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Education

PhD in Biomedical Engineering, Tulane University, New Orleans, LA (GPA 4.0) (2009)
MS in Biomedical Engineering, Tulane University, New Orleans, LA (GPA 4.0) (2007)
MS in Mechanical Engineering, Harbin Institute of Technology, China (GPA 3.9) (2000)
BS in Mechanical Engineering, Harbin Institute of Technology, China (GPA 3.8) (1998)

Research and Working Experience

***Research Associate,* Optic Nerve Head Research Laboratory, Devers Eye Institute,** Legacy Health System, Portland, OR (06/2010-)
3D histomorphometry and OCT imaging study of the optic nerve in normal, early glaucoma, moderate and severe glaucoma eyes; Co-investigator of Optical Coherence Tomography (OCT) imaging of the optic nerve head; ONH research laboratory management including experiment design, task management, technician training and grant writing as co-investigator.

***Postdoctoral research fellow*, Optic Nerve Head Research Laboratory, Devers Eye Institute,** Legacy Health System, Portland, OR (06/2009-06/2010)
3D histomorphometry and OCT imaging study of the optic nerve in normal, early glaucoma, moderate and severe glaucoma eyes.

Graduate Research Assistant
Optic Nerve Head Research Laboratory,Devers Eye Institute, Legacy Health System, Portland, OR, and **Biomedical Engineering Program,** Tulane University, New Orleans, LA, (11/2005- 05/2009)
3-D Quantification and characterization of Monkey Optic Nerve Head using 3-D reconstruction of the 2D images in early glaucoma eyes. (NIH Grant R01EY11610)
Parametric finite element modeling of optic nerve head of monkey eye using novel morphing techniques and experimental design and optimization method.(NIH Grant R01EY11610 and R43-EY11818).

Graduate Research Assistant
Optic Nerve Head Research Laboratory*, Louisiana State University Eye Center* and **Biomedical Engineering Program,** Tulane University, New Orleans, LA, (06/2003- 10/2005)
3-D Quantification and characterization of Monkey Optic Nerve Head using 3-D reconstruction of the 2D images in early glaucoma eyes. (NIH Grant R01EY11610)
Parametric finite element modeling of optic nerve head of monkey eye using novel morphing techniques and experimental design and optimization method).(NIH Grant R01EY11610 and R43-EY11818).

Software Engineer, Zhongxing Telecommunication Equipment Co., Ltd., China, (07/2000-07/2002)
Software development and maintenance of telecommunication switching devices and charging system

***Graduate research assistant*, Automation and Instrumentation Program**, (06/1999-07/2000) Harbin Institute of Technology, China. Master thesis research conducted with Dr.Jingmin Dai. Software and hardware development of infrared multi-wavelength thermometer (National Science Foundation, Grant No.: 69777020)

Awards

- **Young Investigator Award**, Casey & Devers Eye Research Day 2008, Award money 300 dollars
- **ARVO 2007 International Travel Grant Award**, Association for Research in Vision and Ophthalmology Awarded 700 dollars for travel and hotel
- **Honored Graduate** for bachelor degree in 1998, Harbin Institute of Technology, China
- **Hai Wang Outstanding Student scholarship** in 1997, Best scholarship of Harbin Institute of Technology, China, issued once every four year by Hai Wai National Education Foundation (less than 20 people will be awarded every four year in 30000 students in HIT)
- Several other university scholarships, state scale excellent students awards, excellent athlete during undergraduate study and graduate study in Harbin Institute of Technology, China from 1994 to 2000

Journal Publications

Yang H, Downs JC, Bellezza AJ, Thompson H, Burgoyne CF. 3-D Histomorphometry of the Normal and Early Glaucomatous Monkey Optic Nerve Head: Prelaminar Neural Tissues and Cupping. Invest Ophthalmol Vis Sci 2007;48:5068-5084. NIHMSID: 119138

This article is chosen as cover of IOVS and won the Lewis Rudin prize for the senior author
http://www.iovs.org/content/vol48/issue11/cover.shtml
http://www.nyam.org/news/3160.html

Yang H, Downs JC, Girkin C, Sakata L, Bellezza A, Thompson H, et al. 3-D Histomorphometry of the Normal and Early Glaucomatous Monkey Optic Nerve Head: Lamina Cribrosa and Peripapillary Scleral Position and Thickness. Invest Ophthalmol Vis Sci. 2007;48(10):4597-607. PMCID: PMC2764532.

Downs JC, **Yang H**, Girkin C, Sakata L, Bellezza AJ, Thompson H, et al. 3-D Histomorphometry of the Normal and Early Glaucomatous Monkey Optic Nerve Head: Neural Canal and Subarachnoid Space Architecture. Invest Ophthalmol Vis Sci. 2007;48(7):3195-208. PMCID: PMC1978199. ***Downs and Yang are co-first authors and contribute equally to the work.***

Yang H, Downs JC, Burgoyne CF. Physiologic intereye differences in monkey optic nerve head architecture and their relation to changes in early experimental glaucoma. Invest Ophthalmol Vis Sci. 2009;50(1):224-34. PMCID: PMC2753437.

Yang H, Downs JC, Sigal IA, Roberts MD, Thompson H, Burgoyne CF. Deformation of the normal monkey optic nerve head connective tissue after acute IOP elevation within 3-D histomorphometric reconstructions. Invest Ophthalmol Vis Sci. 2009;Invest Ophthalmol Vis Sci(12):5785-99. NIHMSID: 175941

Strouthidis NG, **Yang H**, Fortune B, Downs JC, Burgoyne CF. Detection of Optic Nerve Head Neural Canal Opening within Histomorphometric and Spectral Domain Optical Coherence Tomography Data Sets. Invest Ophthalmol Vis Sci. 2009;50(1):214-23. PMCID: PMC2726821.

Strouthidis NG, **Yang H**, Downs JC, Burgoyne CF. Comparison of Clinical and Three-Dimensional Histomorphometric Optic Disc Margin Anatomy. Invest Ophthalmol Vis Sci. 2009;50(5):2165-74. PMCID: PMC2753440.

Fortune B, **Yang H**, Strouthidis NG, Cull GA, Grimm J, Downs JC, et al. The effect of acute intraocular pressure elevation on peripapillary retinal thickness, retinal nerve fiber layer thickness and retardance. Invest Ophthalmol Vis Sci. 2009;50(10):4719-26. PMCID: PMC2764538.

Strouthidis NG, **Yang H**, Reynaud J, Grimm J, Gardiner S, Fortune B, et al. Comparison of Clinical and Spectral Domain Optical Coherence Tomography Optic Disc Margin Anatomy. Invest Ophthalmol Vis Sci. 2009;50(10):4709-18. PMCID: PMC2751811.

Sigal IA, **Yang H**, Roberts MD, Downs JC. Morphing methods to parameterize specimen-specific finite element model geometries. J Biomech. 2010;43(2):254-62.

Yang H, Thompson H, Roberts MD, Sigal IA, Downs JC, Burgoyne CF. Deformation of the Early Glaucomatous Monkey Optic Nerve Head Connective Tissue Following Acute IOP Elevation within 3-D Histomorphometric Reconstructions. Invest Ophthalmol Vis Sci. 2011 Jan 21;52(1):345-63.

Sigal IA, **Yang H**, Roberts MD, Burgoyne CF, Downs JC. IOP-induced lamina cribrosa displacement and scleral canal expansion: an analysis of factor interactions using parameterized eye-specific models. Invest Ophthalmol Vis Sci. 2011 Mar 30;52(3):1896-907.

Strouthidis NG, Fortune B, **Yang H**, Sigal IA, Burgoyne CF. Longitudinal Change Detected by Spectral Domain Optical Coherence Tomography in the Glaucomatous Optic Nerve Head and Peripapillary Retina. IOVS-10-5599. Invest Ophthalmol Vis Sci. 2011 Mar 2;52(3):1206-19.

Yang H, Williams G, Downs JC, Sigal IA, Roberts MD, Thompson H, Burgoyne CF. Posterior (outward) migration of the lamina cribrosa and early cupping in monkey experimental glaucoma. Invest Ophthalmol Vis Sci. 2011 Sep 9;52(10):7109-21. Print 2011. PubMed PMID: 21715355; PubMed Central PMCID: PMC3207714.

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 Nov 21;52(12):9023-32. Print 2011 Nov. PubMed PMID: 21989723; PubMed Central PMCID: PMC3231799.

Strouthidis NG, Fortune B, **Yang H**, Sigal IA, Burgoyne CF. Effect of acute intraocular pressure elevation on the monkey optic nerve head as detected by spectral domain optical coherence tomography. Invest Ophthalmol Vis Sci. 2011 Dec 9;52(13):9431-7. Print 2011. PubMed PMID: 22058335; PubMed Central PMCID: PMC3293414.

Yang H, Qi J, Hardin C, Gardiner SK, Strouthidis NG, Fortune B, Burgoyne CF. Spectral-domain optical coherence tomography enhanced depth imaging of the normal and glaucomatous nonhuman primate optic nerve head. Invest Ophthalmol Vis Sci. 2012 Jan 25;53(1):394-405. Print 2012 Jan. PubMed PMID: 22159003; PubMed Central PMCID: PMC3292373.

Reis AS, Sharpe GP, **Yang H**, Nicolela MT, Burgoyne CF, Chauhan BC. Optic Disc Margin Anatomy in Patients with Glaucoma and Normal Controls with Spectral Domain Optical Coherence Tomography. Ophthalmology. 2012 Jan 3. [Epub ahead of print] PubMed PMID: 22222150.

Reis AS, O'Leary N, **Yang H**, Sharpe GP, Nicolela MT, Burgoyne CF, Chauhan BC. Influence of Clinically Invisible, but Optical Coherence Tomography Detected, Optic Disc Margin Anatomy on Neuroretinal Rim Evaluation. Invest Ophthalmol Vis Sci. 2012 Mar 12. [Epub ahead of print] PubMed PMID: 22410561.

Book Chapters

Claude FB, **Hongli Yang**, Crawford Downs. Clinical Cupping - Laminar and Prelaminar Components -. In: Samples PSJR (ed), *The Glaucoma Book:A Practical, Evidence-Based Approach to Patient Care.* New York: Springer Science+Business Media, LLC 2010; 2010:185-194.

Conference Proceedings

Hongli Yang, Ian Sigal, Michael Roberts, Claude Burgoyne, Crawford Downs. The influence of material properties and geometry on optic nerve head biomechanics. Proceedings of ASME 2009 Summer Bioengineering Conference. Lake Tahoe, CA.

Ian Sigal, **Hongli Yang**, Michael Roberts,J.Crawford Downs. Using mesh morphing to study the influence of geometry on biomechanics: An example in ocular biomechanics. Proceedings of the ASME 2008 Summer Bioengineering Conference.

Ian Sigal, **Hongli Yang**, Michael Roberts, Claude Burgoyne ,J.Crawford Downs. BIOMECHANICS OF THE POSTERIOR POLE During THE REMODELING Progression From Normal To Early Experimental Glaucoma. Proceedings of the ASME 2009 Summer Bioengineering Conference.

Selective Talk and Poster Presentations

Paper Presentation (Talk), **H. Yang**, J.C. Downs, R.T. Hart, C. F. Burgoyne, “Neural Canal and Peripapillary Scleral Alterations Within Three-Dimensional (3D) Reconstructions of Early Glaucoma (EG) Monkey Optic Nerve Heads (ONH),” Association for research in vision and ophthalmology (ARVO) 2005, Fort Lauderdale, Florida, USA
Paper Presentation(Talk), **H. Yang**, J. C. Downs, J. Grimm, J. Reynau, C. F. Burgoyne Laminar Cupping and Prelaminar Neural Tissue Thickening (not thinning) are present at the onset of Confocal Scanning Laser Tomographic (CSLT) detected Optic Nerve Head (ONH) surface change in Early Monkey Experimental Glaucoma(EG). ARVO 2007, Fort Lauderdale, Florida, USA
Paper Presentation(Talk), **H. Yang**, J. C. Downs, J. Grimm, J. Reynau, C. F. Burgoyne Laminar Cupping and Prelaminar Neural Tissue Thickening (not thinning) are present at the onset of Confocal Scanning Laser Tomographic (CSLT) detected Optic Nerve Head (ONH) surface change in Early Monkey Experimental Glaucoma(EG). Casey & Devers Eye Research Day 2007
Poster Presentation, H. Yang, J. C. Downs, M. Roberts,J. Grimm, J. Reynaud, C. F. Burgoyne, Physiologic, Inter-Eye Differences (PID) in Optic Nerve Head (ONH) Architecture within Normal Non-human primate (NHPs) by Three Dimensional (3D) Histomorphometry. ARVO 2008, Fort Lauderdale, Florida, USA
Poster Presentation, H. Yang, J. C. Downs, M. Roberts,J. Grimm, J. Reynaud, C. F. Burgoyne, Physiologic, Inter-Eye Differences (PID) in Optic Nerve Head (ONH) Architecture within Normal Non-human primate (NHPs) by Three Dimensional (3D) Histomorphometry. Casey & Devers Eye Research Day 2008
Poster Presentation, **H. Yang**, I.A. Sigal, M.D. Roberts, J. Grimm, C.F. Burgoyne, J.C. Downs. The Effect of Local Lamina Cribrosa Beam Orientation on Optic Nerve Head Biomechanics, ARVO 2009, Fort Lauderdale, Florida, USA.
Paper Presentation(Talk), **H. Yang,** G. Williams, J. Downs, I. Sigal, M. Roberts, J. Grimm, H. Thompson, C. Burgoyne. Optic Nerve Head (ONH) Lamina Cribrosa Insertion Migration and Pialization in Early Non-Human Primate (NHP) Experimental Glaucoma. ARVO 2010, Fort Lauderdale, Florida, USA.
Paper Presentation(Talk), H.Yang, Brad Fortune, Nick Strouthidis ,Galen Williams, Christy Hardin, Grant Gull, Jonathan Grimm, and Claude Burgoyne. Longitudinally detected, SDOCT Optic Nerve Head (ONH) Structural Change occurs early and suggests age-related structural stiffness differences in one young and one

old monkey with unilateral early Experimental Glaucoma (EEG). International Society for imaging in the eye (ISIE) 2010, Fort Lauderdale, Florida, USA.

Paper Presentation (Talk), M. Pazos, S. Gardiner, J. Reynaud, J. Grimm, W.O. Cepurna, E.C. Johnson, J.C. Morrison, C.F. Burgoyne, **H. Yang**. Radial Optic Nerve Expansion Within the Expanding Scleral Canal in the Hypertonic Saline Rat Early Experimental Glaucoma (EEG) Model. ARVO 2010, Fort Lauderdale, Florida, USA

Paper Presentation (Talk). ***Hongli Yang****, Stuart K. Gardiner, Galen Williams, Christy Hardin, Nicholas G. Strouthidis, J Crawford C. Downs, Brad Fortune, Claude F. Burgoyne,* Spectral Domain Optical Coherence Tomography (SDOCT) Detected Optic Nerve Head (ONH) Change Demonstrates Age-Related Differences in Young vs Old Monkey Early Experimental Glaucoma (EEG). ARVO 2011, Fort Lauderdale, Florida, USA

Poster Presentation . Hongli Yang, Stuart Gardiner, Ruojin Ren, Claude Burgoyne, Shaban Demirel, Spectral Domain Optical Coherence Tomography (SDOCT) BMO Minimum Rim Area Predicts Functional Status better than HRT Rim Area in Human Ocular Hypertension and Early Glaucoma. American Glaucoma Society Meeting 2012.

Membership

Member of Tulane University Chapter of National Biomedical Engineering Honor Society Alpha Eta Mu Beta, 2005-Present
Member of Association for Research in Vision and Ophthalmology, 2004-Present

Grant Support

NIH/NEI R01 EY011610 (years 11-15) 2007-2012
"IOP-Related Force and Failure in the Optic Nerve Head"
Co- Investigator

NIH/NEI R01EY021281 2010-2014
"Optic Nerve Head SDOCT Imaging in Glaucoma"
Co- Investigator

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