

CORNEA

Metalloproteinase Expression in Corneal Wounds

Dimitri Azar, MD
Sponsored by the National Eye Institute

Collagen XVIII in Corneal Neovascularization

Jin-Hong Chang, PhD
Sponsored by the National Eye Institute

Functional Characterization of Peptide Domain

Jin-Hong Chang, PhD
Sponsored by the Illinois Society for the Prevention of Blindness

Evaluation of the Function and the Persistence of Transplanted Limbal Stem Cells

Ali Djalilian, MD
Sponsored by the Midwest Eye Banks

Notch Signaling in the Corneal Epithelium

Ali Djalilian, MD
Sponsored by the National Eye Institute

Notch Signaling in Corneal Development and Disease

Ali Djalilian, MD
Sponsored by Fight for Sight

The Use of Topical Rapamycin (Sirolimus) to Prevent Stromal Haze after Photorefractive Keratectomy

Ali Djalilian, MD
Sponsored by the American Society of Cataract and Refractive Surgery Foundation

Chicago-area Acanthamoeba Keratitis Study

Charlotte Joslin, OD
Sponsored by the Midwest Eye Banks

The Role of the Domestic Water Supply in a Persistent Acanthamoeba Keratitis Outbreak

Charlotte Joslin, OD
Sponsored by Prevent Blindness America

Corneal Refractive Power Post Refractive Surgery*

Charlotte Joslin, OD
Sponsored by the National Eye Institute

Predictor Analyses of Corneal Topography Data from Keratoconus Subjects

Timothy McMahon, OD
Sponsored by the National Eye Institute

A Randomized Study of the Safety and Efficacy of Thymosin Beta 4 in Treatment of Diabetic Patients' Corneal Wounds*

Jennifer Lim, MD
Sponsored by RegeneRx Biopharmaceuticals

Molecular Mechanism of HSV Entry and Spread

Deepak Shukla, PhD
Sponsored by the National Institute of Allergies and Infectious Diseases

Role of Nectin-1 in Corneal HSV Infection

Deepak Shukla, PhD
Sponsored by the Midwest Eye Banks

Specificity of Heparan Sulfate for Herpes Infection

Deepak Shukla, PhD
Sponsored by the University of North Carolina

Cornea Donor Study*

Joel Sugar, MD
Sponsored by Rheumatology Research, International

Efficacy and Safety of LX201 Implantation for the Prevention of Corneal Allograft Rejection Episodes or Graft Failure*

Joel Sugar, MD
Sponsored by LuxBiosciences

Study of Fuchs' Endothelial Corneal Dystrophy Genetics*

Joel Sugar, MD

Sponsored by Case Western Reserve University

Effects of Room Temperature Storage of Optisol-GS on Fungal Growth

Elmer Tu, MD
Sponsored by the Eye Bank Association of America

Biochemical Basis of Keratoconus

Beatrice Yue, PhD
Sponsored by the National Eye Institute

DIABETIC MACULAR EDEMA

Efficacy and Safety of Ranibizumab Injection in Subjects with Macular Edema with Center Involvement Secondary to Diabetes Mellitus*

Michael Blair, MD
Sponsored by Genentech

Intravitreal Ranibizumab or Triamcinolone Acetonide as Adjunctive Treatment to Panretinal Photocoagulation for Proliferative Diabetic Retinopathy*

Jennifer Lim, MD
Sponsored by the National Eye Institute through the Jaeb Center for Health Research, Inc.

Ranibizumab for Edema of the Macula in Diabetes (READ)*

Jennifer Lim, MD
Sponsored by the Juvenile Diabetes Foundation and Genentech

Dexamethasone Posterior Segment Drug Delivery Applicator System in Treatment of Patients with Macular Edema*

Lawrence Ulanski, MD
Sponsored by Allergan, Inc

GLAUCOMA

On the Cause, Prevention and Treatment of Primary Open Angle Glaucoma

Paul Knepper, MD, PhD
Sponsored by Alcon Research, Ltd.

Novel Peptides to Understand Herpetic Damage to Human Trabecular Meshwork via Actin Rich Nanotubular Structures

Deepak Shukla, PhD
Sponsored by The Glaucoma Foundation

Structural Testing in Advanced Glaucoma*

Thasarat Vajaranant, MD
Sponsored by the American Glaucoma Society

Electrophysiology in Glaucoma*

Thasarat Vajaranant, MD
Sponsored by The American Glaucoma Society

Biology of Trabecular Meshwork in Health and Disease

Beatrice Yue, PhD
Sponsored by the National Eye Institute

Functional Roles of Optineurin in RBC-5 Cells

Beatrice Yue, PhD
Sponsored by The American Health Assistance Foundation—Glaucoma

LENSES

The Role of ZO-1 in the Function of Lens Gap Junctions

Nalin Kumar, DPhil
Sponsored by the National Eye Institute

Ophtec Model 311 Artificial Iris Lens Continued Access Compassionate Use Clinical Study*

Joel Sugar, MD
Sponsored by Ophtec Internation Ophthalmological Laboratories

Using the Starr Collamer Intraocular Lens as a Drug Delivery System in the Prevention of Endophthalmitis*

Lawrence Ulanski, MD
Sponsored by the Illinois Society for the

Prevention of Blindness and by the Midwest Eye Banks

NEURO-OPHTHALMOLOGY

Longitudinal Ocular Neuritis Study*

James Goodwin, MD
Sponsored by the National Eye Institute through the Jaeb Center for Health Research, Inc

RETINA

Visual Dysfunction in Retinal Degenerations

Kenneth Alexander, PhD
Sponsored by the National Eye Institute

Visual Noise and Computational Efficiency in Retinal Degenerations

Kenneth Alexander, PhD
Sponsored by the Midwest Eye Banks

A Novel Method for Quantitative Control of Retinal Hypoxia

Norman Blair, MD
Sponsored by the Midwest Eye Banks

Clinical and Molecular Genetic Investigations in Retinitis Pigmentosa

Gerald Fishman, MD
Sponsored by the Foundation Fighting Blindness

Molecular Genetic Defects in Patients with Hereditary Retinal Degenerations

Gerald Fishman, MD
Sponsored by Grant Healthcare Foundation

Comparing Reduced-fluence Visudyne-Lucentis Combination Therapies and Lucentis Monotherapy in Subjects with CNV Secondary to AMD*

Jennifer Lim, MD
Sponsored by OLT Inc.

Ranibizumab Therapy for Choroidal Neovascularization Associated with Angioid Streaks*

Jennifer Lim, MD
Sponsored by Genentech

Safety and Tolerability of 20089 in the Treatment of Patients with Cystoid Macular Edema Associated with Retinal Vein Occlusion or Cataract Surgery*

Jennifer Lim, MD
Sponsored by ICON Bioscience, Inc.

Development of Nanoscale Neuromodulating Platforms

David Pepperberg, PhD
Sponsored by the National Eye Institute

Nanoscale Modulators of Retinal Postsynaptic Receptors

David Pepperberg, PhD
Sponsored by the American Health Assistance Foundation—Macular Degeneration

Properties of GABA_A Receptors on Retinal Neuron

Haohua Qian, PhD
Sponsored by the National Eye Institute

Gap Junction Mediated Cell Death In Rod Cone Dystrophies

Harris Ripps, PhD, DSc
Sponsored by the National Eye Institute

Assessment of Age-Related Eye by Retinal Topography and Thickness Mapping

Mahnaz Shahidi, PhD
Sponsored by the VA Office of Research & Development

Noninvasive Imaging of Chorioretinal Oxygen Tension

Mahnaz Shahidi, PhD
Sponsored by the National Eye Institute

Retinal Image Quality in Retinal-Diseased Eyes

Mahnaz Shahidi, PhD
Sponsored by the National Eye Institute

Early Treatment of Retinopathy of Prematurity*

Michael Shapiro, MD
Sponsored by the National Eye Institute

Measuring Reading Rehabilitation Outcomes*

Janet Szylyk, PhD
Sponsored by the Department of Veterans Affairs Rehabilitation Research and Development Service

Comprehensive Functional Assessment Of The iZON Wavefront Guided Glasses*

Janet Szylyk, PhD
Sponsored by Ophthonix, Inc.

Age-Related Eye Disease Study 2 (AREDS2); Trial of Lutein, Zeaxanthin, and Omega-3 Long-Chain Polyunsaturated Fatty Acids in Age-Related Macular Degeneration*

Lawrence Ulanski, MD
Sponsored by the National Eye Institute

UVEITIS

Multi-Center Uveitis Steroid Treatment (MUST) Trial*

Debra Goldstein, MD
Sponsored by the National Eye Institute

Trial of Adalimumab (Humira) in the Treatment of Refractory Non-infectious Uveitis*

Debra Goldstein, MD
Sponsored by Abbott

Ulcerative Colitis Specific Antibodies in the Sera of Patients with Idiopathic Intraocular Inflammation*

Debra Goldstein, MD
Sponsored by the Illinois Society for the Prevention of Blindness

Efficacy and Safety of LX211 as Therapy in Subjects with Active Sight Threatening Non-Infectious Intermediate-Anterior-, Intermediate-Posterior-, or Pan-Uveitis*

Howard Tessler, MD
Sponsored by Lux Biosciences, Inc.

Study of an Experimental Drug Delivery System in the Treatment of Non-infectious Ocular Inflammation of the Posterior Segment in Subjects with Intermediate Uveitis*

Howard Tessler, MD
Sponsored by Allergan, Inc.

Study of an Experimental Drug Delivery System in the Treatment of Non-infectious Ocular Inflammation of the Anterior Segment in Subjects with Anterior Uveitis*

Howard Tessler, MD
Sponsored by Allergan, Inc.

PROGRAM GRANT

Core Grant for Vision Research

Dimitri Azar, MD
Supported by the National Eye Institute

RESEARCH TO PREVENT BLINDNESS

Career Development Award

Ali Djalilian, MD
Haohua Qian, PhD
Deepak Shukla, PhD

Senior Scientific Investigator Award

David Pepperberg, PhD
Kenneth Alexander, PhD
Harris Ripps, PhD, DSc

Unrestricted Departmental Grant

Dimitri Azar, MD

*Clinical trial



1. Michael Blair, MD

Assistant Professor, Retina Service

Soon after receiving his appointment as an assistant professor in July 2006, Dr. Blair began developing his research interests. Currently he is enrolling patients in a Diabetic Retinopathy Clinical Research Network study funded by the National Institutes of Health. This study will examine the effects two drug applications used in combination with laser to treat diabetic macular edema. Diabetic retinopathy is the most common cause of visual loss in working age adults, and macular edema is major source of visual loss from diabetes. Standard treatment with laser is very good at halting further vision loss, but the current study examines whether vision can be improved with additional treatment modalities. Dr. Blair is also studying the ocular penetration of antibiotics (antibacterials, antifungals, and antivirals) after oral administration. This could impact treatment of severe vision threatening infections of the retina and entire eye (endophthalmitis). Another line of inquiry for Dr. Blair is the impact of a new transconjunctival vitrectomy system on visual outcomes. This new system could reduce operating times and improve discomfort for patients after surgery. Furthermore, Dr. Blair has published in collaboration with Dr. Shahidi, a new automated computer algorithm designed to identify and measure the thickness of six intraretinal layers. In the future, this imaging system could be used to measure a patient's intraretinal response to treatments and allow for more precise management of retinal diseases.

2. Jennifer Lim, MD

Professor and Director, Retina Service

When Dr. Lim joined the department in July 2007, she brought with her a well-developed research program and a passion for finding answers for patients with a variety of vitreoretinal disorders such as age-related macular degeneration, choroidal neovascularization, diabetic retinopathy, macular edema and retinal vein occlusion. Dr. Lim has recently begun an exciting new Phase 1 study sponsored by ICON Bioscience, Inc. This multi-site trial has enrolled patients with cystoid macular edema associated with retinal vein occlusion and post operative cataract surgery and will test the efficacy and safety of a new drug product based on the use of Verisome™ technology, developed by ICON Bioscience. The treatment identified as IBI-20089, is designed to last up to one year with a single intravitreal injection administered without the need for additional devices or surgical procedures. Once injected the drug turns from liquid to gel inside the vitreous. If the clinical trial results are encouraging, this product will uniquely provide physicians the flexibility to choose the dosage and duration of effect for each patient while reducing the number of injections a patient will need.

3. Timothy McMahon, OD

Professor and Director, Contact Lens Service

After spending eight years as one of clinical site investigators participating in the Collaborative Longitudinal Evaluation of Keratoconus (CLEK) Study funded by the National Eye Institute (NEI), Dr. McMahon saw a further use for the data collected during this observational study. The purpose of the CLEK study was to characterize the prognosis in keratoconus and its impact on quality of life. Keratoconus is an eye condition which affects the shape and health of the cornea. With the support of a research project grant from NEI, Dr. McMahon is now evaluating the predictive value of corneal topography indices which characterize the corneal surface for a number of clinical outcomes in patients with keratoconus. With the results from his analysis, Dr. McMahon hopes to provide clinicians with information that could alter treatment decisions and possibly predict when a patient will need a corneal transplant.

4. Mahnaz Shahidi, PhD

Professor of Physics in Ophthalmology and Director, Applied Physics Laboratory

Dr. Shahidi recently has received two NEI research awards within one year. Her work aims to improve the tools used by clinicians to diagnose and treat major sight threatening diseases. Dr. Shahidi's current recent projects will provide needed information on the applicability of novel technologies for high-resolution retinal imaging and visual performance evaluation in patients with retinal diseases. At the present time, the available imaging methods produce limited resolution which are used to assess damage to retinal cell layers. Dr. Shahidi is developing a specialized optical imaging system that will provide reliable, quantitative parameters for evaluating and monitoring abnormalities in retinal structure and vasculature due to retinal diseases. Dr. Shahidi believes that her research findings have a high potential to benefit the clinical management of patients by expanding the knowledge of retinal disease pathogenesis and advancing early diagnosis and treatment of retinal diseases.

5. Howard Tessler, MD

Professor, Uveitis Service

Treatment options for uveitis, the term used to categorize a number of inflammatory eye conditions, may be increasing as new drugs and new drug delivery systems are given clinical trials. Dr. Tessler is participating in three multi-center drug trials sponsored by Lux Biosciences Inc which may break new ground. The causes of ocular inflammation are various and even mysterious, but the traditional treatment is quite narrow. In one form or another, doctors reduce inflammation in the eye with corticosteroids, a group of drugs which may produce side effects which at times may be severe. If left untreated, uveitis can produce pain, loss of visual clarity, and permanent damage to the eye. Dr. Tessler's clinical studies are testing a new drug which may allow doctors to reduce the dosage of corticosteroids in the treatment of non-infectious uveitis. He is also gearing up for two new studies sponsored by Allergan Inc. to test a new drug delivery system. In these studies a steroid-like drug will be administered with drops into the back of the eye where the drug will slowly dissolve over time. All of Dr. Tessler's studies are aimed at providing patients suffering from chronic or acute ocular inflammation, better and safer alternatives to traditional treatment.

6. Thasarat Vajaranant, MD

Assistant Professor, Glaucoma Service

The American Glaucoma Society (AGS) is supporting the research efforts of Dr. Vajaranant with two awards: the Young Physician Scientist Grant and the Mentoring for Advancement of Physician-Scientists (MAPS) Enabling Award. Dr. Vajaranant, who joined the faculty and the Glaucoma service in August 2007, has been able to establish her own glaucoma research program with the aid of this funding. As a clinician, Dr. Vajaranant questions the usefulness of visual field testing in patients with advanced glaucoma. The results are variable and therefore, not dependable. She believes that objective tests are needed to detect structural abnormalities existing in the retinal nerve fiber layer and macula in patients in the later stages of the disease. By using ultra high speed and high resolution imaging in addition to electrophysiological testing, Dr. Vajaranant proposes to determine which structural changes are associated with loss of visual function in advanced glaucoma and develop combined structural and functional mapping for monitoring its progression. Dr. Vajaranant has stated that monitoring the progression of glaucoma in all its stages "is essential to ensure adequate treatment and to prevent permanent blindness."

7. Beatrice Yue, PhD

Thanis A. Field Professor of Ophthalmology and Director, Ocular Cell Biology Laboratory

As a member of the faculty for more than 25 years, Beatrice Yue PhD has received consistent support from the National Eye Institute for her research, which is focused on the cellular biology of keratoconus corneas and the inner workings of the trabecular meshwork which plays a critical role in certain glaucomas. She is currently conducting a new research project supported by the National Glaucoma Research Program of the American Health Assistance Foundation. Blindness occurs in glaucoma with the loss of retinal ganglion cells and their axons. In this project Dr. Yue is exploring a new take on optineurin, a gene which has primarily been associated with low tension and normal tension in glaucoma but its specific effects on an inter and intra-cellular level have remained undefined. By focusing on the precise role optineurin plays in fundamental functions of neuronal cells, Dr. Yue hopes to find clues as to how aberrant levels of optineurin and/or its mutations may lead to glaucomatous conditions. She is particularly interested in the relationship between optineurin and cell silencing, cell death and/or survival.