vingrys AJ. Acceptable false response rates for reliable perimetric outcomes. In: Mills RP, ed. *Perimetry Update 94/95*. Amsterdam, Kugler Publications, 1995:83-88. International Perimetric Society biannual meeting, Washington D.C., USA.

A7. Vingrys AJ, **Demirel S** and Kalloniatis M. Multi-dimensional colour, flicker and increment perimetry. In: Mills RP, ed. *Perimetry Update 94/95*. Amsterdam, Kugler Publications, 1995:159-166. International Perimetric Society biannual meeting, Washington D.C., USA.

A8. Brandt JD, Johnson CA, **Demirel S**. Comparison between subjective and objective cup-to-disc (C/D) ratio assessment in ocular hypertension. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1996;37(Suppl):S664.

A9. **Demirel S**, Johnson CA. Analysis of short wavelength automated perimetry (SWAP) in ocular hypertensives who develop visual field loss. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1996;37(Suppl):S946.

A10. Fendrich R, **Demirel S**, Danziger S. The oculomotor gap effect without a foveal fixation point. *Society for Neuroscience Abstracts*, 1996;22:2032.

A11. Fendrich R, **Demirel S**, Johnson CA. Visual thresholds and frequency-of-seeing curves near the blind spot: stabilized and nonstabilized perimetry. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1996;37(Suppl):S1081.

A12. Lynch S, **Demirel S**, Johnson CA. Are early losses of visual function in glaucoma selective or non-selective. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1996;37(Suppl):S410.

A13. **Demirel S**, Johnson CA, Fendrich R, Vingrys AJ. The slope of frequency-of-seeing curves in normal, amblyopic and pathological vision, in *Vision Science and Its Applications,* Vol. 1, 1997 OSA Technical Digest Series (Optical Society of America, Washington DC, 1996), 244-47.

A14. Johnson CA, Cello KE, Nelson-Quigg, JM, **Demirel S**. Performance of frequency doubling perimetry for detecting various levels of glaucomatous field loss. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1997;38(Suppl):S200.

A15. Vingrys AJ, **Demirel S**, Johnson CA. Flicker sensitivity under conditions of chromatic adaptation. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1997;38(Suppl):S380.

A16. **Demirel S**, Takamoto T, Cello KE, Schwartz B, Johnson CA. Changes in nerve fiber layer thickness, pallor and visual fields in ocular hypertensives. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1997;38(Suppl):S835.

A17. **Demirel S**, Johnson CA. Validation of a risk model for glaucomatous field loss: application to standard automated perimetry and SWAP. In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:275-280. International Perimetric Society biannual meeting, Wurtzberg, Germany.

A18. Johnson CA, **Demirel S**. The role of spatial and temporal factors in frequency doubling perimetry. In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:13-19. International Perimetric Society biannual meeting, Wurtzberg, Germany.

A19. Lynch S, Johnson CA, **Demirel S**. Is early damage in glaucoma selective for a particular cell type or pathway? In: Wall M, Heijl A, Eds. *Perimetry Update 96/97*. Amsterdam, Kugler Publications, 1997:253-262. International Perimetric Society biannual meeting, Wurtzberg, Germany.

A20. Vingrys AJ, **Demirel S**. Temporal modulation thresholds isolate mechanisms with different adaptational and spatial properties, in *Vision Science and Its Applications,* Vol. 1, 1998 OSA Technical Digest Series (Optical Society of America, Washington DC, 1997), 78-81.

A21. **Demirel S**, Johnson CA. Incidence of short wavelength automated perimetry (SWAP) deficits in ocular hypertension. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1998;39(Suppl):S492.

A22. **Demirel S**, Anderson RS, Haggerty K, Thibos LN. Detection and resolution of high-pass (vanishing-optotype) letters in central and peripheral vision. *Optom Vis Sci*, 1998;75:202.

A23. **Demirel S**, Vingrys AJ, Anderson A, Johnson CA. Spatiotemporal properties of the frequency doubling effect. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 1999;40(Suppl):S42.

A24. **Demirel S**, Johnson CA, Thibos LN. Age and eccentricity effects on grating detection and grating resolution automated perimetry. Wall M, Wild JM, Eds. *Perimetry Update 98/99*. The Hague/The Netherlands, Kugler Publications, 1999:229-239. International Perimetric Society biannual meeting, Gardone Riviera, Italy.

A25. **Demirel S**, Anderson RS. Detection and resolution acuity of the short wavelength system in foveal and peripheral vision. BCOVD 99 meeting. *Ophthalmic and Physiological Optics*.

A26. Meetz RE, Henderson PA, Tonekaboni K, Hitzeman SA, **Demirel S**. False positive screening errors on the Humphrey frequency doubling technology visual field instrument. *Optom Vis Sci*, 1999;76(Suppl):258.

A27. **Demirel S**, Anderson RS. Detection and resolution acuity of the short wavelength system in foveal and peripheral vision. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 2000;41(Suppl):S810.

A28. **Demirel S**, Anderson RS Zlatkova MB. Is detection and resolution acuity of the short wavelength system sampling limited in foveal and peripheral vision? In: Wall M, Mills RP, Eds. *Perimetry Update 200/01*. The Hague/The Netherlands, Kugler Publications, 2002:87-88. International Perimetric Society biannual meeting, Halifax (NS), Canada.

A29. Viswanathan S, **Demirel S**. Multifocal ERG (MERG) responses of the short wavelength sensitive chromatic mechanism. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 2001;42(Suppl):S4212.

A30. **Demirel S**, Viswanathan S, Candy TR. Multifocal VEP responses from the short-wavelength-sensitive chromatic mechanism. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 2001;42(Suppl):S4236.

A31. Viswanathan S, **Demirel S**. Naso-temporal variations in the human multifocal electroretinogram (mfERG). *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 2002;43(Suppl).

A32. Beirne RO, Logan JFJ, Zlatkova MB, Jackson AJ, Rankin SJA, **Demirel S**, Anderson RS. Peripheral resolution for achromatic and SWS gratings in early glaucoma: Implications for selective ganglion cell density loss. *ARVO Abstracts, Invest Ophthalmol Vis Sci*, 2002;43(Suppl).

A33. **Demirel S**, Johnson CA. A comparison of SWAP and FDT perimetry in cases of early glaucoma and high-risk ocular hypertensives. International Perimetric Society biannual meeting, June 2002, Stratford Upon Avon, United Kingdom.

A34. Fortune B, Goh K, **Demirel S**, Novitsky K, Cioffi GA, Mansberger S, Johnson CA. Detection of glaucomatous visual field loss using multifocal VEP. International Perimetric Society biannual meeting, June 2002, Stratford Upon Avon, United Kingdom.

A35. Anderson RS, Zlatkova MB, Coulter E, **Demirel S**. Changes in short-wavelength resolution perimetry with age and defocus in the periphery. International Perimetric Society biannual meeting, June 2002, Stratford Upon Avon, United Kingdom.

A36. Beirne RO, Logan J, Zlatkova MB, Jackson AJ, Rankin SJA, **Demirel S**, Anderson RS. Resolution perimetry for blue and achromatic gratings in early glaucoma: Implications for selective ganglion cell loss. International Perimetric Society biannual meeting, June 2002, Stratford Upon Avon, United Kingdom.

A37. Johnson CA, Takahashi G, **Demirel S**. The ability of frequency doubling technology (FDT) perimetry to predict the onset of glaucomatous visual field loss for standard automated perimetry. Fall Vision Meeting, October 2003, San Francisco, CA.

A38. **Demirel S**, Johnson CA. Altitudinal asymmetry in perimetric thresholds: comparison to psychophysical estimates of retinal ganglion cell density. Optometric Glaucoma Society Annual Meeting, December 2002, San Diego, CA.

A39. **Demirel S**, Robinson R. Upper vs. lower field asymmetry in SAP and SWAP thresholds: Comparison to psychophysical estimates of ganglion cell density. *Invest Ophthalmol Vis Sci* 2003; 44: E-Abstract 69.

A40. Takahashi G, **Demirel S**, and Johnson CA. Predicting glaucomatous visual field loss using short wavelength automated perimetry. *Invest Ophthalmol Vis Sci* 2003; 44: E-Abstract 59.

A41. **Demirel S**. In search of psychophysical evidence for RGC dysfunction in glaucoma Optometric Glaucoma Society Annual Meeting, December 2003, Dallas, TX.

A42. **Demirel S**, Flanagan J, Sample P. Short wavelength automated perimetry. Association of International Glaucoma Societies structure function in glaucoma consensus meeting, December 2003, San Diego, CA.

A43. **Demirel S**. New developments in the short wavelength sensitive cone system. Japanese Ophthalmological Society annual meeting, April 2003, Tokyo, Japan.

A44. Johnson CA, **Demirel S**, Anderson AJ, Chauhan BC, Fingeret M, Spry PGC. Detection of glaucomatous visual field loss using the Humphrey Matrix Frequency Doubling Technology (FDT) perimeter. *Invest Ophthalmol Vis Sci* 2004; 45: E-Abstract 3470.

A45. **Demirel S**. Psychophysical evidence for RGC dysfunction in glaucoma. *Invest Ophthalmol Vis Sci* 2004; 45: E-Abstract 3303.

A46. Nakano T, Takahashi G, **Demirel S**, Kitahara K, Johnson CA. Investigation of racial differences in responsiveness to frequency doubling technology (FDT) perimetry in normal subjects. *Invest Ophthalmol Vis Sci* 2004; 45: E-Abstract 2136.

A47. Gunvant P, **Demirel S**, Johnson CA. Reproducibility of visual field abnormalities identified by FDT and SAP. *Optom Vis Sci*, 2004;81(Suppl):6.

A48. Takahashi G, Aoki Y, Koike T, Nakano T, Kitahara K, **Demirel S**, Johnson CA. The influence of instruction on frequency doubling technology perimetry and Humphrey Matrix results in normals and early glaucoma patients. *Invest Ophthalmol Vis Sci* 2005; 46: E-Abstract 2482.

A49. Johnson CA, Kent K, **Demirel S**. The influence of optical media opacities on Humphrey Matrix frequency doubling technology (FDT) perimetry results. *Invest Ophthalmol Vis Sci* 2005; 46: E-Abstract 3740.

A50. Fortune B, **Demirel S**, Bui B. Multifocal VEP responses to pattern-reversal, onset, offset and sparse pulse stimuli. *Invest Ophthalmol Vis Sci* 2005; 46: E-Abstract 3750.

A51. **Demirel S**, Newkirk M. Perimetric increment contrast sensitivity is related to the number of retinal ganglion cells stimulated in a non-linear manner. *Invest Ophthalmol Vis Sci* 2006; 47: E-Abstract 3980.

A52. Fortune B, **Demirel S**, Zhang X, Hood DC, Patterson E, Jamil A, Mansberger SL, Cioffi GA, Johnson CA. Comparison between multifocal visual evoked potentials (mfVEP) and standard automated perimetry (SAP) in high-risk ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2006; 47: E-Abstract 1126.

A53. Gardiner SK, Swanson WH, **Demirel S**, Turpin A, McKendrick AM, Johnson CA. Examining the perimetric sensitivity-variability relation in glaucoma using a cortical spike model. *Invest Ophthalmol Vis Sci* 2007; 48: E-Abstract 1617.

A54. Mansberger SL, Nguyen H, Torres R, **Demirel S**, Fortune B, Gardiner SK, Cioffi GA, Johnson CA. Patterns of optic disc change in early glaucoma and glaucoma suspect patients. *Invest Ophthalmol Vis Sci* 2007; 48: E-Abstract 3338.

A55. **Demirel S**, Fortune B, Zhang X, Hood DC, Patterson E, Jamil A, Mansberger SL, Cioffi GA, Johnson CA. Effect of recording duration on diagnostic performance of multifocal visual evoked potentials in high-risk ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2007; 48: E-Abstract 4453.

A56. **Demirel S**, Fortune B, Fan J, Levine RA, Torres R, Nguyen H, Mansberger SL, Gardiner SK, Cioffi GA, Johnson CA. Predicting progressive glaucomatous optic neuropathy using baseline standard automated perimetry. *Invest Ophthalmol Vis Sci* 2008; 49: E-Abstract 1153.

A57. Gardiner SK, Swanson WH, **Demirel S**, McKendrick AM, Turpin A, Johnson CA. Retinal ganglion cell saturation to high contrast stimuli in perimetry. *Invest Ophthalmol Vis Sci* 2008; 49: E-Abstract 1558.

A58. Gardiner SK, Johnson CA, Strouthidis NG, **Demirel S**. Using Heidelberg Retinal Tomography (HRT) to predict future functional change in early glaucoma. *Invest Ophthalmol Vis Sci* 2009; 50: E-Abstract 4395.

A59. **Demirel S,** Hofflet Z, Johnson CA, Mansberger SL, Cioffi GA. Stability of Central Corneal Thickness (CCT) in individuals with high-risk ocular hypertension or early glaucoma. *Invest Ophthalmol Vis Sci* 2009; 50: E-Abstract 4896.

A60. Eisner A, **Demirel S**. Does phytoestrogen consumption affect vision? *Invest Ophthalmol Vis Sci* 2009; 50: E-Abstract 5335.

A61. De Moraes CG, **Demirel S**, Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA. Effect of treatment on rates of visual field change in the ocular hypertension treatment study. *Invest Ophthalmol Vis Sci* 2010; 51: E-Abstract 2049.

A62. Gardiner SK, Johnson CA, **Demirel S**. Cup size measured with the Heidelberg Retinal Tomograph (HRT) predicts subsequent functional change in early glaucoma better than rim area. *Invest Ophthalmol Vis Sci* 2010; 51: E-Abstract 4901.

A63. **Demirel S**, De Moraes CG, Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA. Rates of change of mean deviation in the ocular hypertension treatment study. *Invest Ophthalmol Vis Sci* 2010; 51: E-Abstract 5520.

A64. **Demirel S**, De Moraes CG, Gardiner SK, Liebmann JM, Cioffi GA, Ritch R, Gordon MO, Kass MA. Rates of visual field change in eyes with optic disc hemorrhage in the Ocular Hypertension Treatment Study. *Invest Ophthalmol Vis Sci* 2011; 52: E-Abstract 2119.

A65. Blachly CL, **Demirel S**, Johnson CA, Gardiner SK. Rates of visual field change for standard automated perimetry and Matrix perimetry in patients with high-risk ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2011; 52: E-Abstract 4150.

A66. Alqudah A, Mansberger SL, Gardiner SK, Blachly C, **Demirel S**. The association between quality of life and visual field status in glaucoma patients. *Invest Ophthalmol Vis Sci* 2011; 52: E-Abstract 5521.

A67. **Demirel S**, Johnson CA, Gardiner SK. Does glaucoma have a short memory? *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 215.

A68. Blachly CL, Gardiner SK, Yang H, Ren R, Hardin C, Whitworth M, Burgoyne CF, **Demirel S**. Spectral domain optical coherence tomography "Bruch's membrane opening minimum rim area" is more closely associated with functional status than Heidelberg Retina Tomograph rim area in human ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 707.

A69. Goren D, Gardiner SK, **Demirel S**. Correlations between perimetric global indices and different measures of retinal nerve fiber layer thickness. *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 713.

A70. Whitworth M, **Demirel S,** Blachly CL, Fortune B, Johnson CA, Gardiner SK. Spatial Correspondence between retinal nerve fiber layer thickness from OCT and perimetric sensitivity. *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 723.

A71. Gardiner SK, **Demirel S,** Gordon MO, Kass MA. Seasonal variations in sensitivity and intraocular pressure (IOP) in the Ocular Hypertension Treatment Study (OHTS). *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 1751.

A72. Hardin C, Yang H, Ren R, Gardiner SK, Blachly CL, Whitworth M, Fortune B, **Demirel S**, Burgoyne CF. Enhanced correlation between retinal nerve fiber layer thickness (RNFLT) and the spectral domain optical coherence tomography (SDOCT) derived neuroretinal rim parameter "Bruch's membrane opening minimum rim area" (BMO-MRA) in human ocular hypertension and glaucoma. *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 2821.

A73. Ren R, Yang H, Gardiner SK, Hardin C, **Demirel S**, Burgoyne CF Age-related differences in spectral domain optical coherence tomography (SDOCT) identified lamina cribrosa depth in patients with ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2012; 53: E-Abstract 3693.

A74. Koenigsman H, Ren R, Yang H, Gardiner SK, Reynaud J, Kinast RM, Mansberger SL, Fortune B, **Demirel S**, Burgoyne CF. Variability in optic disc margin and rim assessment by glaucoma specialists using color stereophotographs. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 64.

A75. Ren R, Yang H, Gardiner SK, He L, Reynaud J, Kinast RM, Mansberger SL, Fortune B, **Demirel S**, Burgoyne CF. Global and regional discordance between colocalized Heidelberg retinal tomograph (HRT) rim area and spectral domain optical coherence tomography (SDOCT) minimum rim measurements. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 85.

A76. Mansberger SL, Gardiner SK, **Demirel S**, Becker T. Long-term comparative effectiveness of telemedicine to detect diabetic retinopathy. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 1549.

A77. He L, Ren R, Hardin CA, Yang H, Gardiner SK, Fortune B, **Demirel S**, Burgoyne CF. Spectral domain optical coherence tomography (SDOCT) optic nerve head (ONH) rim quantification in glaucoma and glaucoma suspect eyes using anatomic vs acquired image frame (AIF) regionalization. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 1709.

A78. Pathak M, **Demirel S**, Gardiner SK. Autoregressive mixed effects approach for modeling longitudinal standard automated perimetry data in glaucoma. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 1884.

A79. Blachly CL, Gardiner SK, Fortune B, Goren D, Whitworth MD, Mansberger SL, **Demirel S**. Signal-to-noise ratios for structural and functional tests in glaucoma. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 1885.

A80. Deng L, Goren D, Pathak M, **Demirel S**, Gardiner SK. Predicting standard automated perimetry (SAP) sensitivities from spectral domain optical coherence tomography (SD-OCT) retinal nerve fiber layer thickness (RNFLT) using temporally correlated data. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 1891.

A81. **Demirel S**, Deng L, Goren D, Pathak M, Mansberger SL, Fortune B, Gardiner SK. Rates of functional and structural change are significantly correlated in eyes with early to moderate glaucoma. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 2276.

A82. Goldman C, **Demirel S**, Blachly CL, Whitworth MD, Mansberger SL, Gardiner SK, Goren D. Comparison of the strengths of 'moving correlations' between SD-OCT and SLP nerve fiber layer thickness and standard automated perimetry. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 2279.

A83. Gardiner SK, Goren D, Goldman C, Swanson WH, **Demirel S**. The effect of stimulus size on the relation between sensitivity and variability in perimetry. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 2363.

A84. Goren D, **Demirel S,** Goldman C, Swanson WH, Gardiner SK. Accuracy of sensitivities measured by perimetry at damaged locations in subjects with glaucoma. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 3940.

A85. Kinast RM, Ren R, Koenigsman H, Yang H, Gardiner SK, Reynaud J, Mansberger SL, Fortune B, **Demirel S**, Burgoyne CF. Glaucoma clinician (GC) color stereophoto (CSphoto) rim estimation compared to colocalized spectral domain optical coherence tomography (SDOCT) minimum rim measurements. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 4827.

A86. Hardin CA, Yang H, Ren R, He L, Gardiner SK, Fortune B, **Demirel S**, Burgoyne CF. The magnitude and direction of mismatch between Bruch's membrane opening (BMO) and anterior scleral canal opening (ASCO) within spectral Domain Optical Coherence Tomography (SD-OCT) optic nerve head (ONH) scans of ocular hypertension and glaucoma patients. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 4841.

A87. Reyes L, Ren R, Reynaud J, Yang H, Gardiner SK, Fortune B, **Demirel S**, Burgoyne CF. Variability of the foveal-Bruch's membrane opening centroid (FoBMO) axis angle in patients with ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci* 2013; 54: E-Abstract 4842.

A88. Deng L, Gardiner SK, **Demirel S**. Reducing variability of visual field sensitivities in glaucoma through spatial filtering. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 964.

A89. Pathak M, Gardiner SK, **Demirel S**. Forecasting retinal nerve fiber layer thinning and visual field decay in glaucoma. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 989.

A90. Boey P, Yang H, Reynaud J, Gardiner SK, **Demirel S**, Fortune B, Hardin CA, Zangalli C, Burgoyne CF. Optic nerve head (ONH) neuroretinal rim vs. retinal nerve fibre layer thickness (RNFLT) change in eyes with glaucomatous visual field change. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 4025.

A91. Chauhan BC, Danthurebandara VM, Sharpe GP, **Demirel S**, Girkin CA, Scheuerle AF, Mardin CY, Burgoyne CF. Characteristics of an anatomically and geometrically accurate neuroretinal rim parameter in a normal population. A multi-centre study. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 4028.

A92. Sharpsten L, Fan J, **Demirel S**, Su X, Johnson CA, Levine RA. Predicting progressive glaucomatous optic neuropathy using random forests based on longitudinally collected standard automated perimetry data. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 5619.

A93. Goren D, Swanson WH, **Demirel S,** Gardiner SK. Censoring sensitivities results in a non-linear model of sensitivity vs. variability for standard automated perimetry. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 5631.

A94. Gardiner SK, **Demirel S,** Goren D, Swanson WH. The effect of stimulus size on the effective dynamic range of Perimetry. *Invest Ophthalmol Vis Sci* 2014; 55: E-Abstract 5640.

A95. **Demirel S,** Fortune B, Mansberger SL Gardiner SK. Age as a predictor of future rate of visual field change in glaucoma: Traditional statistics and tree-based modeling. *Invest Ophthalmol Vis Sci* 2015; 56: E-Abstract 1047.

A96. Gardiner SK, **Demirel S,** Reynaud J, Fortune B. Changes in retinal nerve fiber layer reflectance intensity are related to functional loss in glaucoma. *Invest Ophthalmol Vis Sci* 2015; 56: E-Abstract 2057.

A97. Menda S, Fortune B, Mansberger SL Gardiner SK, **Demirel S.** Reynaud J, Fortune B. The effect of manually refining automated image segmentations on retinal nerve fiber layer thickness measurements from optical coherence tomography (OCT) scans. *Invest Ophthalmol Vis Sci* 2015; 56: E-Abstract 4551.

A98. Ma K, **Demirel S**, Gardiner SK, Fortune B, Mansberger SL. Peripapillary retinoschisis in glaucomatous and suspect eyes. *Invest Ophthalmol Vis Sci* 2016; 57: E-Abstract 860.

A99. Pathak M, **Demirel S**, Gardiner SK. Reducing variability of perimetric global indices from eyes with progressive glaucoma by censoring unreliable sensitivity data. *Invest Ophthalmol Vis Sci* 2016; 57: E-Abstract 3920.

A100. Gardiner SK, Boey P, Yang H, Burgoyne CF, Fortune B, **Demirel S**. Comparative short-term predictive power of global structural measurements in glaucoma. *Invest Ophthalmol Vis Sci* 2016; 57: E-Abstract 5189.

A101. Fortune B, Reynaud J, Yang H, Boey PY, **Demirel S**, Burgoyne CF, Gardiner SK. Optic nerve head rim tissue thins more rapidly than peripapillary retinal nerve fiber layer tissue in early glaucoma. *Invest Ophthalmol Vis Sci* 2017; 58: E-Abstract 1589.

Book Reviews

B1. **Demirel S**. *Visual Fields* by David B. Henson. Published in *Clinical and Experimental Optometry,* 1994;77:183.

B2. **Demirel S**. *Pathophysiology of the Eye: Glaucoma* edited by J Feher. Published in *The Quarterly Review of Biology*, 2000;75:221.

B3. **Demirel S**. *Visual Field Testing with the Humphrey Visual Field Analyzer. A Text and Clinical Atlas, 2nd Ed* by Neil T Choplin and Russell P Edwards. Published in *Optometry and Vision Science*, 2000;77:341.

B4. **Demirel S**. *Field Of Vision, A Manual and Atlas of Perimetry* by Jason J. S. Barton and Michael Benatar. Published in *Optometry and Vision Science*, 2004;81:164.

Book Chapters

C1. Johnson CA, **Demirel S.** Psychophysiology of Glaucoma: From Form to Function in *Ophthalmology Research: Mechanisms of the Glaucomas.* Shields MB, Tombran-Tink J, Barnstable CJ Eds. Humana Press, Totowa, NJ. 2008.