

**HARVARD UNIVERSITY FACULTY OF MEDICINE
CURRICULUM VITAE
Reza Dana**

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Education:

1981 *Diploma Summa Cum Laude*, Saint Paul's School, Concord NH
1985 *Bachelor of Arts (BA) Phi Beta Kappa*, Johns Hopkins University
1989 *Master of Public Health (MPH)*, Johns Hopkins University
1989 *Doctor of Medicine (MD)*, Johns Hopkins University
2005 *Master of Science (MSc) in Health Care Management*, Harvard University

Postdoctoral Training:

1989-1990 Intern in Medicine, Greater Baltimore Medical Center, Baltimore
1990-1993 Resident in Ophthalmology, Illinois Eye & Ear Infirmary, Chicago
1993-1994 Cornea & External Diseases, Wills Eye Hospital, Philadelphia
1994-1995 Immunology & Uveitis, Massachusetts Eye & Ear, Harvard Medical School, Boston
1994-1996 NIH National Research Service Award-Research Fellow, Ocular & Transplantation Immunology, Schepens Eye Research Institute, Harvard Medical School, Boston

Licensure and Certification:

1990-1993 State of Illinois medical license
1993-1994 State of Pennsylvania medical license
1994- State of Massachusetts medical license
1995- Diplomate, American Board of Ophthalmology
2003 Harvard Medical School Leadership Development for Physicians and Scientists

Academic Appointments:

1988-1989 Student, Ocular Immunology Laboratory (Mentor: Elaine Young, PhD), Wilmer Eye Institute, Johns Hopkins University School of Medicine
1995-1997 Instructor, Department of Ophthalmology, Harvard Medical School
1997-2000 Assistant Professor of Ophthalmology, Harvard Medical School
2000-2007 Associate Professor of Ophthalmology, Harvard Medical School

- 2001- Member with full mentoring privileges, Committee on Immunology (Graduate Program in Immunology), Harvard Medical School
- 2007- Professor of Ophthalmology, Harvard Medical School
- 2007- Claes Dohlman Chair in Ophthalmology, Harvard Medical School
- 2008- Vice Chairman for Academic Programs, Harvard Department of Ophthalmology
- 2014- Honorary Professor, Shanghai Medical College, Fudan University, Shanghai, China.

Hospital & Harvard-Affiliated Institution Appointments:

- 1995-2002 Founder and Director, Ocular Immunology Service, Brigham & Women's Hospital, Boston
- 1995-2002 Director, Cornea and External Disease Service, Brigham & Women's Hospital, Boston
- 1995-2004; 2009- Associate Surgeon, Department of Surgery, Brigham & Women's Hospital, Boston
- 1996-1997 Investigator, Schepens Eye Research Institute, Boston
- 1997- Attending Physician and Surgeon, Cornea Service, Massachusetts Eye & Ear Infirmary, Boston
- 1997-2000 Assistant Scientist, Schepens Eye Research Institute, Boston
- 2000-2004 Associate Scientist, Schepens Eye Research Institute, Boston
- 2002- W. Clement Stone Scholar, Schepens Eye Research Institute
- 2004- Senior Scientist, Schepens Eye Research Institute, Boston
- 2005- Clinical Associate, Surgery, Massachusetts General Hospital, Boston
- 2006- Director, Cornea and Refractive Surgery Services, Massachusetts Eye & Ear Infirmary, Boston
- 2008-2010 Physician Director, Mass Eye and Ear Board
- 2008- Associate Chief of Ophthalmology, Massachusetts Eye and Ear Infirmary
- 2012-2017 Member, Residency Selection Team
- 2017- Consulting Staff, Department of Surgery, Dana-Farber Cancer Institute

Other Professional Positions and Administrative Responsibilities:

- 1992-1997 Principal Investigator, Multicenter Pediatric Keratoplasty Study Group
- 2000-2002 Ad Hoc Member, Food and Drug Administration (FDA) Orphan Drug Development Advisory Panel
- 2000- Reviewer, Wellcome Trust grants, United Kingdom
- 2001-2002 Conference Chair, First International Workshop on Corneal Immunology, Bermuda
- 2001-2003 Scientific Advisory Board, Wadsworth Foundation for Multiple Sclerosis Research, Seattle, WA
- 2001-2004 Medical and Scientific Advisory Board, Sjogren's Syndrome Foundation, New York, NY
- 2002-2007 Visual Sciences A/Anterior Eye Disease Study Section, National Institutes of Health (Member, 2002-2004; Ad Hoc, 2006-2007)
- 2002-2009 Executive Committee, American Uveitis Society, New Orleans, LA
- 2002- Reviewer, Republic of Ireland Science Foundation grants
- 2004-2006 Reviewer, Cora Verhagen Prize in Immunology, ARVO

2004-2005	Consultant, NIH Consensus Panel for Trials in Graft-versus-Host Disease
2005-2006	Co-Chair, Second International Workshop on Corneal Immunology, Berlin, Germany
2005-2008	Member, National Eye Institute Special Emphasis Review Panel (RO1, R21, RO3), NIH
2005-2008	Member (Chair, 2007-2008), Awards Committee, ARVO
2006-2007	Head, Immunity and Inflammation Research Subcommittee, International Dry Eye Workshop (DEWS)
2006-	Member and Chair (2012-), Dohlman Fellow Selection Committee
2006-2007	Ad hoc member, NIH Brain and Neuroscience Special Emphasis Review Panel ZRG1 BDCN
2007-2009	Maintenance of certification (MOC) examination question preparer, American Board of Ophthalmology (for Uveitis & Ocular Immunology)
2010	Member, National Eye Institute Workshop on Ocular Pain
2010-	Chair of Selection Committee and Director, Alcon Scholar Program at Harvard Department of Ophthalmology
2011-2015	Member, International Workshop on Classification, Diagnosis, and Treatment of Ocular Surface Stem Cell Insufficiency
2011-2016	Member, International Workshop on Classification, Diagnosis, and Treatment of Ocular Graft-versus-Host Disease
2011-	Grant Reviewer, Medical Research Council, United Kingdom
2011-	Member, Scientific Advisory Board, <i>Institut de la Vision</i> , Paris, France
2012-2013	Member, Scientific Review Committee, Lymphatic Research Foundation
2013-	Reviewer, Grant Agency, <i>Agence Nationale de la Recherche</i> (French National Research Agency)
2015-	Member, External Advisory Board, ARREST BLINDNESS Consortium of the European Union
2016-	Member, Advisory Board, Tej Kohli Cornea Institute, LV Prasad Eye Institute, India
2016-	Member, National Institutes of Health ZEY1 VSN (04) - NEI Mentored Basic Research and Pathways to Independence Award Review Panel
2016-	Member, National Eye Institute Special Emphasis Review Panel for the Cornea (RO1, R21) BDCN-J 91
2017-2018	Expert Mentor, MIT IDEA2 Global team, "Fabricating the Corneal Stroma"
2018	International Council of Ophthalmology Allergan Research Fellowship Jury
2018-	Member, Eversight Innovations Advisory Council

Harvard and Affiliated Academic Committee Assignments:

Harvard Medical School-

2006-2009	Robert Wood Johnson Faculty Scholar Nomination Committee
2008-2012; 2014-	Ad Hoc Subcommittees for Professorial promotions
2010-	Director (Co-Director, 2014-), Harvard Medical School Cornea Center of Excellence

Schepens Eye Research Institute-

1995- Member: Immunity, Inflammation, and Transplantation Focus Group
 1997-2000 Member: Training Committee
 1997-2012 Member: Technology Transfer Committee
 2000-2004 Head: Corneal Transplantation Research Program
 2001-2012 Chair: Human Research Committee-IRB
 2009-2012 Co-Director of Research, Schepens Eye Research Institute

Massachusetts Eye and Ear Infirmary

2007- Research Leadership Committee
 2007-2009 MEEI Strategy Committee
 2008-2009 Physician Director, Mass Eye and Ear Board
 2012-2018 Member, Intellectual Property Committee (committee disbanded after MEE integration into Partners network)
 2012-2018 Member, Conflict of Interest Committee
 2012-2017 Member, Translational Research Committee
 2014-2016 Chair, Annual International Mini-Symposium in Ocular Research
 2015-2018 Chair, Review Committee, Summit Fund (for incubating new technologies)
 2016- Member, Research Steering Committee
 2017- Member, Selection Committee, Distinguished Clinical and Research Alumni Awards

Department of Ophthalmology, Harvard Medical School-

2000- Faculty Member, Harvard Department of Ophthalmology/National Eye Institute Training Grant program
 2000- Chair/Co-Chair, Biennial Cornea Research Conferences
 2000-2005 Member, Curriculum Committee, NIH/NEI Training Program in the Molecular Bases of Eye Diseases, Harvard Department of Ophthalmology
 2002-2007 Member, Predoctoral Training Grant in Immunology, Harvard Medical School
 2003-2004 Course director and organizer, Neurobiology 300, "Biology of Ophthalmic Diseases"
 2004- Director, Harvard-Vision Clinical Scientist Development Program (K12)
 2006-2009 Member, Harvard Ophthalmology Fellowship Committee
 2007- Member, Promotion and Reappointment Committee
 2008- Member, Executive (Full Professors') Committee
 2011-2012 Member, Search Committee for Director of Research for Schepens Eye Research Institute, Massachusetts Eye and Ear Infirmary
 2011-2016 Chair, Harvard Department of Ophthalmology Retreat Planning Committee
 2013- Chair, Harvard Medical School Cornea Center of Excellence Biennial International Workshop
 2018- Member, Award Nominations Committee, Harvard Department of Ophthalmology

Professional Societies:

1988- Association for Research in Vision and Ophthalmology
 1992- American Academy of Ophthalmology
 1993-1996; 2006- Contact Lens Association of Ophthalmologists

1994-1997	Pediatric Keratoplasty Association
1994-	Ocular Microbiology and Immunology Group
1994-	Wills Eye Hospital Association
1995-	Society of Heed Fellows
1995-2012	American Uveitis Society (2002-2009, Executive Committee)
1996-2016	International Ocular Inflammation Society
1997-	Member with Thesis, (Castroviejo) Cornea Society
1998-	Transplantation Society
1998-	American Association of Immunologists
1999-2002	Medical Advisory Board, National Sjogren's Syndrome Association
2000-2003	Medical and Scientific Advisory Board, Sjogren's Syndrome Foundation
2000-	Paton Society, Eye Bank Association of America
2004-	American Society of Transplantation
2007-	American Ophthalmological Society
2009-2015	International Society of Contact Lens Research
2016-	Academia Ophthalmologica Internationalis

Editorial Activities:

2001-2018	Associate Editor (2011-2018). Prior to that: Editorial Board Member, <i>Investigative Ophthalmology and Visual Science</i>
2001-	Guest Editorial Board Member, <i>Current Eye Research</i>
2002-	Editorial Board Member, <i>Cornea</i>
2002-	Senior Associate Editor (2018-). Prior to that: Editorial Board Member, <i>The Ocular Surface</i>
2007-2011	Editorial Board Member, <i>Open Transplantation Journal</i>
2008-	Editorial Board Member, <i>The Journal of Ophthalmic and Vision Research</i>
2008-	Editorial Board Member, <i>Ophthalmologica</i>
2004-2007	Section co-editor for Immunology. Albert DM, Jakobiec FA. Principles and Practice of Ophthalmology. 3rd Ed. WB Saunders Co., 2007.
2006-	Editorial Board Member, <i>UpToDate Rheumatology</i>
2000-	Ad hoc Reviewer, <i>New England Journal of Medicine, Nature, Nature Medicine, Journal of Immunology, Journal of Clinical Investigation, Nature Reviews Drug Discovery, American Journal of Pathology, FASEB Journal, Transplantation, Microbes and Infection, Archives of Ophthalmology, American Journal of Ophthalmology, Ophthalmology, British Journal of Ophthalmology, Annals of Internal Medicine, Journal of Leukocyte Biology, Ocular Immunology and Inflammation, Laboratory Investigation, Journal of Interferon and Cytokine Research, PLoS ONE</i>
2007-	Senior Editor, <i>Encyclopedia of the Eye</i> , Elsevier
2016-	Editorial Board Member, <i>Scientific Reports</i> (Nature Publishing Group)
2018-	Editorial Board Member, <i>Graefe's Archive for Clinical and Experimental Ophthalmology</i>

Awards and Honors:

1981	National Cum Laude Society
1984	Phi Beta Kappa (<i>Junior Year</i>), Johns Hopkins University
1981-1985	Dean's List (every semester), Johns Hopkins University

- 1989 Henry Strong Dennison Award for Research, Johns Hopkins University School of Medicine
- 1990 National Eye Institute/ARVO Travel Fellowship
- 1995 Heed Ophthalmic Foundation Fellowship (Ocular Immunology)
- 1996 Named Knapp Fellow of the Society of Heed Fellows
- 1996 Clinical Scientist Career Award (KO8) from NIH
- 1999 Invited Participant, Research to Prevent Blindness National Science Writers Seminar
- 1999 Research to Prevent Blindness William & Mary Greve Special Scholar Achievement Award, American Academy of Ophthalmology
- 2002 Kronfeld Memorial Lecturer, Illinois Eye & Ear Infirmary
- 2002 Fry Memorial Lecturer, Wills Eye Hospital Biennial Cornea Conference
- 2003 Cogan Award, ARVO
- 2003 Dohlman Lecturer, Boston Biennial Cornea Conference
- 2004 Alta Lecturer and visiting professorship, Univ. California San Francisco
- 2004 Keynote Address, 28th All-Japan Cornea Conference, Yonago, Japan
- 2005 Research to Prevent Blindness Physician Scientist-Merit Award
- 2006 Service Recognition Award, American Academy of Ophthalmology
- 2007- Listed, "Best Doctors of America" (selected by peers)
- 2007- Listed, "Best of Boston" Ophthalmologists (selected by peers), *Boston Magazine*
- 2007- Listed, "Best Ophthalmologists of America" (selected by peers)
- 2008 Alcon Research Institute Award
- 2009 Research to Prevent Blindness Lew R. Wasserman-Merit Award
- 2011 David Easty Lecturer, Bowman Club, Royal College of Surgeons, Edinburgh
- 2011 Joaquin Barraquer Lecture, Spanish Congress of Ophthalmology
- 2012 LSU Chancellor's Award in Neuroscience and Ophthalmology
- 2012 Mentoring Award, European Young Investigator Network for Ocular Surface Inflammation
- 2013 Senior Scientific Investigator Award, Research to Prevent Blindness
- 2013 Gold Fellow, Association for Research in Vision and Ophthalmology
- 2013 Keynote Speaker, Biennial Meeting of the European Society of Ophthalmology (SOE), Copenhagen, Denmark
- 2014 Thygeson Lecture, Ocular Microbiology and Immunology Group
- 2014 A. Clifford Barger Excellence in Mentoring Award, Harvard Medical School
- 2015 Kersley Lecture, British Ocular Surface Society, London, England
- 2015 Keynote Address and Certificate of Honor, European Association for Vision and Eye Research (EVER), Nice, France
- 2016 Roger Meyer Lecture, University of Michigan Kellogg Eye Center
- 2016 Elected, Academia Ophthalmologica Internationalis
- 2016 Mooney Lecture, Irish College of Ophthalmologists, Rep. Ireland
- 2016 Endre A. Balazs Prize, International Society for Eye Research
- 2017 Plenary Address, 121st Mtg. Japanese Ophthalmological Society
- 2017 Senior Achievement Award, American Academy of Ophthalmology
- 2017 Streilein Lecture, 30th Biennial Cornea Conference

2018	Friedenwald Award, Association for Research in Vision and Ophthalmology (ARVO)
2018	Stein Innovation Award, Research to Prevent Blindness
2018	C. Stephen and Frances Foster Lectureship, Duke University
2018	Honorary Keynote Lecture, 120 th Korean Ophthalmological Society
2019	Champalimaud Lecture, LV Prasad Eye Institute (Expected)

RESEARCH, TEACHING, AND CLINICAL CONTRIBUTIONS

Major Research Interests: Narrative Report

I am an ophthalmologist and immunologist whose principal research interest is in determining the molecular and cellular regulation of ocular immunity, and the mechanisms by which immune homeostasis breaks down in chronic inflammation. In the 1990s the principal focus of my lab was on the function of specific cytokines and chemokines in induction of antigen-specific immunity, and the mechanisms of recruitment and activation of ocular antigen-presenting cells (APC). When we first embarked on these studies, the cornea was thought of as a simple tissue that was merely a passive target of immunity. Very little was known of how resident bone marrow-derived APC gain access to lymphoid tissues, and of the local mechanisms that regulate APC-lymphatic vessel interactions—all critical facets in the induction of antigen-specific immunity in both transplantation and autoimmunity.

Identification of novel APC populations- Our studies led to several novel and unexpected discoveries. My lab was the first to discover several distinct populations of uniformly MHC class II⁺ highly immature APCs (including epithelial Langerhans cells and stromal myeloid CD11c⁺ dendritic cells) in the central cornea (*IOVS 2002, J Leuk Bio 2003*), breaking a longstanding dogma that the cornea was devoid of functional antigen-presenting cells. We also showed that these immature/precursor myeloid populations can mature to acquire high levels of costimulatory molecules CD40 and CD80, as well as MHC class II expression as they egress the eye through selective upregulation of specific receptors to prime naïve T cells under conditions of inflammation. This discovery had practical implications, as it demonstrated how the cornea itself (including corneal transplants) can contribute to immunity through *resident* APC, a process known as ‘direct sensitization’, particularly in states of high tissue inflammation (*J Immunology 2004*).

APC-Lymphatic interactions- To determine precisely where and how corneal APC interact with T cells, we embarked on a series of investigations that established the local draining lymph nodes as the site of allosensitization (*IOVS 2001; J Exp Med 2002*). Remarkably, before these studies, the field was almost exclusively focused on APC-T cell interactions in the spleen. Subsequent studies showed that APC localization in these draining lymphoid tissues is reliant on a novel function of the VEGFR-3 receptor, known to be a growth factor for lymphatic and budding blood vessel endothelia. We determined that this receptor is acquired by mature MHC class II^{hi} dendritic cells in the cornea, and mediates their chemotactic mobilization into lymphatics, thereby allowing their egress from the inflamed eye. We also showed that blockade of this pathway can suppress the trafficking of APC from the eye to regional lymph nodes and suppress the induction of immunity to ocular antigens (*Nature Medicine 2004*). The identification of this novel role for VEGFR-3 in APC mobilization received considerable attention since subsequent work by others

showed a similar mechanism to be operative for certain epithelial cancers and peritumor cells for gaining access to the lymphatic system for systemic spread.

Regulation of corneal angiogenesis and lymphangiogenesis- Our studies on VEGFR-3 function stumbled us onto entirely unexpected insights into how corneal avascularity is maintained. We found high constitutive ‘ectopic’ expression of non-signaling VEGFR-3 by the corneal *epithelium*, and described how this “sink” mechanism for binding VEGF-C/D prevents their ligation of their receptors VEGFR-2/3, thereby functioning as a critical mechanism for maintaining corneal avascularity and regulating immunity (*PNAS* 2006). More recently, we have shown that this regulatory function can be subverted by IL-17 binding to epithelial cells, which have functional IL-17R signaling, inducing over-expression of VEGF-D by epithelial cells (*Blood* 2011).

Failure of immunoregulatory mechanisms in inflammation- We have determined that Foxp3+ regulatory T cells (Tregs) become dysfunctional in hosts prone to reject allografts as well as in chronic ocular surface disease (*J Immunology* 2009). Our work has uncovered mechanisms that regulate Treg plasticity and regulatory breakdown in highly inflamed microenvironments, identifying different Treg phenotypes (*Sci Reports* 2016). We have identified Treg plasticity as a key factor in loss of allotolerance, and have defined novel strategies to (i) enhance Treg homing to the immune synapse (*J Immunology* 2014) and (ii) promote Treg expansion (*Transplantation* 2016) for induction of graft tolerance.

Dry eye disease (DED) immunopathogenesis- Our work in corneal transplantation immunology permitted us since the mid 2000s to launch a program determining the immunopathogenesis of dry eye disease (DED), a chronic immune-mediated disease (and one of the most common reasons for patients seeking eye care) whose precise pathogenesis was barely understood even a few years earlier. We optimized a murine model for dry eye disease that did not rely on gene deletion or transgenic technology and used it in our basic research program to identify critical features in the immunopathogenesis of DED. Our work led to several novel discoveries, including identifying a select resistance of T helper-17 (Th17) cells, the principal pathogenic effectors in DED, to suppression by regulatory T cells (*J Immunology* 2009). We subsequently showed that failure in Treg function in chronic DED leads not only to expansion of Th17 effectors but also development of classic immunologic memory mediated by effector memory IL-17 secreting cells (*Mucosal Immunology* 2014). Very recently, we have focused on the molecular mechanisms that lead to *generation* and *maintenance* of memory Th17 cells- an almost entirely unexplored area—and showed the critical function of IL-7 and IL-15 in this process (*J Autoimmunity* 2017).

Translational research- In addition to these basic investigations, I am engaged in translational research. These projects have focused on novel immunomodulatory strategies to manage high-risk corneal and stem cell transplants, pathological corneal angiogenesis, graft-versus-host disease, dry eye, and in vivo corneal immuno- and neuro-imaging. Our group has been one of the first to develop and clinically test topical protein-based biologic approaches targeting specific inflammatory and pro-angiogenic cytokines (such as VEGF, IL-1, PDGF) in the management of corneal and ocular surface diseases in patients. These studies have been facilitated by 10 successful FDA Investigational New Drug (IND) submissions from my group since 2008.

New areas of investigation- While we have maintained our focus on immunology and immune regulation, our group has gradually broadened its focus to include novel animal models for high-risk corneal and stem cell transplantation, keratoprosthesis and biosynthetic corneal constructs.

Our group was the first to develop a miniature keratoprosthesis for the mouse and stereotactic brain surgery models for corneal neuropathy.

Teaching & Mentoring- I have focused extensively on education of both clinical and basic researchers. This has included teaching of postdoctoral research fellows, clinical fellows and residents, and medical students and graduate students enrolled in various Harvard Medical School curricula—I have served as primary mentor to over 100 laboratory trainees from 32 countries as well as over 70 clinical fellows. I have always been a strong advocate for clinical scientists in bridging the wide gap between basic science and clinical applications, and I direct the Harvard-Vision Clinical Scientist Development Program funded by the NIH K12 mechanism- with the express intent of recruiting, training, and retaining the brightest young minds to Harvard to contribute to our research efforts. I have served as PI/Director for this program since its inception at Harvard Ophthalmology in 2004. Lastly, I serve as an Expert Mentor for the MIT IDEA2 Global team working on fabricating the corneal stroma, advising an international team on fabrication of an artificial cornea.

Research Funding Information

<u>Current:</u>	2000-2021	NIH R01-EY12963: PI <i>Mechanisms of sensitization in high-risk corneal grafts</i>
	2010-2019	NIH RO1-EY20889: PI <i>Immunopathogenesis of dry eye disease</i>
	2018-2021	DOD/CDMRP Vision Research Award VR170189: PI <i>Novel Adhesive Biomaterials for Quick and Long-Lasting Sutureless Repair of Corneal Injuries</i>
	2018-2020	NIH/NEI R21: PI <i>Efficacy of the Neuropeptide Alpha-Melanocyte Stimulating Hormone (α-MSH) in Promoting Survival of Corneal Endothelial Cells in Eye Banking and Transplantation</i>
	2004-2021	NIH K12-EY016335: PI <i>Harvard-Vision Clinical Scientist Development Program</i>
	2018-2020	Stein Innovation Award, Research to Prevent Blindness: PI <i>Bioengineering a prosthetic cornea</i>
	2018-2022	DOD/CDMRP Vision Research Award VR170180: Co-PI (PI: A. Djalilian) <i>“Phase I/II Multicenter Randomized Controlled Clinical Trial of Mesenchymal Stem Cell Therapy for Severe Ocular Surface Chemical Injuries”</i>
	2014-2019	NIH U10-EY022879/EY022881: (Site PI: R. Dana; Program PIs: M. Maguire and P. Asbell) <i>The Dry Eye Evaluation And Management (DREAM) Study</i>
	2017-2021	NIH UG-1 (PI: U. Jurkunas) <i>Safety and Feasibility of Cultivated Autologous Limbal Epithelial Cell (CALEC) Transplantation in the Treatment of Limbal Stem Cell Deficiency</i>
	2015-2019	DOD Translational Award: Consulting Investigator (PI: J. Ciolino)

- Vision restoration with a collagen crosslinked Boston keratoprosthesis unit*
- 2017-2019 Massachusetts Lions Eye Research Fund: PI
Function of neuropeptides in regulating corneal endothelial cell survival and function
- 2018-2019 Eye Bank Association of America Research Grant: PI
Role of neuropeptide alpha-melanocyte stimulating hormone in preventing corneal endothelial cell loss in tissue storage and transplantation
- 2018-2019 Eversight Eye Bank Grant:PI
The role of neuropeptide alpha-melanocyte stimulating hormone in preventing corneal endothelial cell loss in tissue storage under inflammatory cytokine-induced stress

Past:

- 1988-1989 Fight For Sight Research Division of the National Society to Prevent Blindness Student Research Fellowship: PI
Development of a community-based survey of blindness in rural North America/Appalachia region.
- 1988-1989 Research Grant from the Eleanor Naylor Dana Charitable Trust, Wilmer Eye Institute, Johns Hopkins School of Medicine: PI
Prevalence and causes of blindness and visual impairment in an Appalachian river valley
- 1992-1993 Illinois Society for the Prevention of Blindness Research Grant: PI
Dynamic shifts in corneal topography after radial and astigmatic keratotomy
- 1995-1996 Individual National Research Service Award, NEI/NIH: PI
Corneal neovascularization and the immunobiology of high-risk penetrating keratoplasty
- 1995-1996 Eye Bank Association of America Research Grant: PI
Role of corneal lymphangiogenesis in high-risk transplantation
- 1996-1997 Eye Bank Association of America Research Grant: Co-Investigator
Development of new photodynamic glue for corneal applications
- 1996-1997 Massachusetts Lions Eye Research Fund: Co-PI
New strategies for controlling ocular inflammation
- 1997-1998 SERI Institutional Research Grant: Co-PI
Cytokine modulation in atopic eye disease
- 1998-1999 Fight For Sight / Prevent Blindness America Grant-in-Aid: PI
Role of IL-1Ra in T cell responses in high-risk corneal transplantation
- 1998-1999 SERI Institutional Research Grant: Co-PI
Host T cell responses in corneal transplantation
- 1998-1999 Eye Bank Association of America (EBAA) Res. Award: PI
Topical modulation of IL-1 activity in corneal allotransplantation
- 1996-2000 NEI/NIH K08 Clinical Scientist Development Award: PI
Immunobiology of high-risk corneal transplantation
- 1997-2000 Sponsored Research Program Recipient, Amgen: PI

- Proinflammatory cytokines in corneal inflammation and transplantation immunology*
- 1999-2000 Research Support Agreement, Alcon: PI
Long-term efficacy and tolerability of silicone punctal occlusion in Sjogren's and dry eye syndromes
- 1999-2000 Research to Prevent Blindness William and Mary Greve Special Scholar Award: PI
Cytokine modulation in corneal transplantation
- 1999-2000 Research Grant, Harvard Department of Ophthalmology Joint Clinical Research Center: Co-PI
Harvard dry eye epidemiology study
- 1999-2000 Massachusetts Lions Eye Research Fund: Co-PI
Promotion of transplant survival without generalized immune suppression
- 1998-2001 Sponsored Research Program Recipient, Biogen: PI
Regulation of ocular immunity and inflammation through CD40L and Lymphotoxin-B blockade
- 2000-2001 Research Grant, Harvard Department of Ophthalmology Joint Clinical Research Center: Co-PI
Measurement of tear mucin levels in dry eye and allergic conjunctivitis patients
- 2000-2005 NIH R01 EY03306: Co-investigator (PI: Dr. I. Gipson)
Ocular surface mucins
- 2001-2002 Eye Bank Association of America (EBAA) Research Award: PI
Use of anti-apoptotic gene therapy for promotion of corneal transplant survival
- 2001-2003 Roche Organ Transplantation Research Fund: PI
Promotion of corneal graft survival by anti-apoptotic genes
- 2001-2004 Sponsored Research Program Recipient, Daiichi: PI
Multicenter study for development of global index of symptomatology in dry eye syndrome
- 2001-2004 Sponsored Research Program Recipient, Biogen: PI
Role of VLA-1 and VLA-4 in ocular immunity
- 2002-2003 TATRC grant to Schepens Eye Research Institute: Project PI
Gene therapy for donor corneal storage and prolonging graft survival
- 2000-2004 NEI/NIH R01: Co-investigator (PI: Dr. Wayne Streilein)
Immunobiology of corneal transplantation
- 2003-2004 Eye Bank Association of America (EBAA) Research Award: PI
Promotion of corneal transplant survival by integrin-based immunotherapy
- 2004-2005 Research Grant, Harvard Department of Ophthalmology Joint Clinical Research Center: Co-PI
Role of toll-like receptors (TLR) in innate immune response in dry eye syndromes
- 2003-2005 TATRC grant to Schepens Eye Research Institute: Project PI

- Prevention of apoptotic cell death in cornea as result of injury and inflammation*
- 2005-2007 NIH R21- EY015738: PI
- Regulation of corneal apoptosis in corneal transplantation*
- 2005-2007 Sponsored Research Program Recipient, Biogen-Idec: PI
- Role of matrix-binding integrins in regulation of ocular immunity and inflammation*
- 2004-2007 NIH/NCRR P20 RR20753: Co-PI (PI: Dr. D. Dartt)
- Planning grant for research on blinding eye diseases*
- 2005-2007 P20 Pilot Project Grant: PI
- Regulation of adaptive and innate immunity in the eye*
- 2006-2007 TATRC grant to Schepens Eye Research Institute: Project PI
- Regulation of corneal inflammation*
- 2006-2007 New England Eye Bank Corneal Transplantation Research Fund
- Novel risk stratification approaches for high-risk keratoplasty (PI)*
- 2004-2008 Sponsored Research Program, Johnson & Johnson-Vistakon: PI
- Immunopathogenesis of dry eye-related ocular surface disease*
- 2006-2008 Allergan: *Multicenter study to assess the safety and efficacy of intraocular implantation of a bioerodable extended release implant to deliver Dexamethasone (Posurdex) in treatment of patients with uveitis: Site PI*
- 2003-2008 NIH R01 EY14847: Co-investigator (PI: Dr. P. Argueso)
- O-Glycans on mucins of the ocular surface*
- 2007-2008 Lux Biosciences: *Multicenter dose-ranging study to assess the efficacy and safety of LX201 for prevention of corneal allograft rejection in patients at high risk for corneal transplant rejection: PI*
- 2007-2008 Lux Biosciences: *Multicenter (Phase II/III) dose-ranging study to assess the efficacy and safety of LX211 (a novel calcineurin inhibitor) in treatment of patients with uveitis: Site PI*
- 2007-2008 TATRC grant to Schepens Eye Research Institute: Project PI
- Regulation of corneal angiogenesis*
- 2007-2008 Eye Bank Association of America: *Kinetics and function of T regulatory cells (Tregs) in corneal transplantation: PI*
- 2007-2009 Allergan (Investigator-initiated): *Prospective randomized study to test the prophylactic use of topical Cyclosporine A 0.05% (Restasis) to prevent onset and progression of graft-versus-host disease-related dry eye (PI)*
- 2008-2009 Genentech: *Effectiveness and safety of topical ranibizumab for treatment of corneal neovascularization: PI*
- 2008-2010 Prevent Blindness America Investigator Award
- Effectiveness and safety of topical bevacizumab (Avastin) for treatment of corneal neovascularization; PI*
- 2009-2010 Pfizer: *Phase I/II prospective, randomized, double masked vehicle and comparator controlled, dose ranging study of CP-690,550 in dry eye disease; site PI*
- 2009-2010 Eye Bank Association of America: *Use of potentiated Tregs to*

- 2009-2010 *promote corneal allograft survival: PI*
Eye Bank Association of America: *Prevention of endothelial cell loss in corneal storage: PI*
- 2009-2010 Eye Bank Association of America: *Function and role of decoy receptor D6 in corneal transplantation: PI*
- 2009-2010 TATRC grant to Schepens Eye Research Institute: Project PI
Regulation of corneal and ocular surface inflammation
- 2009-2011 International Agency for the Prevention of Blindness-National Centre for Research for Prevention of Blindness and Low Vision Rehabilitation
Effectiveness and safety of topical interleukin-1 receptor antagonist (IL-1Ra) in the treatment of corneal neovascularization; PI
- 2011-2012 Eye Bank Association of America: *Corneal transplantation in dry eye disease: PI*
- 2011-2012 Eye Bank Association of America: *Effect of soluble VEGFR-3 on corneal neovascularization and transplant survival: PI*
- 2011-2012 Eye Bank Association of America: *Effect of IL-6 blockade on corneal allograft survival: PI*
- 2010-2011 Eye Bank Association of America: *Use of azithromycin to promote corneal allograft survival: PI*
- 2010-2011 Eye Bank Association of America: *Use of aspirin-triggered Lipoxin agonist (ATLa) to promote corneal allograft survival: PI*
- 2008-2013 NIH K24-EY019098: *New strategies for modulation of corneal and ocular surface inflammation; PI*
- 2015-2016 Massachusetts Eye and Ear Cure For Kids Award: PI
Promotion of Corneal Transplant Survival in the Very Young
- 2012-2017 CDMRP Department of Defense Translational Research Award DM120045: PI
Safety and efficacy of bevacizumab in high-risk corneal transplantation
- 2017-2018 Eversight Eye Bank Research Award: Co-PI
Prolongation of corneal storage in eye banks
- 2017-2018 Eye Bank Association of America: PI/Mentor (W. Foulsham)
The use of neuropeptides to prevent corneal endothelial cell loss in storage and transplantation

Report of Teaching, Curricular Offerings & Advisory Roles:

- 1994-1995 **Organizer, Immunology Seminar Series, Mass. Eye & Ear Infirmary**
- 1995 **Founder, Ocular Immunology Service, Brigham & Women's Hospital.** Developed new clinical and research program: focusing on inflammatory and immune diseases of the eye, providing novel and expanded patient care and educational services, as well as clinical research venues. This service became an integral part in the training of fellows in the joint Partners (Mass General-Brigham and Women's Hospital) Immunology and Allergy Program.

- 1995- **Postdoctoral Fellow Advisor**
- 5-7 clinical fellows (cornea and anterior segment services)/year
- 12-18 laboratory research fellows and pre-doctoral students (immunology)/year
- 1995-2002 **Anterior Segment Fellowship, combined Brigham and Women's and Mass Eye and Ear program**
- Co-Director (1995-1998); Director (1999-): supervised fellow and resident activities in the clinic and operating rooms; mentor research projects
- 2 fellows (BWH) and 6 residents (MEEI)/year
- 1996-1997 **Joint Harvard-Affiliated program in Emergency Medicine**
- Instructor: essential concepts in care of corneal and external disease emergencies for ER residents
- 6-8 residents/year
- 1996-2001 **Intensive Review of Infectious Diseases**
- Instructor: "Ocular infectious disease diagnosis and management"
- 100-200 physicians/year
- 1996-2002 **Immunology Fellowship Program**
- Taught diagnosis and management of ocular inflammatory diseases to Allergy and Immunology (Department of Medicine) fellows rotating through cornea & ocular immunology clinics
- 2 fellows/year
- 1997- **Cornea Service Attending, Mass. Eye & Ear Infirmary**
- Instructor: surgical and clinical care of patients with corneal and anterior segment disease; mentored research projects
- 4-8 fellows/year
- 1997- **Faculty member, NIH/NEI T32 EY007145 Postdoctoral training program in molecular bases of eye disease (PI: A. Kazlauskas [1997-2001] & P D'Amore [2001-]) in inflammatory and immune-mediated ocular diseases**
- 1997-1998 **American Academy of Ophthalmology**
Instructor and course co-organizer: "Emerging concepts in the pathogenesis and treatment of corneal and ocular surface diseases". Course provided overview of the fundamental molecular and cellular mechanisms of corneal and ocular surface diseases
- 1997-1998 **Harvard Medical School Postgraduate Rheumatology Course, "Advances in Rheumatology"**
Instructor: "Ocular manifestations of rheumatic diseases"
80-100 residents and fellows
- 1997-1998 **BWH Primary Care Ophthalmology Rotation**

- Instructor: essential concepts in primary care ophthalmology
 - 3-4 residents/year
- 1997-2001 **Undergraduate Student Advisor, Harvard College**
Non-resident Tutor: Currier House, Cambridge
- 1998 **Intensive Review of Adult and Pediatric Allergy and Immunology**,
(cosponsored by the American Academy of allergy, asthma, and immunology and
Mass. General Hospital)
- Instructor, “Immunopathology of eye diseases; review of cellular and molecular
mechanisms of immunity and inflammation in the eye”
- 1998-2002 **Intensive Review of Ophthalmology**
- Principal Instructor for Cornea and External Diseases (1998-), and Immunology
and Uveitis (1999-) sections
- 1999-2003 **Board Review of Ophthalmology for Residents and Fellows**
- Instructor for Cornea/External and Inflammatory diseases
 - 30 MEEI and affiliated institutions residents and fellows
- 1999 **Organizer, Boston Symposium on Sjogren’s Syndrome and Allied Disorders.**
Organized the first Boston-wide symposium, involving 18 faculty members from
area universities, and the NIH on the basic science and clinical aspects of
autoimmune exocrinopathies.
- 1999 **Organizer, Mini-symposium on Corneal Transplant Immunology, Annual
Scientific Meeting of the Castroviejo Cornea Society.** Organized and
moderated a mini-symposium dedicated to review of new developments in corneal
transplant immunology research.
- 2000-2010 **Faculty member, NIH/NEI T32 EY007156, Harvard program in Ocular
Immunology (PI: J. Stein-Streilein)**
- 2001- **Faculty Member, Harvard Medical School Graduate Program in
Immunology (Committee on Immunology)**
- 2002 **Course Co-Director**, Harvard Medical International Master Workshop in Design
and Conduct of Clinical Research, U. Tokyo, Tokyo, Japan
- 2003 **Tutorial Instructor**, Immunology, Microbiology and Infectious Diseases course
(IN704.0)
Harvard Medical School
- 2001-2008 **Lancaster Course in Ophthalmology, sponsored by the Harvard Department
of Ophthalmology**
Instructor for Ocular surface inflammation and corneal transplantation sections of
the course.

- 2001-2008 **Harvard Dept. of Ophthalmology/National Eye Institute Training Grant Program** NIH/NEI T32 EY007145
- Instructor for ocular immunology, “Biology of ophthalmic disease”
 - Course coordinator (2003-4)
- 2001- **Conference Co-Chair, Biennial Cornea Research Conference.**
- 2001-2010 **Course Organizer (2003-2004) and Instructor (2001-),** Biology of Ophthalmic Diseases (Neurobiology 300); Introduction to the Visual System (HBTM 303QC), Harvard Medical School
- 2004- **Director, Harvard Department of Ophthalmology Clinical Scientist Development (NIH-K12) Program**
- 2005- **Faculty Mentor, HMS Department of Ophthalmology Residency Program**
Mentor 1 to 3 residents per year
- 2005-2010 **Faculty member,** NIH/NIAID T32 AI07498 Harvard PhD Program in Immunobiology (PI: M. Carroll)
- 2007-2010 **Maintenance of certification (MOC) examination question preparer, American Board of Ophthalmology** (uveitis & ocular immunology)
- 2007-2013 **Associate Examiner, American Board of Ophthalmology**
- 2007-2010 **Senior Editor, *Encyclopedia of the Eye*, 2010, Elsevier UK**
- 2007- **American Academy of Ophthalmology, Cornea Subspecialty Day**
Instructor for course lectures and development of curricula dealing with the management of severe ocular surface disorders, corneal melts from infection and autoimmune diseases, and corneal neovascularization.
- 2010- **Faculty Member,** Harvard Medical School Course in Advanced Ophthalmology OP502
- 2010- **Director,** Alcon Scholar Program, Massachusetts Eye and Ear, Harvard Department of Ophthalmology
- 2017-2018 **Expert Mentor,** MIT 2 Global team, “Fabricating the Corneal Stroma”

Names of Laboratory-Mentored Trainees and Current Positions:

- 1996-2001 Mini Balam, MD, Postdoctoral fellow, “Ocular surface inflammatory diseases”. Currently: Director at Allergan.
- 1996-1998 Suning Zhu, MD, PhD, Postdoctoral Fellow, “Cytokine regulation of adhesion factors in corneal inflammation”. Currently: Research Scientist, Toronto General Hospital, Max Bell Research Institute, University of

- Toronto, Canada, and Professor, Department of Ophthalmology, First Affiliated Hospital, Zhejiang University, China.
- 1997-1998 Elizabeth Davis, MD, Research Fellow (Schepens Eye Research Institute), and Resident (Massachusetts Eye & Ear Infirmary), “Corneal angiogenesis”. Currently: Minnesota Eye Consultants and University of Minnesota, Minneapolis, MN.
- 1997-1998 Iva Dekaris, MD, PhD candidate, “Molecular mechanisms of antigen-presenting cell motility in the cornea and ocular surface”. Currently: Professor, University Eye Clinic Svjetlost, Zagreb, Croatia, and past President of European Eye Bank Association.
- 1998-1999 Satoru Yamagami, MD, PhD, Postdoctoral Research Fellow, “Chemokine gene expression in corneal transplantation”. Currently: Professor and Chair of Ophthalmology, University of Tokyo, Japan.
- 1998-2001 Ying Liu, MD, PhD, Postdoctoral Research Fellow, “Induction of immunity to intracorneal antigens”, Schepens Eye Research Institute, Boston, MA. Currently: Physician, Cambridge, MA.
- 1998-2002 Ying Qian, MD, PhD, Postdoctoral Research Fellow, “Role of TNF superfamily receptors in corneal immunity”. Currently: Cornea Specialist, University of Rochester, Rochester, NY.
- 1999-2001 Pedram Hamrah, MD, Postdoctoral Research Fellow, “Corneal antigen-presenting cell function and activation”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Tufts University Medical School, Boston, MA.
- 1999-2001 Vikas Tewari, Pre-doctoral student (Brown University), “Function of IL-12 in regulating immune response to transplant antigens”. Currently: Ophthalmologist, Caritas Good Samaritan Medical Center, Brockton, MA.
- 2000-2002 Sudhir Vora, Pre-doctoral student in Pasteur Research Program (Harvard), “Patterns of chemokine expression in ocular inflammatory diseases”. Currently: Ophthalmologist at Kaiser Permanente, San Diego, CA.
- 2001-2002 Flavia Mendes, MD, Postdoctoral Research Fellow, “Outcome measures in corneal transplantation”, Brigham and Women’s Hospital and Schepens Eye Research Institute, Boston, MA. Currently: Ophthalmologist, Toulouse, France.
- 2001-2003 Clay Beauregard, PhD, Postdoctoral Research Fellow, “Role of caspases in inflammation and apoptosis in the cornea”, Schepens Eye Research Institute, Boston, MA. Currently: Director of Therapeutic Development, Baylor Institute for Immunology Research.
- 2001-2003 Syed Huq, MD, Postdoctoral Research Fellow, “Mechanisms of allosensitization in high-risk corneal transplantation”. Currently: Physician-Scientist, Anesthesiology Department, University of Sydney, Australia.
- 2001-2004 Lu Chen, PhD, Postdoctoral Research Fellow, “Corneal dendritic cell trafficking”, Schepens Eye Research Institute, Boston, MA. Currently: Professor and Morton D. Sarver Endowed Chair, University of California, Berkeley, CA.
- 2001-2005 Abha Sood, MD, Postdoctoral Research Fellow, “Immunopathogenic mechanisms in ocular surface disease”, Schepens Eye Research Institute,

- Boston, MA. Currently: R&D Division, Ophthalmic Research Associates, North Andover, MA.
- 2002-2003 Komal Trivedi, MD, Postdoctoral Research Fellow, “Risk factors for pathogenesis of chronic ocular surface disease”. Currently: Ophthalmologist, Detroit, MI.
- 2002-2004 Claus Cursiefen, MD (co-mentored with Dr. Wayne Streilein), Post-Doctoral Research fellow, “Molecular regulation of angiogenesis and lymphangiogenesis in the cornea”. Currently: Professor and Chair, University of Cologne, Germany.
- 2003-2004 William Chen, MD, PhD, Postdoctoral Fellow, “Role of toll-like receptors in activation and function of corneal dendritic cells”, Schepens Eye Research Institute and Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Professor and Director of Cornea and Ocular Surface Diseases, Department of Ophthalmology, WenZhou Medical College, China.
- 2003-2006 Rita Barcia, PhD (Co-mentored with Dr. Andrius Kazlauskas), Postdoctoral Research fellow, “Molecular regulation of corneal endothelial cell apoptosis”, Schepens Eye Research Institute, Boston, MA. Currently: Research Scientist, Industry, Portugal.
- 2003-2007 LinLing Shen, PhD, Postdoctoral Research Fellow, “Mechanisms of tolerance and immune regulation including PD-L1 in the cornea”, Schepens Eye Research Institute, Boston, MA. Currently: Scientist at ETH Zurich, Basel, Switzerland.
- 2003-2005 Stefano Barabino, MD, PhD candidate, University of Genoa, Italy, “Molecular and cellular aspects of innate immunity in pathogenesis of dry eye disease”, Schepens Eye Research Institute and Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Associate Professor, University of Genoa, Italy.
- 2004-2005 Claudia Fabiani, MD/PhD candidate, University of Rome, Italy, “Corneal epithelial cell turnover in novel mouse model of dry eye”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, Department of Ophthalmology, Humanitas Research Hospital, Milan, Italy.
- 2004-2006 Saadia Rashid, MD, Postdoctoral Fellow, “Immunopathogenesis of dry eye-related chronic ocular surface inflammation”, Schepens Eye Research Institute and Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Assistant Professor, Vitreoretinal Surgeon, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY.
- 2004-2006 Eva-Marie Chong, MD, Postdoctoral Fellow, “Molecular regulation of ocular surface immunity”, Schepens Eye Research Institute and Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Cornea Specialist, University of Arizona, Phoenix AZ.
- 2004-2010 Yiping Jin, MD, PhD, Postdoctoral Fellow, “Antigen-presenting cell trafficking and function of CCR7 chemokine receptor in cornea and ocular surface”, Schepens Eye Research Institute, Boston MA. Currently: Department of Medicine, Woodhull Medical Center, Brooklyn, NY.
- 2005-2007 Audrey Chan, MD, Postdoctoral Fellow, “Ocular surface disease in dry eye syndromes”, Massachusetts Eye & Ear Infirmary and Schepens Eye

- Research Institute, Boston MA. Currently: Cornea Specialist, Ophthalmic Consultants of Boston, Boston, MA.
- 2005-2007 Xian Zhang, MD, PhD, Postdoctoral Fellow, “Regulation of corneal alloimmunity by ex-vivo manipulation and leukocyte depletion of donor tissues”, Schepens Eye Research Institute, Boston MA. Currently: Physician, Saint Elizabeth’s Hospital, Washington, DC.
- 2005-2009 Daniel Saban, PhD, Postdoctoral Fellow, “Therapeutic induction of tolerance in transplantation”, Schepens Eye Research Institute, Boston MA. Currently: Associate Professor, Department of Ophthalmology, Duke University School of Medicine, Durham, NC.
- 2006-2007 Tatiana Ecoiffier, PhD Student, Ecole Supérieure de Biotechnologie de Strasbourg (France), “Regulation of ocular surface inflammation by integrins”, Schepens Eye Research Institute, Boston MA. Currently: Genentech, South San Francisco, CA.
- 2006-2008 Jaafar El Annan, MD, Postdoctoral Fellow, “Molecular mechanisms of corneal inflammation and function of PD-L1 in autoimmunity”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, U Texas Medical Branch/ MD Anderson Cancer Center, Houston, TX.
- 2006-2007 Eui-Sang Chung, MD, PhD, Postdoctoral Fellow, “Regulation of corneal heme and lymphangiogenesis in ocular surface immunity”, Schepens Eye Research Institute, Boston MA. Currently: Associate Professor, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea.
- 2006-2009 Sunil Chauhan, PhD, Postdoctoral Fellow, “Regulatory T cells in corneal transplantation and corneal inflammation”, Schepens Eye Research Institute, Boston MA. Currently: Associate Scientist, Schepens Eye Research Institute and Associate Professor, Harvard Department of Ophthalmology, Boston.
- 2006-2009 M. Dastjerdi, MD, Postdoctoral Fellow, “Ocular surface inflammation and angiogenesis in chronic corneal diseases”, Massachusetts Eye & Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, U Medicine & Dentistry of New Jersey (UMDNJ), Newark, NJ.
- 2007 Elizabeth Shields, Harvard College student, “Ex vivo expansion of epithelial cells for ocular surface reconstruction”, Schepens Eye Research Institute, Boston, MA.
- 2007-2008 Kathryn Masselam, MD, Clinical Fellow, “Limbal stem cell insufficiency”, Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Assistant Professor, Cornea Service, Massachusetts Eye and Ear Infirmary, Boston, MA.
- 2007-2008 Helene Lam, MD, Clinical fellow, “Pathophysiology of corneal transplant rejection”, Massachusetts Eye & Ear Infirmary, Boston, MA. Currently: Ophthalmologist, Harvard Vanguard Medical Associates, Boston, MA.
- 2007-2009 Sunali Goyal, MD, Postdoctoral Fellow, “Pre-clinical models of dry eye”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, U. Arkansas, Little Rock, AR.
- 2007-2014 Zahra Parastoo Sadrai, MD, Postdoctoral Fellow, “Mechanisms of epithelial damage by proinflammatory cytokines in chronic ocular surface

- disease”, Schepens Eye Research Institute, Boston, MA. Currently: Department of Medicine, U Massachusetts Medical Center, Worcester MA.
- 2007-2010 Amir R. Hajrasouliha, MD; Postdoctoral Fellow, “Molecular regulation of corneal inflammation and lymphangiogenesis”, Schepens Eye Research Institute, Boston MA. Currently: Fellow in Retina, U California Davis, CA.
- 2007-2009 Toshi Funaki, MD, PhD, Postdoctoral Fellow, “Molecular mechanisms of corneal endothelial decompensation in corneal transplantation”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Jutendo University School of Medicine, Tokyo, Japan.
- 2008-2009 Hyung K. Lee, MD, PhD, Postdoctoral Fellow, “Regulation of VEGF receptor signaling by PTK-7”, Schepens Eye Research Institute, Boston, MA. Currently: Professor, Department of Ophthalmology, Yonsei University College of Medicine, Seoul, Republic of Korea.
- 2008-2010 Thomas Fuchsluger, MD, PhD, Postdoctoral Fellow/Visiting Assistant Professor from Univ Hospital Essen, Germany, “Regulation of cell apoptosis in tissue preservation and transplantation”, Schepens Eye Research Institute, Boston MA. Currently: Professor and Head of Eye Bank, Friedrich Alexander Erlangen-Nuernberg Univ., Germany.
- 2008-2012 Nambi Nallasamy, MD, HST Student- Harvard/MIT, “Development of automated platform for quantification of corneal Neovascularization and nerves in human and animal corneas”, Massachusetts Eye & Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Fellow in Cornea, Bascom Palmer Eye Institute, Miami FL.
- 2008-2009 Andre Okanobo, MD, Postdoctoral Fellow, “Pathogenesis of chronic corneal inflammation and neuropathy”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Ophthalmologist at the State University of Campinas, Campinas, Brazil.
- 2008-2013 Yihe Chen, MD, Postdoctoral Fellow, “Role of Th17 cells in the immunopathogenesis of dry eye”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston MA. Currently: Senior Research Associate, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston.
- 2008-2010 Hiroki Ueno, MD, PhD, Postdoctoral Fellow, “Regulation of ocular surface stem cell niche”, Schepens Eye Research Institute, Boston MA. Currently: Assistant Professor, St. Marianna University School of Medicine, Kawasaki, Japan.
- 2009-2010 Giulio Ferrari, MD, Postdoctoral Fellow, “The role of corneal nerves in epithelial trophism and chronic ocular surface disease”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston MA. Currently: Associate Professor, San Raffaele Medical Center, Milan, Italy.
- 2009-2011 Takaaki Hattori, MD, PhD, Postdoctoral Fellow, “Tolerogenic mechanisms in ocular inflammation”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston MA. Currently: Associate Professor, Department of Ophthalmology, Tokyo Medical University, Tokyo, Japan.

- 2009-2012 Hyun Soo Lee, MD, PhD, Postdoctoral Fellow, “Pathophysiology of dry eye-associated chronic ocular surface disease”, Schepens Eye Research Institute, Boston MA. Currently: Associate Professor, The Catholic University of Korea, College of Medicine, Korea.
- 2009 Deniz Hos, Medical Student (University of Erlangen, Germany), “Role of VEGF in corneal wound healing”. Schepens Eye Research Institute, Boston MA; Currently: Ophthalmology Resident, University of Cologne, Cologne, Germany.
- 2009-2011 Yinan Lan, Medical Student, Boston University, “Function of mesenchymal stem cells in host response to corneal injury”, Schepens Eye Research Institute, Boston, MA.
- 2009-2013 Francisco Amparo, PhD, Postdoctoral Fellow, “Novel imaging platforms for assessment in ocular surface disease”, Schepens Eye Research Institute and Massachusetts Eye and Ear Infirmary, Boston MA. Currently: Senior Research Associate, Massachusetts Eye and Ear, Harvard Medical School, Boston MA.
- 2009-2011 Sheng-Fu (Jack) Cheng, PhD, Postdoctoral Fellow, “Therapeutic approaches to corneal angiogenesis”, Schepens Eye Research Institute and Massachusetts Eye and Ear Infirmary, Boston, MA. Currently: Ophthalmologist at the Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan.
- 2010-2013 Parisa Emami, MD, MPH, Postdoctoral Fellow, “Development of tolerogenic antigen-presenting cells in transplantation”, Schepens Eye Research, Boston MA. Currently: Resident in Ophthalmology, Kresge Eye Center, Detroit, MI.
- 2010-2011 Simona Schlereth, Graduate Student, University of Freiburg, Germany, "Phenotypic characterization of ocular antigen-presenting cells”, Schepens Eye Research Institute, Boston MA. Currently: Resident, Department of Ophthalmology at University of Cologne, Germany.
- 2010 Yesim Haussler-Sinangin MD, Postdoctoral Fellow, “Imaging lymphatics in ocular surface disease”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston MA. Currently: Assistant Professor, University of Frankfurt, Germany.
- 2010-2013 William Stevenson, MD, Postdoctoral Fellow, “Macrophage phenotype modulation in regulating corneal inflammation”, Schepens Eye Research Institute, Boston MA. Currently: Resident in Ophthalmology, University of Arizona College of Medicine, Tuscon, AZ.
- 2010-2013 Shilpa Kodati, MBBS, Postdoctoral Fellow, “Chemokine receptor expression by APCs in dry eye disease”, Schepens Eye Research, Boston MA. Currently: Resident in Ophthalmology, University of Pittsburgh, Pittsburgh, PA.
- 2010-2015 Jing Hua, MD, Postdoctoral Fellow, “Treg dysfunction in high-risk corneal transplantation and chronic ocular inflammation”, Schepens Eye Research Institute, Boston MA. Currently: MERSI, Waltham MA.
- 2011-2014 Thomas Dohlman, MD, Postdoctoral Fellow, “Molecular mechanisms of Th1 and Th17 cell homing in corneal inflammation”, Schepens Eye

- Research Institute, Boston, MA. Currently: Resident in Ophthalmology, Cornell Weill Medical College, New York NY.
- 2011 Belen Alfonso Bartolozzi, graduate student, University of Asturias, Spain, “Regulation of corneal angiogenesis”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Resident in Ophthalmology, University of Oviedo, Asturias, Spain.
- 2011 Parisa Faridian, summer student from U.C. San Diego, “Computer-assisted imaging in corneal and ocular surface inflammation”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Physician, San Diego, CA.
- 2011-2012 Narghes Calcagno, Student, U Milan, “Ex vivo expansion of corneal bone marrow-derived cells”, Schepens Eye Research Institute, Boston, MA. Currently: Postdoctoral Fellow in immunology, ALS Research Center, Harvard Medical School.
- 2011-2012 Ilya Leskov, Harvard Medical School student, “Chemokine-mediated mechanisms of leukocyte mobilization in corneal transplantation and inflammation”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, Feinberg School of Medicine, Department of Ophthalmology, Northwestern University, Chicago, IL.
- 2011-2013 Sumona Chaudhury, Harvard PhD candidate, Harvard U, “Risk factors in ocular surface inflammation”, Massachusetts Eye and Ear Infirmary, Boston, MA.
- 2011-2013 Hasanain Shikari, MD, Postdoctoral Fellow, “Graft-versus-host disease immunopathogenesis”, Schepens Eye Research Institute and Massachusetts Eye and Ear Infirmary, Boston MA. Currently: Medical Director, Arete Clinics, Opera House, Mumbai, Maharashtra 400004, India.
- 2011-2014 Masahiro Omoto, MD, PhD, Postdoctoral Fellow, “Development of novel model of endothelial keratoplasty in the mouse”, Schepens Eye Research Institute, Boston, MA. Currently: Physician-scientist, U Tokyo, Japan.
- 2012-2016 Maryam Tahvildari, MD, Postdoctoral Fellow, “Ex vivo manipulation of corneal bone marrow-derived cells for immunoregulatory applications in corneal transplantation”, Schepens Eye Research Institute, Boston, MA. Currently: Resident in Ophthalmology, Kresge Eye Institute, Wayne State U, Detroit MI
- 2012-2014 Sang-Mok Lee, MD, PhD, Postdoctoral Fellow, “Cross regulation of corneal nerves and immunity in ocular surface disease”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Hallym University College of Medicine, Korea.
- 2012-2015 Tina Shiang, Boston University 7-year combined Liberal Arts/Medical Education program, “Early corneal endothelial changes in transplant rejection”, Schepens Eye Research Institute, Boston, MA.
- 2012-2013 Bracha Robinson, Yeshiva University (New York) College Student, Schepens Eye Research Institute, Boston, MA.
- 2012-2015 Ujwala Saboo, MD, Postdoctoral Fellow, “Ocular graft-versus-host disease.” Currently: Fellow in Pediatric Ophthalmology, University of Texas Southwestern Medical Center, Dallas, TX.

- 2012 Jennifer Galley, Medical/Graduate student from Royal College of Surgeons, Ireland, “Quantification of corneal neovascularization”, Schepens Eye Research Institute, Boston, MA.
- 2012 Negar Pirmadjid, Medical student from George’s College, University of London, Schepens Eye Research Institute, Boston, MA. Currently: St. George’s University of London
- 2012-2015 Takenori Inomata, MD, PhD, Juntendo University School of Medicine, Tokyo, Japan, “Dysfunction of peripherally induced T-regulatory cells in high-risk corneal transplantation”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, Juntendo University School of Medicine
- 2012 Ben Chaon, Medical student, University of Iowa, Iowa City, IA. “Development of a survey to assess ocular pain”, Massachusetts Eye and Ear Infirmary, Boston, MA. Currently: St. George’s, University of London, London.
- 2012-2015 Alja Crnej, MD, Postdoctoral Fellow (co-mentored with Dr. Claes H. Dohlman), “Development of mouse model of keratoprosthesis”, Schepens Eye Research Institute, Massachusetts Eye and Ear Infirmary, Boston MA. Currently:
- 2013-2015 Brinda Subbarayal, PhD, Post-doctoral fellow, “Interface between Th17 and B cell-mediated immunity in chronic dry eye disease”, Schepens Eye Research Institute, Boston, MA. Currently: Executive Director, Biopharma, Appasamy Associates, Chennai (Madras), India
- 2013-2014 Tulio Abud, MD, Postdoctoral Fellow, “Efficacy of topical tacrolimus in ocular graft-versus-host disease”, Massachusetts Eye and Ear Infirmary and Schepens Eye Research Institute, Boston, MA. Currently: Physician - Cataract, Cornea and Refractive Surgery Department, Santa Lucia Hospital, Uberaba-MG-Brazil.
- 2013-2014 Iris Hong Qi, MD, PhD, Postdoctoral Fellow, “Function of regulatory Th17 cells in abatement of ocular surface disease”, Schepens Eye Research Institute, Boston, MA. Currently: Professor of Ophthalmology, Peking University Eye Center, Peking University Third Hospital, Beijing, China
- 2013-2014 Göknil Gültekin, Medical student at Istanbul University, Cerrahpasa Faculty of Medicine, Turkey, Schepens Eye Research Institute, Boston, MA.
- 2013 Osman Aijazi, Tufts University student, Boston, MA, Schepens Eye Research Institute, Boston, MA.
- 2013-2015 Antonio DiZazzo, MD, Resident at University of Rome, Post-doctoral fellow, “Angiostatic function of Tregs in ocular inflammation”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, University of Rome Campus Bio Medico, Rome.
- 2014-2015 Lang Bai, MD, Post-doctoral fellow, “Function and TLR regulation of Tregs in corneal inflammatory diseases”, Schepens Eye Research Institute, Boston MA. Currently: Chief Physician, Nanfang Hospital, Southern Medical University, Guangdong Sheng, China
- 2014-2015 Xuhua Tan, MD, PhD, Post-doctoral fellow, “The immunoregulatory role of corneal epithelium-derived TSP-1 in dry eye disease,” Schepens Eye

- Research Institute, Boston, MA. Currently: Attending Physician, Department of Cataract, Zhongshan Ophthalmic Center, Sun Yat-Sen University, Guangzhou, Guangdong, China
- 2014 Abigail Kaye, MB ChB, University of Bristol, UK, Research Intern, Schepens Eye Research Institute, Boston MA. Currently: U Bristol Medical School, UK.
- 2014 Alexandra Rezazadeh, Medical Student at University of Wisconsin School of Medicine, Madison WI, “Regulation of corneal angiogenesis”, Schepens Eye Research Institute, Boston, MA.
- 2014 Homer Chiang, Medical Student at University of Vermont College of Medicine, Burlington VT, Research Intern, “Biphasic response of inflammatory angiogenesis in the cornea” Schepens Eye Research Institute, Boston, MA. Currently: Ophthalmology resident, Univ. Texas San Antonio.
- 2014-2015 Merle Fernandes, MBBS, MS, Postdoctoral Fellow, “Immunoregulatory function of corneal epithelial PEDF in suppressing T cell mediated immunity”, Schepens Eye Research Institute, Boston, MA. Currently: Professor, LV Prasad Eye Institute, India.
- 2014-2016 Alireza Mashaghi, MD, PhD, Postdoctoral Fellow, “Contribution of aging to autoimmunity”, Schepens Eye Research Institute, Boston, MA. Currently: Assistant Professor, Leiden University, The Netherlands
- 2014-2017 Anna Marmalidou, MD, Postdoctoral Fellow, “Substance P-mediated dysfunction of T regulatory cells in dry eye disease”, Schepens Eye Research Institute, Boston, MA. Currently: Clinical Research Fellow, Mass Eye and Ear Retina Service, Boston
- 2014-2016 Josh Hong, MD, PhD, Post-doctoral Fellow, “Immune regulation of the ocular surface”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Fudan University Eye Ear Nose and Throat Hospital, Shanghai, China.
- 2015-2019 Afsaneh Amouzegar, MD (co-mentor with Dr. Sunil Chauhan), Postdoctoral Fellow, “Immune homeostasis in the cornea”, Schepens Eye Research Institute, Boston, MA. Currently:
- 2015-2018 Takeshi Nakao, MD, Mass Eye and Ear-Bausch & Lomb fellow, “Promotion of corneal transplant survival in the very young”, Schepens Eye Research Institute, Boston, MA.
- 2015 Fatemeh Ramazani, University of Alberta, Edmonton, Summer Student, “Imaging studies in ocular surface disorders”, Schepens Eye Research Institute, Boston, MA. Currently: U Alberta Medical School, Canada.
- 2015 Jessica Girgis, U. Massachusetts-Amherst Honors Commonwealth College summer student, “Neuro-immune basis of corneal inflammation”. Schepens Eye Research Institute, Boston, MA. Currently: Clinical Research Coordinator, Dana Farber Cancer Institute, Boston, MA.
- 2015-2016 Mohsen Tehrani, Post-doctoral Fellow, “Immunoregulatory mechanisms of Tregs in ocular inflammation”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Mazandaran University of Medical Sciences, Iran.

- 2015-2016 Kunal Suri, MD, Post-doctoral Fellow, “Trophic factors for support of corneal endothelium”, Schepens Eye Research Institute, Boston, MA. Currently: Resident Physician, Department of Medicine, University Hospitals Cleveland Medical Center, Case Western Reserve University, Cleveland, Ohio.
- 2015-2017 Vannarut Satitpitakul, MD, Postdoctoral Fellow, “Murine models for study of regenerative approaches to corneal endothelial dysfunction”, Schepens Eye Research Institute, Boston, MA. Currently: Attending Physician, Cornea and Refractive Unit, Department of Ophthalmology, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Bangkok, Thailand.
- 2015-2017 Jia Yin, MD, PhD, Fellow, “Treg regulation of angiogenesis”, Massachusetts Eye and Ear Infirmary, Boston, MA. Currently: Attending Physician, Cornea Service, Massachusetts Eye and Ear, Boston, MA
- 2015-2017 Chunyi Shao, MD, PhD, Fellow, “Immune interactions of T cells with corneal endothelial cells in transplantation”, Schepens Eye Research Institute, Boston, MA. Currently: Attending Physician, Department of Ophthalmology, Shanghai Ninth People’s Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China.
- 2016-2017 Mandy Yu, MD, PhD, Postdoctoral Fellow, “Function of alpha-2b adrenergic system in regulating T cell function”, Schepens Eye Research Institute, Boston, MA. Currently: Associate Professor, Department of Ophthalmology, Sichuan Academy of Medical Sciences, Chengdu, Sichuan Province, China.
- 2016-2019 Zhongmou Sun, Pre-doctoral Student, “In vitro effect of nerve-derived factors VIP and a-MSH on corneal endothelium”. Schepens Eye Research Institute, Boston, MA
- 2016- William Foulsham, MD, PhD, Postdoctoral Fellow, "Regulatory T cell dysfunction in high-risk corneal allograft rejection", Schepens Eye Research Institute, Boston, MA
- 2017-2018 Giulia Coco, MD, Postdoctoral Fellow, “Role of regulatory T cells in preventing corneal endothelial cell loss”, Schepens Eye Research Institute, Boston, MA
- 2017- Rohan B Singh, MD, “Treg phenotypic and functional changes in autoimmunity”, Schepens Eye Research Institute, Boston MA
- 2017-2018 Rani Al-Karmi, MD, “Regulation of ocular redness”, Schepens Eye Research Institute and Mass Eye and Ear, Boston MA
- 2017- Yukako Taketani, MD, PhD, “Treg dysfunction in dry eye disease”, Schepens Eye Research Institute, Boston MA
- 2017- Lingjia (Helen) Liu, MD, “Regulation of ocular surface immunity by the adrenergic system”, Schepens Eye Research Institute, Boston MA
- 2017- Tatiana Carreno, MD, “Regulation of ocular surface stem cell function”, Schepens Eye Research Institute, Boston MA
- 2018- Zala Luznik, MD, PhD, Fulbright Scholar from U. Ljubljana Slovenia, “Neuropeptide protection of corneal endothelial cells in eye banking and transplantation”, Schepens Eye Research Institute, Boston MA.

- 2018- Tomas Blanco, PhD, “Tolerogenic APC of the ocular surface”, Schepens Eye Research Institute, Boston MA.
- 2018- Clotilde Jumelle, PhD, “Bioengineering corneal matrices and drug delivery platforms”, Schepens Eye Research Institute, Boston MA.
- 2018- Nai-Wen Fan MD PhD, “Substance P and memory Th17 cells”, Schepens Eye Research Institute and Mass Eye and Ear, Boston MA
- 2018- Shuyan Zhu, MD PhD, “Corneal angiogenesis in transplantation”, Schepens Eye Research Institute and Mass Eye and Ear, Boston MA
- 2018- Ann Yung, Boston U Undergrad Student, “Novel corneal bioadhesives”, Schepens Eye Research Institute and Mass Eye and Ear, Boston MA
- 2018- Shruti Sinha, MBBS, “Novel therapies for corneal inflammatory disorders”, Schepens Eye Research Institute and Mass Eye and Ear, Boston MA

Clinical Fellows Mentored to Date (80 to date)

- 1995-1996 Joshua Young, MD
- 1996-1997 Aamna Sultan, MD
- 1996-1998 Tad Baum, MD
- 1996-1998 Esen Akpek, MD
- 1996-1998 Kathryn Colby, MD
- 1996-1998 Sonia Yoo, MD
- 1997-1998 Scott Hoffman, MD
- 1998-1999 Ignatius Cyriac, MD
- 1998-1999 Randa Garrana, MD
- 1997-1998 Farzad Yaghouti, MD
- 1998-2000 Eric Dudenhofer, MD
- 1998-2000 Victor Perez, MD
- 1998-2000 Samir Melki, MD
- 1998-2000 Stephen Stechschulte, MD
- 1999-2001 Natalie Afshari, MD
- 1999-2001 Sandeep Jain, MD
- 1999-2001 Jonathan Primack, MD
- 2000-2001 Richard Maw, MD
- 2000-2002 Shahzad Mian, MD
- 2000-2002 Kimberly Sippel, MD
- 2001-2002 David Yi, MD
- 2001-2003 Anh Nguyen, MD
- 2001-2003 Mahnaz Nouri, MD
- 2001-2003 Patrick Yeh, MD
- 2002-2003 Matthew Gardiner, MD
- 2002-2004 Joseph Ma, MD
- 2002-2004 Scott Barnes, MD
- 2003-2005 Mark Rosenblatt, MD
- 2004-2006 Ula Jurkunuas, MD
- 2004-2006 Eva Chong, MD
- 2004-2006 Jose de la Cruz, MD

2005-2007 Mona Harissi-Daher, MD
2005-2007 Audrey Chan, MD
2005-2007 Ying Qian, MD
2006-2005 Pankaj Gupta, MD
2006-2008 Pedram Hamrah, MD
2006-2008 Helene Lam, MD
2006-2008 Kathryn Masselam Hatch, MD
2007-2009 Joseph Ciolino, MD
2007-2009 Jessica Ciralsky, MD
2007-2009 Pauline Lim, MD
2007-2009 Mira Lim, MD
2007-2009 Sangita Patel, MD
2008-2010 Anne Keating, MD
2008-2010 Ginny Kullman, MD
2008-2010 Aisha Traish, MD
2009-2011 John Clements, MD
2009-2011 Janie Yoo, MD
2009-2011 Kristen Hawthorne, MD
2009-2011 J. Richard Townley, MD
2010-2012 Houman Hemmati, MD
2010-2012 Sahar Kohanim, MD
2010-2012 Christina Prescott, MD
2011-2013 Peggy Chang, MD
2011-2013 Hyunjoo Lee, MD
2011-2013 Rony Sayegh, MD
2012-2014 Sara Bozorg, MD
2012-2014 Ramez Haddadin, MD
2012-2014 Cecily Hamill, MD
2013-2015 Deepika Shah, MD
2013-2015 Silva Odorcic, MD
2013-2015 Sunali Goyal, MD
2013-2015 Haunmith Kha-Farooqi, MD
2013-2015 Duna Raoof, MD
2014-2016 Hajirah Saeed, MD
2015-2016 Yuna Rapoport, MD
2015-2016 Steven Greenstein, MD
2015-2016 Shaohui Liu, MD
2015-2017 Jia Yin, MD, PhD
2016-2017 Emma Davies, MD
2016-2017 Charista Evangelista, MD
2016-2018 Reena Gupta, MD
2017-2018 Rohini Rao, MD
2017-2018 Grace Shih, MD
2018-2019 Kunal Merchant, MD
2018-2019 Yusra Siddiqui, MD
2018-2019 Shawn Lin, MD, PhD
2018-2020 Stephan Ong Tone, MD, PhD

2018-2020 Thomas Dohlman, MD

Report of Clinical Activities:

1. Clinical Practice: Cornea/External Disease, and Ocular Immunology.
Full-time hospital-based academic faculty at the Massachusetts Eye and Ear Infirmary, Boston. In addition, I am involved in clinical research in the areas of ocular surface and ocular inflammatory diseases. Clinical activities comprised of medical and surgical subspecialty care of patients with corneal and inflammatory ocular diseases. All patients are evaluated and managed with trainees.

3. Contributions: Development of a new multidisciplinary Ocular Immunology service at the Brigham and Women's Hospital (BWH) in 1995 focusing on management of patients with ocular immuno-inflammatory conditions. This program streamlined the care of these patients, and provided new educational opportunities for Ophthalmology and Immunology fellows rotating through our service in the Longwood Medical Area. Upon the merger of the BWH Ophthalmology service and Mass Eye and Ear Infirmary, my related clinical activities were transferred entirely to Mass. Eye and Ear where the same interdisciplinary process in conjunction with Rheumatology (for autoimmune diseases) and Hematology (for graft-versus-host cases) was continued. Since assuming the directorship of the Cornea Service at MEEI in early 2006, my responsibilities have included oversight of the operations and academic programs of this service, comprised of 13-16 attending physicians and 6-8 clinical and clinical research fellows (in addition to 15-20+ postdoctoral laboratory-based research fellows), and >20 ancillary and technical staff. In addition, I have considerably expanded the translational and clinical research activities of the Cornea Service by creation of the Cornea Research Department and the Ocular Surface Imaging Center—the latter employs several full-time staff and leads numerous clinical research protocols, nearly all investigator-initiated. These studies have involved 11 physician-sponsored Investigational New Drug (IND) approvals from the FDA.

Selected Invited Talks (from 250+)

- 2018** Harvard Cornea Center of Excellence, **Boston, MA**
Duke U. Foster Visiting Professor, **Durham, NC**
Miguel Hernandez Institute of Neuroscience, **Alicante, Spain**
World Ophthalmology Congress, **Barcelona, Spain**
Academia Ophthalmologica Internationalis Chair LXXXIII lecture, **Barcelona**
Association for Research in Vision and Ophthalmology (ARVO), **Honolulu, HI**
Johns Hopkins University Wilmer Eye Institute, **Baltimore, MD**
American Academy of Ophthalmology, **Chicago, IL**
Korean Ophthalmological Society Keynote Speaker, **Seoul, S Korea**
- 2017** PanCornea International Conference, **Miami, FL**
USAMMA on Novel Biomaterials for Cornea Repair, **Frederick, MD**
Plenary Address, 121st Mtg. Japanese Ophthalmological Society, **Tokyo, Japan**
Connecticut Society of Eye Physicians and Surgeons, **Farmington, CT**
Symposium on Aging & Immunosenescence, ARVO, **Baltimore, MD**
Special Interest Group-Mechanisms of ocular surface immunity, ARVO, **Baltimore**
Visiting Professorship, Yale U. Department of Ophthalmology, **New Haven, CT**
Streilein Lecture, Biennial Cornea Conference, **Boston, MA**
Symposium on Graft-versus-Host Disease, **Chicago, IL**
- 2016** International Symposium on Ocular Pharmacology & Therapeutics, **Rome, Italy**
Mooney Lecture, Irish College of Ophthalmologists, **Killarney, Rep. Ireland**
Endre A Balazs Prize, International Society for Eye Research, **Tokyo, Japan**
Visiting Professor, University of California San Diego, **San Diego, CA**
Roger Meyer Lecture, U Michigan Kellogg Eye Center, **Ann Arbor, MI**
U California Berkeley Visiting Professor- Oxyopia Lecture, **Berkeley, CA**
Mini-symposium on Ocular Graft-Versus-Host Disease, ARVO, **Seattle, WA**
Mass. General Hospital Division of Hematology-Oncology, **Boston, MA**
- 2015** Japan-China-USA Cornea Specialists' Translational Research Meeting, **Denver, CO**
Conference Address, European Assoc. for Vision and Eye Research, **Nice, France**
Special Interest Group Co-organizer & Moderator, ARVO, **Denver, CO**
Kersley Medal Lecture, British Ocular Surface Society, **London, UK**
VII World Cornea Congress, **San Diego, CA**
Distinguished Lecture in Vision Science, **SUNY Buffalo, NY**
New England Ophthalmological Society, **Boston, MA**
Frontiers of Corneal Research, Harvard Cornea Center of Excellence, **Boston, MA**
- 2014** Symposium Chair, World Ophthalmology Congress, **Tokyo, Japan**
International Sympos. on Ocular Pharmacology & Therapeutics, **Reykjavik, Iceland**
Joint Fudan University - Harvard Medical School Symposium, **Shanghai, China**
International Society for Eye Research XXI Biennial Meeting, **San Francisco, CA**
Thygeson Lecture, Ocular Microbiology and Immunology Group, **Chicago, IL**
New England Ophthalmological Society, **Boston, MA**

- 2013** International Symposium on Ocular Pharmacology & Therapeutics, **Paris, France**
Keynote Speaker, European Ophth Society Meeting, **Copenhagen, Denmark**
Keynote Address, 7th International TFOS Conference, **Taormina, Italy**
Inflammation and Ocular Surface Focus Group, **Hamburg, Germany**
ARVO Foundation Vision Innovation and Venture Forum, **Seattle, WA**
International Symposium on Corneal Research, **Boston, MA**
- 2012** International Society for Eye Research, **Berlin, Germany**
Visiting Professor, Fudan University, **Shanghai, China**
Harvard-Osaka-Xiamen Univ. Symposium on Ocular Regeneration, **Xiamen, China**
Distinguished Chancellor Lecture in Neurosciences, LSU, **New Orleans**
Conference Lecture, Gordon Research Conferences on Cornea, **Ventura, CA**
Cornea Day, ASCRS Annual Meeting, **Chicago, IL**
Special Interest Group on Biomarkers, ARVO, **Ft. Lauderdale, FL**
Case Western Reserve University Annual Scientific Meeting, **Cleveland, OH**
Visiting Professor, Washington University School of Medicine, **St. Louis, MO**
Frontiers in Corneal Research, Mass Eye and Ear, **Boston, MA**
- 2011** David Easty Lecture, Bowman Club, Royal College of Surgeons, **Edinburgh**
Symposium Organizer, French Ophthalmology Society, **Paris, France**
Meeting of the European Ophthalmology Society, **Geneva, Switzerland**
Atlantic Eye Symposium, **Halifax, Canada**
Joaquin Barraquer Lecture, Spanish Congress of Ophthalmology, **Oviedo, Spain**
Inflammation and Ocular Surface Focus Group, **Barcelona, Spain**
International Symposium on Ocular Pharmacology & Therapeutics, **Vienna, Austria**
ARVO Foundation for Frontiers in Eye Research, **Ft. Lauderdale, FL**
American Academy of Ophthalmology, Cornea Subspecialty Day, **Orlando, FL**
Grand Rounds, Massachusetts Eye and Ear Infirmary, **Boston, MA**
- 2010** 6th International TFOS Conference, **Florence, Italy**
Symposium on Transplantation, Asian Cornea Society, **Kyoto, Japan**
Dry Eye Summit, **Ft. Lauderdale, FL**
Visiting Professor, UCLA Jules Stein Eye Institute, **Los Angeles, CA**
Inflammation and Ocular Surface Focus Group, **Chicago, IL**
National Eye Institute Planning Workshop on Ocular Pain, **Airlie Center, VA**
World Cornea Congress VI, **Boston, MA**
AVS Symposium, Federation of Clinical Immunology Societies, **Boston, MA**
Greater Boston Sjogren's Syndrome Foundation, Tufts University, **Boston, MA**
- 2009** Visiting Professor, University of Montreal, **Montreal, CA**
Chair, Cornea Symposium, European Soc. Ophthalmology, **Amsterdam, Holland**
International Society for Contact Lens Research, **Crete, Greece**
Inflammation and Ocular Surface Focus Group, **Montreal, Canada**
International Symposium on Ocular Pharmacology & Therapeutics, **Rome, Italy**
Alcon Research Institute Award Lecture, **Fort Worth, Texas**

- Visiting Professor, Columbia University, **New York, NY**
Visiting Professor, Mount Sinai School of Medicine, **New York, NY**
Visiting Professor, Cole Eye Institute, Cleveland Clinic, **Cleveland, OH**
Editors' Choice Symposium, American Academy of Ophthalmology, **San Francisco, CA**
Frontiers in Vision Science, Tufts University, **Boston, MA**
- 2008** International Symposium on Ocular Pharmacology & Therapeutics, **Budapest**
Inflammation and Ocular Surface Focus Group, **Dublin, Ireland**
Workshop on Role of Lipids in Dry Eye and Inflammation, **Sanremo, Italy**
State of the Art Lecture, Int'l Congress of the Transplantation Society, **Sydney**
Pan-Hellenic Ocular Inflammation and Infection Meeting, **Thessaloniki, Greece**
Keynote Speaker, Iranian Congress of Ophthalmology, **Tehran, Iran**
Special Interest Group Co-organizer & Moderator, ARVO, **Ft. Lauderdale, FL**
Visiting Professor, Johns Hopkins University, Wilmer Eye Institute, **Baltimore, MD**
150th Anniversary Conference Lecture, Illinois Eye & Ear Infirmary, **Chicago, IL**
Dana-Farber/Harvard Cancer Care Blood and Marrow Transplant Center, **Boston**,
3rd Biennial Symposium on Traumatic Eye and Brain Injury, **Boston, MA**
New England Ophthalmological Society, **Boston, MA**
- 2007** Inflammation and Ocular Surface Focus Group, **Paris, France**
Combined Meeting of the European Ophthalmology Society and AAO, **Vienna**
Visiting Professor, Kresge Eye Institute, Wayne State University, **Detroit MI**
Cullen Symposium on Ocular Surface Inflammation, Baylor College Med., **Houston**
The 25th Boston Biennial Cornea Conference, **Boston, MA**
- 2006** International Symposium on Ocular Pharmacology and Therapeutics, **Berlin**
2nd International Workshop on Corneal Immunology, **Berlin, Germany**
International Congress for Eye Research, **Buenos Aires, Argentina**
Visiting Professor, U of Louisville Department of Ophthalmology, **Louisville, KY**
9th Annual Ocular Drug & Surgical Therapies Meeting, **Dana Point, CA**
Visiting Professor, Case Western Reserve University, **Cleveland, OH**
Grand Rounds Speaker, Department of Ophthalmology, UCSF, **San Francisco, CA**
Postgraduate Course: Basic Science Update, World Transplant Congress, **Boston**
New England Ophthalmological Society, **Boston, MA**
- 2005** Keynote Speaker, Paraguayan Ophthalmological Society, **Asuncion, Paraguay**
World Cornea Congress V, **Washington DC**
Cullen Symposium on Ocular Surface Inflammation, Baylor University, **Houston**
J&J Materials Symposium- New Technologies for Contact Lenses, **Jacksonville, FL**
National Eye Inst. Symposium on the Clinician Scientist, **Ft. Lauderdale, FL**
- 2004** Keynote Speaker, 28th All-Japan Cornea Conference, **Yonago, Japan**
Visiting Professor, Kyoto Prefectural University, **Kyoto, Japan**
Annual Meeting of the German Ophthalmological Society, **Berlin, Germany**
Symposium on Corneal Immunology, EVER, **Faro, Portugal**
Keynote Speaker, 4th TFOS Conference, **San Juan, Puerto Rico**

- Alta Lecture, University of California-San Francisco, **San Francisco, CA**
Folkman Angiogenesis Conference, U. Pittsburgh, **Pittsburgh, PA**
Grand Rounds, Brigham and Women's Division of Rheumatology, **Boston, MA**
Sjogren's Syndrome Foundation- New England Chapter, **Braintree, MA**
- 2003** International Workshop in Ocular Immunology, **Ettal, Germany**
Colorado Rheumatism Society, **Denver, CO**
Dept. of Immunology and Microbiology, Dartmouth Medical Center, **Hanover, NH**
First Harvard-wide Workshop on Cell Death and the Eye, **Boston, MA**
Dohlman Lecture, 23rd Boston Biennial Cornea Conference, **Boston, MA**
New England Ophthalmological Society, **Boston, MA**
- 2002** Visiting Professor, Kyoto Prefectural University, **Kyoto, Japan**
Course Co-Director, Harvard Medical International Master Workshop in Design and
Conduct of Clinical Research, **Tokyo, Japan**
International Workshop in Ocular Immunology, **Ettal, Germany**
International Symposium on Frontiers in Immunology, and Transplantation, **London, UK**
First International Workshop on Corneal Immunology, **Bermuda**
Peter C. Kronfeld Memorial Lecture, Illinois Eye & Ear Infirmary, **Chicago, IL**
Biennial Cornea Conference, Wills Eye Hospital, **Philadelphia, PA**
Transplantation Biology Research Center, Massachusetts General Hospital, **Boston**
New England Ophthalmological Society, **Boston, MA**
- 2001** Inst. Ophthalmology & Dept. of Immunology, University College London, **London**
Symposium on Corneal Immunology, EVER, **Alicante, Spain**
American Uveitis Society Winter Symposium, **Vail, CO**
Visiting Professor, Oregon Health Sciences University, **Portland, OR**
Minisymposium on Ocular Immune Regulation and Immunotherapy, **Ft. Lauderdale, FL**
Distinguished Speaker, U. of Alabama-Mobile, Department of Immunology, **Mobile, AL**
Annual Meeting of the American College of Rheumatology, **San Francisco, CA**
Rheumatology Grand Rounds, SUNY Stony Brook Dept. of Medicine, **Stony Brook NY**
Tufts University Department of Ophthalmology Research Conference, **Boston, MA**
Wellman Laboratory for Photomedicine, Mass. General Hospital, **Boston, MA**
Second Symposium on Sjogren's and Allied Disorders, **Boston, MA**
- 2000** Visiting Professor, Federal U. S. Paulo, Paulista Sch Medicine, **Sao Paulo, Brazil**
XIV International Congress of Eye Research, **Santa Fe, NM**
3rd International TFOS Conference, **Maui, HI**
American Academy of Ophthalmology, **Dallas, TX**
Visiting Professor, Tufts University-New England Eye Center, **Boston, MA**
50th Anniversary Scientific Symposium of Schepens Eye Research Inst. **Boston, MA**
New England Ophthalmological Society, **Boston, MA**
- 1999** International Workshop on the Meibomian Gland, **Coral Gables, FL**
Research to Prevent Blindness National Science Writers Seminar, **Los Angeles, CA**
10th National Conference on Sjogren's Syndrome, **Cleveland, OH**

- Ocular Microbiology and Immunology Group, **Orlando, FL**
Eye Bank Association of America, **Orlando, FL**
Symposium on Sjogren Syndrome and Allied Disorders, **Boston, MA**
Tufts University-New England Eye Center, **Boston, MA**
New England Ophthalmological Society, **Boston, MA**
- 1998** 1st International Symposium on Ocular Immunology, **Amsterdam, Netherlands**
Loma Linda University Department of Ophthalmology, **Loma Linda, CA**
Ocular Microbiology and Immunology Group, **New Orleans, LA**
Castroviejo Cornea Society, **New Orleans, LA**
Allergy and Immunology Conference, Children's Hospital, **Boston, MA**
Longwood Medical Area Ophthalmology Grand Rounds, **Boston, MA**
- 1997** Grand Rounds Speaker, Dept. of Medicine, NYU Medical School, **New York, NY**
Grand Rounds, Brigham and Women's Hospital Division of Rheumatology, **Boston**
- 1996** 4th New England Immune Regulation Meeting, U of Connecticut, **Farmington, CT**
- 1995** 3rd New England Immune Regulation Meeting, Brown University, **Providence, RI**
Grand Rounds, Brigham and Women's Hospital Division of Rheumatology, **Boston**
- 1994** Wills Eye Hospital Biennial Cornea Conference, **Philadelphia, PA**

Scientific Innovations / Patents

1. Dana R, Chauhan S. Therapeutic compositions for treatment of ocular inflammatory disorders. U.S. Patent No. 9,309,313, issued Apr. 12, 2016. Filed Jan. 9, 2009.
2. Dana R, Chauhan S. Therapeutic compositions for the treatment of dry eye disease. U.S. Patent No. 9,011,861, issued Apr. 21, 2015. Filed Feb. 25, 2011.
3. Dana R. Local use of IL-1Ra for prophylaxis and treatment of corneal transplant rejection and other immune and inflammatory disorders of the eye. US 60/077,186; PCT/US97/21393. Filed November 19, 1997
4. Dana R. Use of soluble tumor necrosis factor receptor I (sTNFR1) to promote survival of corneal transplants and treat inflammatory disorders of the eye. US60/107,351; PCT/US99/26262. Filed November 6, 1998.
5. Dana R, Vaishnav A, Burkly L, Adelman B. Use of CD40:CD154 binding interrupter to treat immunological complications of the eye. US 60/229,491; PCT/US00/28945. Filed August 31, 2000.
6. Dana R, Kazlauskas A. Promotion of corneal graft survival by anti-apoptotic gene therapy. US 60/304,975. Filed July 2001.
7. Dana R, Chen L, Streilein JW. Method of suppressing immunity by inhibiting trafficking of antigen-presenting cells. US Patent Application 60/447,570. Filed February 2003
6. Dana R, Schaumberg DA. Topical use of a combination of fatty acids for treatment of ocular surface and adnexal inflammation. US 60/475,194. Filed June 2003.
7. Dana R, Schaumberg DA, Molock F, Copper L, Mahadevan S, Lorenz K, Rashid S. Compositions and methods for treating eye disorders and conditions. US 60/584,514; PCT/US2005/223113. Filed June 30, 2006.
8. Dana R, Dastjerdi M. Therapeutic compositions for treatment of inflammation of ocular and adnexal tissues. US 60/965,135; PCT/US2008/009776. Filed August 15, 2008.
9. Dana R, Chauhan S. Therapeutic compositions for treatment of ocular inflammatory disorders. US 61/010,566; PCT/US2009/000114. Filed September 1, 2009.
10. Dana R, Dastjerdi, M. Therapeutic compositions for treatment of inflammation of ocular and adnexal tissues. US 61/130,687; PCT/US2008/009776. Filed August 16, 2008.
11. Serhan C, Dana R, Jin Y. Use of novel lipid mediators to inhibit angiogenesis. US 61/047,881; PCT/US2009/041759. Filed April 29, 2009.
12. Dana R, Dastjerdi M, Chauhan S. Therapeutic compositions for treatment of corneal disorders. US 61/143,561; PCT/US2010/020646. Filed January 3, 2011.

13. Dana R, Saban D. Compositions and methods for treating inflammatory conditions of the ocular surface. US 61/446,086; PCT/US2012/026495. Filed February 24, 2012.
14. Dana R, Chauhan S. Therapeutic compositions for the treatment of dry eye disease. US 61/331,278; PCT/US2011/026316. Filed November 5, 2012.
15. Dana R, Hamrah P, Cavalcanti B. Inflammatory eye disorders. US 61/601,149; PCT/US2013/027181. Filed February 21, 2013.
16. Dana R, Amparo Pulido F, Wang H. Calculating conjunctival redness. US 61/601,484; PCT/US2013/027132. Filed February 21, 2013.
17. Dana R, Chauhan S, Kodati S, Saban D. Use of C-C chemokine receptor type 7 (CCR7) inhibitors. US 61/736,976. PCT/US2013/075095. Filed December 12, 2013
18. Dana R. Corneal fluorescein staining quantifying system. US 61/988,144. Filed May 2, 2014.
19. Chauhan S, Dana R. Compositions and Methods for Prevention and Treatment of Corneal Haze and Scarring. US 62/217,611. Filed September 11, 2015.
20. Dana R, Chen Y. A novel therapeutic approach targeting memory Th17 cell-mediated ocular immunoinflammatory diseases. Filed February 2, 2015.
21. Dana R, Khademhosseini A, Kheirkhah A, Annabi N. Bioadhesive for Corneal Repair. US Provisional Application No. 62/292,752.

Publications: h-index = 78; i-10 index = 263; >22,000 citations per Google Scholar

Peer-Reviewed Publications (Select Publications highlighted):

1. Young EM, Olkowski ST, **Dana R**, Mallette RA, Stark WJ. Pretreatment of donor corneal endothelium with ultraviolet-B irradiation. *Transplantation Proc* 1989; 21:3145-6. PMID 2468253
2. **Dana R**, Tielsch JM, Enger C, Joyce E, Santoli JM, Taylor HR. Visual impairment in a rural Appalachian community. Prevalence and causes. *JAMA* 1990; 264: 2400-5. PMID: 2231996
3. **Dana R**, Olkowski ST, Ahmadian H, Stark WJ, Young EM. Low-dose ultraviolet-B irradiation of donor corneal endothelium and graft survival. *Invest Ophthalmol Vis Sci*. 1990; 31: 2261-8. PMID: 2242992
4. **Dana R**, Putz JL, Viana MAG, Sugar J, McMahon TT. Contact lens failure in keratoconus management. *Ophthalmology* 1992; 99: 1187-92. PMID: 1513569
5. **Dana R**, Werner MS, Viana MAG, Shapiro MJ. Spontaneous and traumatic vitreous hemorrhage. *Ophthalmology* 1993; 100: 1377-83. PMID: 8371927
6. **Dana R**, Mori MT, Chandler JW, McMahon TT. Artificial orbit for experimental surgery on the anterior segment. *Arch Ophthalmol* 1994; 112: 125-8. PMID: 8285880
7. **Dana R**, Hochman M, Viana MAG, Hill C, Sugar J. Ocular manifestations of leprosy in the United States. *Arch Ophthalmol* 1994; 112: 626-9. PMID: 8185519
8. **Dana R**, Viana MAG, Mori MT, Chandler JW, McMahon TT. Dynamic shifts in corneal topography after radial and transverse keratotomy. *Ophthalmology* 1994; 101: 1818-26. PMID: 7800363
9. Werner MS, **Dana R**, Viana MAG, Shapiro MJ. Predictors of occult scleral rupture. *Ophthalmology* 1994; 101: 1941-44. PMID: 7997332
10. **Dana R**, Goren MB, Gomes JAP, Laibson PR, Rapuano CJ, Cohen EJ. Suture erosion after penetrating keratoplasty. *Cornea* 1995; 14: 243-8. PMID: 7600806
11. Gomes JAP, **Dana R**, Dua HS, Goren MB, Laibson PR, Cohen EJ. Positive donor rim culture in penetrating keratoplasty. *Cornea* 1995; 14: 457-62. PMID: 8536457
12. **Dana R**, Moyes AL, Gomes JAP, Rosheim KM, Schaumberg DA, Sugar A, Holland EJ, Laibson PR, Sugar J. The indications for and outcome in pediatric keratoplasty: a multicenter study. *Ophthalmology* 1995; 102: 1129-1138. PMID: 9097737

13. **Dana R**, Schaumberg DA, Kowal VA, Goren MB, Rapuano CJ, Laibson PR, Cohen EJ. Corneal neovascularization after penetrating keratoplasty. *Cornea* 1995; 14: 604-9. PMID: 8575183
14. **Dana R**, Schaumberg DA, Moyes AL, Gomes JAP, Laibson PR, Holland EJ, Sugar A, Sugar J. Outcome of penetrating keratoplasty after ocular trauma in children. *Arch Ophthalmol* 1995; 113: 1503-7. PMID: 7487616
15. **Dana R**, Merayo-Llodes J, Schaumberg DA, Foster CS. Prognosticators for visual outcome in sarcoid uveitis. *Ophthalmology* 1996; 103: 1846-53. PMID: 8942880
16. Schaumberg DA, **Dana R**. The epidemiology of world blindness. *Prac Opt* 1996; 7: 192-6.
17. **Dana R**, Streilein JW. Loss and restoration of immune privilege in eyes with corneal neovascularization. *Invest Ophthalmol Vis Sci*. 1996; 37: 2485-94. PMID: 8933765
18. **Dana R**, Merayo-Llodes J, Schaumberg DA, Foster CS. Visual outcomes prognosticators in juvenile rheumatoid arthritis-associated uveitis. *Ophthalmology* 1997; 104: 236-44. PMID:9052627
19. Goren MB, **Dana R**, Rapuano CJ, Gomes JAP, Cohen EJ, Laibson PR. Corneal topography after selective suture removal for astigmatism following keratoplasty. *Ophthalmic Surgery and Lasers* 1997; 28: 208-14. PMID: 9076794
20. **Dana R**, Yamada J, Streilein JW. Topical interleukin-1 receptor antagonist promotes corneal transplant survival. *Transplantation* 1997; 63: 1501-7. PMID: 9175817
21. Streilein JW, **Dana R**, Ksander BR. Immunity causing blindness. Five paths to herpes stromal keratitis. *Immunology Today* 1997; 18: 443-9. PMID: 9293161
22. **Dana R**, Chatzistefanou K, Schaumberg DA, Foster CS. Posterior capsular opacification after cataract surgery in uveitis patients. *Ophthalmology* 1997; 104: 1387-94. PMID: 9307631
23. **Dana R**, Schaumberg DA, Moyes AL, for the Multicenter Pediatric Keratoplasty Study Group. Corneal transplantation in children with Peters anomaly and other mesenchymal dysgeneses. A multicenter study. *Ophthalmology* 1997; 104: 1580-6. PMID: 9331194
24. Schaumberg DA, Snow KK, **Dana R**. The epidemic of Acanthamoeba keratitis. Where do we stand? *Cornea* 1998; 17: 3-10. PMID: 9436873
25. **Dana R**, Dai R, Zhu S, Yamada J, Streilein JW. Interleukin-1 receptor antagonist suppresses corneal Langerhans cell activity and promotes ocular immune privilege, *Invest Ophthalmol Vis Sci* 1998; 39: 70-7. PMID: 9430547

26. Sullivan DA, Rocha EM, Ullman MD, Krenzer KL, Gao J, Toda I, **Dana R**, Wickman LA. Androgen regulation of the meibomian gland. *Adv Exp Med Biol* 1998; 438: 327-31. PMID: 9634904
27. Schaumberg DA, **Dana R**, Christen WG, Glynn RJ. A systematic overview of the incidence of posterior capsular opacification. *Ophthalmology* 1998; 105: 1213-21. PMID: 9663224
28. **Dana R**, Zhu S, Yamada J. Topical modulation of interleukin-1 activity in corneal inflammatory neovascularization. *Cornea* 1998; 17: 403-9., PMID: 9430547
29. Yamada J, **Dana R**, Zhu S, Alard P, Streilein JW. Interleukin 1 receptor antagonist suppresses allosensitization in corneal transplantation. *Arch Ophthalmol* 1998; 116: 1351-57. PMID:9790635
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VEGF-C, and blockade of VEGFR-3-mediated signaling suppresses APC trafficking to the lymphoid compartment, thereby inhibiting allospecific immunity and promoting graft survival. The term 'molecular lymphadenectomy' was coined by us to reflect this immunomodulatory strategy. Of note, this pathway has also been shown to be relevant for peritumor monocytes and for tumor metastasis.

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Foxp3+CD4+CD25+ regulatory T cells (Tregs) play a critical functional 'switch' in immunity by regulating the priming and effector function of T cells. This article showed that far more important than Treg frequency is their level of Foxp3 expression, which is directly associated

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