

## Jarel Gandhi

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### Education

- 2016- **Post-Doctorate**, Ophthalmology and Regenerative Medicine, **Mayo Clinic**, Rochester, MN  
Project: "Clinical Translation of iPSC Technologies for Retinal Degenerative Diseases"
- 2011-2016 **Doctor of Philosophy**, Biomedical Engineering, **Illinois Institute of Technology**, Chicago, IL  
Cell and Tissue Engineering Concentration  
Lab Thesis: "Engineering of Clinical-Scale, *In Vitro* Vascularized Bone Tissue for Implantation"
- 2008-2010 **Master of Science**, Biomedical Sciences, **Tufts University School of Medicine**, Boston, MA  
Lab Thesis: "Adenovirus-Delivered Human Soluble CD59 as an Effective Therapeutic Against the Membrane Attack Complex Deposition Targeting the Endothelium"
- 2004-2008 **Bachelor of Science**, Chemical & Biomolecular Engineering, **Johns Hopkins University**, Baltimore, MD  
Molecular and Cellular Bioengineering Concentration

### Honors and Funding

- 2016- Gordon and Llura Gund Fellowship in Retinal Degenerative Disease Research
- 2017, 2016 VitreoRetinal Surgery Foundation Research Fellowship
- 2017 Travel Grant for Symposium on Regenerative Medicine and Surgery
- 2014 National Science Foundation East Asia-Pacific Summer Institutes (EAPSI): Taiwan Fellowship

### Academic and Professional Appointments

- 2016- Research Fellow, Dept. of Ophthalmology, Mayo Clinic, Rochester, MN
- 2014-2015 Adjunct Faculty, Dept. of Biology, East West University, Chicago, IL
- 2010-2011 Research Fellow, Doheny Eye Institute, University of Southern California, Los Angeles, CA
- 2009-2010 Research Assistant, Schepens Eye Research Institute, Harvard Medical School, Boston, MA
- 2006-2008 Research Assistant, Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore, MD

### Professional Memberships

- 2018- Member, International Society of Stem Cell Research (ISSCR)
- 2012- Member, Tissue Engineering & Regenerative Medicine International Society (TERMIS)
- 2009- Member, Unite for Sight (International and Tufts Chapters)
- 2009- Member, Association for Research in Vision and Ophthalmology (ARVO)
- 2004- Member, American Institute of Chemical Engineers (AIChE)

### Personal Statement

My career goal is to innovate research tools and clinical therapeutics to address retinal degenerative diseases. My early career focused on building a foundation of research in both clinical and basic science research settings for a variety of retinal diseases. Since then, my masters and doctorate have focused on translational projects with potential therapeutic outcomes utilizing gene therapy and tissue engineering. For my post-doctorate, I am combining my experiences in hydrogel materials and tissue engineering with my interest in macular degeneration to design a novel transplantation platform. While a therapeutic application for retinal pigment epithelium (RPE) transplantation is the primary focus, a secondary aim is to expand this system to engineer multilayered retinal tissue. To demonstrate my ability to function as an independent investigator, I am focusing on engineering a vascular choroid within the currently developed platform. This technology could be used to expand therapeutic options for patients with retinal degenerative diseases as well as serve as a model to study pathogenesis.

### Patents

- Marmorstein AD, Iezzi R, **Gandhi JK**, Pulido JS. Methods and Materials for Using Fibrin Supports for Retinal Pigment Epithelium Transplantation. US Patent [# 62431259].
- Marmorstein AD, **Gandhi JK**, Pulido JS. Methods and Materials for Making Retinal Pigment Epithelium. US Patent [Provisional # 62/515,286].

## Publications

- Gandhi JK**, Kao SW, Roux BM, Rodriguez RA, Tang SJ, Fisher JP, Cheng MH, Brey EM. Perfusion Bioreactor Culture of Bone Marrow Stromal Cells Enhances Cranial Defect Regeneration. *Plast Reconstr Surg*. Accepted.
- Gandhi JK**, Manzar Z, Bachman LA, Andrews-Pfannkoch C, Knudsen T, Hill M, Schmidt H, Iezzi R, Pulido JS, Marmorstein AD. Fibrin hydrogels as a xenofree and rapidly degradable support for transplantation of retinal pigment epithelium monolayers. *Acta Biomater*. 67: 2018: 134-146.
- Marmorstein AD, Johnson AA, Bachman LA, Andrews-Pfannkoch C, Knudsen T, Gilles B, Hill MS, **Gandhi JK**, Marmorstein LY, Pulido JS. Mutant Best1 Expression and Impaired Phagocytosis in an iPSC Model of Autosomal Recessive Bestrophinopathy. *Sci Rep*. 8(1): 2018: 4487.
- Gandhi JK**\*, Roy Chowdhury U\*, Buck J, Levin L, Fautsch MP, Marmorstein AD. Differential Effects of Soluble Adenylyl Cyclase Inhibitors on IOP Measured by Tonometry vs. Cannulation. *J Ocul Pharmacol Ther*. 33(8): 2017: 574-581.
- Gandhi JK**, Zivkovic, L, Fisher JP, Yoder MC, Brey EM. Enhanced Viability of Endothelial Colony Forming Cells in Fibrin Microbeads for Sensor Vascularization. *Sensor*. 15(9): 2015: 23886-902.
- Gandhi JK**, Tollefson TT, Telander DG. Falciform macular folds and Chromosome 22q11.2: Evidence in Support of a Locus for Familial Exudative Vitreoretinopathy (FEVR). *Ophthalmic Genet*. 35(2): 2014: 112-6.
- Gandhi JK**, Opara EC, Brey EM. Alginate-Based Strategies for Therapeutic Vascularization. *Ther Deliv*. 4(3): 2013: 327-41.
- Gandhi J**\*, Cashman SM\*, Kumar-Singh R. Soluble CD59 Expressed from an Adenovirus *In Vivo* Is a Potent Inhibitor of Complement Deposition on Murine Liver Vascular Endothelium. *PLoS ONE* 6(6): 2011: e21621.
- Hu H, **Gandhi JK**, Zhong X, Wei Y, Gong J, Duh E, Vinore S. TNF $\alpha$  is required for late BRB breakdown in diabetic retinopathy and its inhibition prevents leukostasis and protects vessels and neurons from apoptosis. *Invest. Ophthalmol. Vis. Sci*. 52(3): 2011: 1336-1344.
- Silva RA, Murakami Y, Jain A, **Gandhi J**, Lad EM, Moshfeghi DM. Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDRP): 18-month experience with telemedicine screening. *Graefes Arch Clin Exp Ophthalmol*. 247(1): 2010: 129-136.
- Murakami Y, Jain A, Silva RA, Lad EM, **Gandhi J**, Moshfeghi DM. Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDRP): 12-month experience with telemedicine screening. *Br J Ophthalmol*. 92(11): 2009: 1456-60.
- Murakami Y, Silva RA, Jain A, Lad EM, **Gandhi J**, Moshfeghi DM. Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDRP): 24-month experience with telemedicine screening. *Acta Ophthalmol*. 88(3): 2008: 317-322.
- Duncan JL, Zhang Y, **Gandhi J**, Nakanishi C, Othman M, Branham KEH, Swaroop A, Roorda A. High-Resolution Imaging with Adaptive Optics in Patients with Inherited Retinal Degeneration. *Invest. Ophthalmol. Vis. Sci*. 48: 2007: 3283-3291.

## Select Conference Proceedings

- Gandhi JK**, Manzar Z, Schmidt H, Gilles B, Knudsen T, Hill M, Bachman L, Iezzi R, Pulido JS, Marmorstein AD. In Vitro Testing of Fibrin as a Temporary Support for RPE Transplantation. Poster session to be presented at: Global Connections in Vision Research, 2017 Annual Meeting of the Association for Research in Vision and Ophthalmology; 2017 May 7-11; Baltimore, MD.
- Gandhi JK**, Kao SW, Cheng MH, Akar B, Fisher JP, Brey EM. Fibrin Culture of Bone Marrow Stem Cells in a Perfusion Bioreactor System for Cranial Defect Regeneration. Oral Presentation presented at: 2015 4<sup>th</sup> World Congress of TERMIS; 2015 Sept 8-11; Boston, MA.
- Gandhi JK**, Yoder MC, Fisher JP, Brey EM. Fibrin Microbeads for Pre-Vascularization of Bone Tissue. Poster session presented at: 2014 Annual Conference and Exposition of TERMIS Americas; 2014 Dec 13-16; Washington DC.
- Gandhi JK**, Dastjerdi MH, El-Annan J, Dana R. The Effects of Desiccating Stress on Corneal Nerve Regeneration. Poster session presented at: Reducing Disparities in Eye Disease and Treatment, 2009 Annual Meeting of the Association for Research in Vision and Ophthalmology; 2009 May 3-7; Fort Lauderdale, FL.