Our Purpose

To improve lives through curing, preventing, and treating eye disease
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For patient appointments, please call 734.763.8122.

Clinic phone numbers are online under “Patient Care” at www.kellogg.umich.edu

Front cover: David Antonetti, Ph.D.; Elizabeth Du, M.D.; an image of the Kellogg Eye Center; Denise John, M.D.; Tyson Kim, M.D., Ph.D.; an image of a 3D embryonic stem cell culture from the lab of Robin Ali, Ph.D.; and Courtney Dewey, O.D.

*This report covers the time period of July 1, 2014 through September 30, 2015.
Dear Friends,

This past fall, the University of Michigan Department of Ophthalmology and Visual Sciences, founded in 1872, celebrated the 30th anniversary of the W.K. Kellogg Eye Center. The construction of the Kellogg Tower in 1985 enabled our department to unify offices, laboratories and clinical spaces that were scattered across seven medical campus buildings. The opening of the Brehm Tower in 2010 provided room for expansion and the opportunity to work more closely with leading diabetes researchers. These tremendous facilities have enabled our faculty, staff and trainees to work more effectively at shaping the future of vision science and eye care. Within these buildings, it is the teamwork and ingenuity of our people that have been the hallmarks of research, education and patient care at Kellogg.

In this year’s Annual Report, you will have the opportunity to learn about some of the new ideas in research that Kellogg scientists are pursuing in collaboration with colleagues from around the University. For example, among our new initiatives is a joint project with investigators at the U-M Biointerfaces Institute. This collaboration has taken shape with three projects aimed at exploring novel methods of diagnosing types of ocular tumors and new treatments for diabetic retinopathy and macular degeneration.

The new Kellogg Clinical Trials Center (KCRC), which opened in June 2015, provides dedicated space at Kellogg for our investigators to conduct clinical research in all areas of ophthalmology. The KCRC team works with our faculty and our volunteer patients to move clinical trials forward with the goal of evaluating the effectiveness of new treatments. Some of our current trials involve assessing innovative therapies for age-related macular degeneration, investigating novel approaches to treating cancer around the eye and examining a new therapy for the treatment of dry eye disease.
At Kellogg, we realize that sharing information and experience means a faster path to improvement. As you may recall from last year’s Annual Report, Kellogg retinal surgeons performed the first four Argus II® Retinal Prosthesis System (Argus II) implantations in the United States since FDA approval. To improve the Argus II patient experience, Kellogg hosted the first meeting of Argus II Investigators. Over 50 retinal surgeons, researchers and rehabilitation professionals from around the world who have worked with the implant, met to discuss and share approaches, surgical and rehabilitation techniques and outcomes. Five additional implantations have since been performed at Kellogg. Worldwide, the Argus II has now been implanted in over 130 patients in 29 centers in the United States, Europe and the Middle East.

Expanding a commitment to global initiatives, two of our faculty members served as advisors in establishing a state-of-the-art residency training program for ophthalmologists at the St. Paul Hospital Millennium Medical College in Addis Ababa, Ethiopia. The program, one of only four in the country, began training its first six residents last year. We are excited to work with our Ethiopian colleagues to develop the program and an eye care center that will become a regional center of excellence. We also welcomed Thomas Lietsman, M.D., Director of the F. J. Proctor Foundation, as our Center for International Ophthalmology’s third Scholar-in-Residency, benefiting from his expertise in trachoma and other ocular infectious diseases throughout the world.

Two of our faculty members have developed innovative ways to make information and training more accessible. Jonathan Trobe, M.D., Professor, authored The Eyes Have It, an educational app for iOS and Android, cataloging 134 eye conditions, 410 images, more than 40 narrated animations and patient videos, six screening examination videos and an eye anatomy review. Assistant Professor Elizabeth Du, M.D., has developed a comprehensive four-week Coursera online class Introduction to Cataract Surgery for residents and trainees who will perform cataract surgery. The course, which is free of charge and offered globally, has run twice with 545 people in 131 different countries completing the instruction.

Among those at Kellogg honored for their achievements this year was Devon Ghodasra, M.D., vitreo-retinal surgery fellow, who was awarded the Raymond R. Margherio Award for his research on vitreous cytokines. In addition, Thomas W. Gardner, M.D., M.S., Professor, was awarded the Retina Society Award of Merit in Retina Research honoring Charles L. Schepens, which recognizes outstanding national achievement in retina research.

Mark W. Johnson, M.D., Professor and head of Kellogg’s Retina and Uveitis Service, was elected to serve as the new president of the Retina Society.

From developing new treatments and educational innovations to cultivating leaders in the field, the people of Kellogg have done and continue to do much to advance the visual sciences and the care of our patients. In 2015, Kellogg had more than 163,000 patient visits and performed more than 7,600 surgical procedures. As our patient volumes grow, we are more motivated than ever to achieve our goal of improving lives through curing, preventing, and treating eye disease.

We want to thank all who have contributed to our growth, research and successes. You helped make the achievements of the last year and the last 30 years possible. Together, we are partners in solving eye disease and are excited and eager to accomplish even more in the coming years.

“Together, we are partners in solving eye disease and are excited and eager to accomplish even more in the coming years.”

—Paul P. Lee, M.D., J.D.

Paul P. Lee, M.D., J.D.
F. Bruce Fralick Professor and Chair, Ophthalmology and Visual Sciences
Director, W.K. Kellogg Eye Center

30 Years of Service
Growing to better serve our patients and expanding our research to find new treatments to cure blinding eye diseases.

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<th>1985</th>
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<td>PATIENT VISITS</td>
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Last fall, Kellogg celebrated its 30th anniversary with an event at the University of Michigan Museum of Art. Among our many honored guests were Paul A. Sieving, M.D., Ph.D., former faculty member and founder of Kellogg’s Center for Retinal and Macular Degeneration and current Director of the National Eye Institute at the National Institutes of Health; and Linh Nguyen, chief operating officer of the W.K. Kellogg Foundation.

Paul R. Lichter, M.D., M.S., Founding Director of the W.K. Kellogg Eye Center and former Chair of the Department of Ophthalmology and Visual Sciences for 34 years, highlighted the remarkable growth and change during the last three decades.

Mr. and Mrs. John R. Breen announced a $3.5M gift from the Jerome Jacobson Foundation. “Jerome’s friends often heard how Dr. Lichter, his longtime physician, assured him that with proper management of his condition—through medication and surgeries when necessary—he would have sight on the last day of his life. And he did,” says Mr. Breen, co-trustee of the Foundation.

Earlier in the day, at Kellogg’s Fall Reunion, Anand Swaroop, Ph.D., former Kellogg faculty member and current Chief of the Neurobiology-Neurodegeneration and Repair Laboratory at the National Eye Institute, returned to give the inaugural address of the Qais A. Farjo, M.D., Memorial Lectureship.

For more information about these gifts, see pages 6 and 20.
“Our vision was for Kellogg to become one of the finest eye centers in the nation and that has been realized. We now have the facilities and, more importantly, the people to shape the future of eye care and vision science.”

—Paul R. Lichter, M.D., M.S.
Anand Swaroop, Ph.D., and Paul A. Sieving, M.D., Ph.D., join in the celebration. Anastas Farjo, M.D., Anand Swaroop, Ph.D., Muno Farjo, M.D., Rand Farjo, M.D., Deena Farjo, Rafid Farjo and Reem Farjo.

Kellogg faculty and alumni gather at Fall Reunion Day to celebrate the introduction of the first Qais A. Farjo, M.D., Memorial Lecture.

THE Q AIS A. FARJO, M.D., MEMORIAL LECTURESHP

A Fitting Tribute to One of Our Department’s Most Beloved Alumni

The Qais A. Farjo, M.D., Memorial Lectureship was created through the generosity of those who were touched by Dr. Farjo’s life and highlights his broad expertise in research, clinical care and education. The lectureship will enable the Department to host speakers who will share advances in their specialties, from translational research to collaborative care, to innovative surgical techniques.

A remarkable physician, surgeon, researcher and mentor, Dr. Farjo completed his medical degree, residency and fellowship at the University of Michigan before joining the faculty of the Department of Ophthalmology and Visual Sciences.

Dr. Farjo is known for his contributions to basic research through his characterization of the NRL gene, now known as a master transcription factor governing photoreceptor cell fate during development. He also served as medical director of the Michigan Eye-Bank. Dr. Farjo died in February 2014 after fighting a courageous battle against cancer.

The inaugural address was given by Anand Swaroop, Ph.D., former faculty member and Chief of the Neurobiology-Neurodegeneration and Repair Laboratory at the National Eye Institute, during the 21st Annual Fall Reunion Day.
Collective Experience Draws Specialists from Top Tier Institutions Around the World

In 2014, Kellogg retinal surgeons performed the first four Argus II® Retinal Prosthesis System (Argus II) implantations in the United States of an artificial retinal sensing device, or “bionic eye,” which was approved in 2013 by the U.S. Food and Drug Administration. Five additional implantations have since been performed at Kellogg. The device is intended for patients with retinitis pigmentosa, a degenerative and blinding eye disease. Worldwide, Argus II has now been implanted in over 130 patients in 29 centers in the United States, Europe and the Middle East.

In 2015, Kellogg hosted the first meeting of Argus II Investigators, providing an opportunity for over 50 retinal surgeons, researchers and rehabilitation professionals to sit together in one room to discuss surgical techniques and outcomes.

“This was a significant event, the first of its kind, marking a critical juncture for all of us to share experiences, highlight challenges and reflect on what we’ve learned,” says K. Thiran Jayasundera, M.D., Assistant Professor. “The need for open communication is central—not just between different segments of people in one institution, but across institutions—so that as a group we can refine this process that will ultimately benefit our patients.”

Initial experiences with the Argus II implant have delivered favorable results, as well as new challenges. The event focused on four areas of optimization—patient selection, device programming, visual rehabilitation and surgical technique.

“The meeting covered the entire process of an Argus II treatment, which starts with screening patients to find the right fit to ensure that each patient has realistic expectations and the correct motivations,” says Byron L. Lam, M.D., Professor and Robert Z. & Nancy J. Green Chair in Ophthalmology at the Bascom Palmer Eye Institute. “There were productive technical discussions particularly about how to make the implantation more successful and how to avoid some of the adverse events that can occur.”

Kellogg hosts the first worldwide meeting of Argus II investigators.

WORLDWIDE NETWORK OF ARGUS II® INVESTIGATORS JOIN FORCES
Robert J. Greenberg, M.D., Ph.D., Chairman of Second Sight Medical Products, the device manufacturer, noted that the meeting marks an important milestone. “This is the first time that a critical mass from around the world is together sharing their great experiences with the technology,” says Dr. Greenberg. “There is a real sense of excitement.”

Moving forward, Dr. Greenberg expects that the external system for the next generation Argus II will be available in some markets worldwide beginning in late 2016.

**Selecting the right patient**

Genetic counselor and Assistant Research Scientist Kari E. Branham, M.S., CGC, works with patients during the screening process to see if they are candidates for the Argus II implant. “A great deal of effort must be put into the patient selection process. The process from pre-op to rehabilitation is rigorous with the requirement of a series of visits,” says Ms. Branham. “Completing a comprehensive evaluation by an occupational therapist before surgery helps identify learning styles, cognitive and physical impairments, psychological concerns, and to continue conversations with patients about setting reasonable goals, managing expectations and staying motivated throughout the long rehabilitation process.”

**Fine tuning the device programming**

Electrophysiologist and Assistant Professor Naheed W. Khan, Ph.D., assesses outcomes and works with device programming at Kellogg. “If the patient is to perceive visual signals, the device must be programmed correctly and adjusted over time,” says Dr. Khan. “Device programming requires two to three sessions, which can be arduous for the patient, but this step can determine the quality of visual performance and whether the patient can use the device successfully.”

**Optimizing visual rehabilitation**

In visual rehabilitation, therapists help patients learn how to interpret the new kinds of visual signals they perceive and then incorporate them into daily activities. “To use the device to its fullest, patients must complete a two-pronged rehabilitation program: in-clinic rehabilitation with an occupational or low vision therapist and community rehabilitation with an orientation and mobility specialist,” says occupational therapist Ashley Howson, M.S., OTR/L. “As part of the rehabilitation process, therapists provide training and guided practice to help the patient learn how to use the device to increase independence and quality of life with meaningful activities such as identifying where a loved one is standing, sorting laundry or detecting lines in a crosswalk.”

**Evaluating surgical outcomes**

Along with selecting the right patient, fine tuning the device and optimizing visual rehabilitation, Dr. Jayasundera reflected on some of the surgical variables that could improve patient outcomes. “Based on a very small sample size, it appears that younger patients may have better visual function after surgery, possibly due to a healthier residual inner retina,” he explains. “We also concluded that we may not need to exclude patients with staphyloma, an abnormal protrusion of the uveal tissue via a weakness in the eyeball, but rather should adapt our surgical technique. Moreover, there is a need to develop surgical strategies to avoid hypotony, an intraocular pressure of 5 mm Hg or less, and conjunctival erosion.”

Proposed modifications to the device include new glasses and a vector processing unit with increased comfort, longer battery life, improved ease of use, custom camera, improved telemetry, faster processing and new filters.

**THE ARGUS USERS’ SUPPORT GROUP**

In 2015, the Kellogg Argus II team hosted the First Argus II® Retinal Prosthesis System Users’ Support Group. The meeting provided a platform for our Argus II users to share their experiences with the device with one another, the Kellogg Argus II team, and engineers at Second Sight, the device manufacturer.

Donna Chapman, Linda Schulte and Mary Hawkins at the first Argus II® Retinal Prosthesis System Users’ Support Group held at Kellogg.
Rajesh C. Rao, M.D., Assistant Professor, and postdoctoral fellow and incoming resident Jason Matthew-Lewis Miller, M.D., Ph.D., were among 22 scientists selected to update members of the U.S. Congress on ophthalmic science last fall by the National Alliance for Eye and Vision Research (NAEVR) Emerging Vision Scientists Program, a coalition of 55 professional, consumer and industry organizations involved in eye care. Drs. Rao and Miller presented summaries of their research to Congressional staff, attended a House hearing on vision research and met with U.S. representatives and senators to lobby for expanded funding for the National Eye Institute.

“I am honored to represent young vision scientists at Kellogg and across the country in our collective goal to highlight the importance of vision research in finding new treatments and cures for blindness to our nation’s lawmakers,” says Dr. Rao. “From gene therapy to stem cells to precision medicine, we have never been at a more promising time in translating cutting-edge technologies to patient care for diseases such as age-related macular degeneration, diabetic retinopathy, inherited retinal degenerations and eye cancers.”

Dr. Rao explains that there remains a great deal of work to do. “As the largest supporters of vision research, our lawmakers, through the National Eye Institute, Departments of Defense and Veterans Affairs, and other agencies, play the most important role in finding new cures for blindness,” says Dr. Rao. “We want to assist them in budgeting for the future, since vision loss from blinding eye diseases will worsen as our population ages. I hope that our advocacy will play a part in ensuring our nation’s future needs for our most valued sense—vision—which allows us to read, walk, drive, work, recognize faces and care for others.”
In an effort to offer more clinical trials to patients, the Eye Center recently opened its Kellogg Clinical Research Center (KCRC)—5,100-square-feet of dedicated space for investigators who conduct clinical research with resources to support patient-oriented research studies in the specialties of retina, cornea, glaucoma and pediatrics. Ocular oncology, oculoplastics and telemedicine projects are also included. Having dedicated space for clinical trials frees the ophthalmology clinics from the complicated process of registering and examining clinical trial patients.

Grant M. Comer, M.D., M.S., Assistant Professor, leads the eight-person KCRC team, who work with Kellogg faculty and volunteer patients to move clinical trials forward with the goal of finding new treatments of high impact.

“We have seen tremendous progress in our ability to operate a wider range of clinical trials over the past year,” says Dr. Comer. “From the addition of personnel with expertise in clinical trial operations to the opening of the research space in June, the KCRC, faculty scientists and our research volunteers are already exploring the next generation of treatment options available to our patients.”

Our current trials include a study to improve the treatment of wet age-related macular degeneration, the investigation of a new drug to treat cancer around the eye and the examination of a supplement to treat dry eye disease.

The following stories highlight a few of our current trials. For a full list, visit: www.kellogg.umich.edu/research/open_clinicaltrials.html

KELLOGG EXPLORES INVESTIGATIVE NEW TREATMENT FOR WET MACULAR DEGENERATION

Wet age-related macular degeneration (AMD) is caused by the growth of abnormal blood vessels beneath the macula, the part of the retina that provides detailed, central vision. These blood vessels are fragile and tend to hemorrhage or leak fluid, resulting in the formation of scar tissue that can lead to permanent vision loss. Currently, the best treatment for wet AMD is injections of vascular endothelial growth factor (VEGF) inhibitors, which have been shown to improve vision rather than simply slowing the rate of vision loss. For patients to reap the benefits of these injections, however, they usually have to be done repeatedly.

Grant M. Comer, M.D., M.S., Assistant Professor, is...
exploring a potential new treatment—encapsulated cell therapy or ECT—that he hopes will replace these injections. The NT-503 ECT implant, about the size of a grain of rice, is surgically placed into the eye under local anesthesia and contains tiny capsules of cells that continuously release VEGF inhibitors to the back of the eye to treat wet AMD.

Through this randomized study, Dr. Comer and his team will compare treatment with the NT-503 ECT implant to the routine injections patients receive for wet AMD. “Clinicians have been searching for ways to reduce the frequency of injections into the back of the eye that are often required for wet AMD,” says Dr. Comer. “This clinical trial will allow us to explore the safety and effectiveness of this new way of delivering these medications.”

The study is currently enrolling patients with the goal of six at Kellogg and 90 worldwide. Participation in this study is for two years. Eligible patients must have active, wet AMD and have had a good response to previous injections of a VEGF inhibitor drug (Avastin, Lucentis or Eylea). Kellogg is one of approximately 36 international sites participating in this study, which is sponsored by Neurotech Pharmaceuticals, Inc. For more information, contact clinical research coordinator Pamela Campbell, COT, CCRP, at pamtitus@med.umich.edu.

KELLOGG INVESTIGATES NEW DRUG TO TREAT CANCER AROUND THE EYE

Vismodegib is a new drug recently approved by the U.S. Food and Drug Administration for treatment of advanced or aggressive basal cell carcinoma (BCCA), the most common type of eye cancer, affecting approximately 750,000 people in the United States every year.

Oculoplastic surgeon Alon Kahana, M.D., Ph.D., Associate Professor, is leading a research team that aims to determine whether vismodegib can be used to preserve vital tissues around the eye as well as visual function in patients with BCCA. The team also will perform basic and translational research on the response of cancer tissue to the drug. The clinical trial, termed VISORB (for VISmodegib for ORbital and periocular Basal cell carcinoma), was awarded a competitive research grant from Genentech, Inc., the manufacturer of vismodegib, which also will provide the drug for the trial. Additional funding was obtained from the U-M Head and Neck Oncology Program, Kellogg and the U-M Comprehensive Cancer Center. The goal of the trial is to test whether this new drug will lead to improved ophthalmic outcomes in patients suffering from BCCA around the eye and to identify markers for tumor response.

“Advanced basal cell carcinoma is commonly found around the eye and can be disfiguring and blinding,” says Dr. Kahana. “A clinical trial is needed to study how this innovative new drug can be used to treat this cancer while preserving visual function. Given how common basal cell carcinoma is, and its potential impact on vision, I’m pleased that such an important trial will be based at Kellogg and at U-M.”

Enrollment for this trial is open to patients with BCCA and Kellogg plans to enter 50 patients over four years. Participation in the study is for one year after initiation of the drug treatment. For more information, contact clinical research coordinator Sonal Trivedi, M.S., CCRP, at strivedi@med.umich.edu.

KELLOGG EXPLORES SUPPLEMENTS AS TREATMENT FOR DRY EYE

Cornea specialist Roni M. Shtein, M.D., M.S., Associate Professor, is leading the Kellogg site of the Dry Eye Assessment and Management, or DREAM, trial in hopes of finding a new treatment option for a condition that can cause severe ocular pain, corneal scars and ulcers, and loss of vision.

The DREAM study evaluates the safety and effectiveness of omega-3 fatty acid supplements to treat the symptoms of moderate to severe dry eye disease. These over-the-counter nutritional supplements are currently used to treat high levels of fat in the blood.

“Dry eye disease is extremely common and leads many patients to seek care from their eye care professionals,” says Dr. Shtein. “The DREAM study is the first major trial on dry eye disease that is not funded by a pharmaceutical company. We are excited to be a part of it.”

Participation in the study is for one year. Eligible patients may extend their participation for an additional year. Dr. Shtein and her team hope to enroll 50 patients here at Kellogg, with a national goal of 600 patients. The trial is led by the University of Pennsylvania and funded by the National Eye Institute, a branch of the National Institutes of Health.

For more information, contact clinical research coordinator Munira Hussain, M.S., COA, CCRP, at hussain@med.umich.edu.
Kellogg scientists partnered with the U-M Biointerfaces Institute, a group of interdisciplinary biomedical researchers, at a recent two-day conference to address barriers to solving therapeutic challenges for patients with blinding eye diseases. The B-EYE Biointerfaces Institute/Ophthalmology Challenge, a joint initiative focused on how interactions in the life sciences, physical sciences and engineering can accelerate the development of new drug delivery systems, was inaugurated at this conference.

Belinda Seto, Ph.D., Deputy Director of the National Eye Institute, delivered the keynote address *Vision Breakthroughs Enabled by Multidisciplinary Approaches*. The event also included presentations by specialists in ophthalmology and biomedical sciences, followed by breakout sessions where attendees brainstormed ideas and concepts, identified challenges, and designed next steps for collaborative research and seed fund proposals in the categories of biomaterials and drug delivery, microfluidics and sensors, cell and tissue engineering, and nanotechnology.

Three Kellogg faculty members were awarded B-EYE grants

Hakan Demirci, M.D., Associate Professor and Director of Ocular Oncology, was the recipient of a challenge grant for his proposal *In-vivo Biopsy of Intraocular Tumors by Physiochemical Photoacoustics*. Dr. Demirci's work seeks to aid in the differential diagnosis of intraocular tumors such as choroidal melanomas, hemangiomas and metastases. He is collaborating with U-M Department of Radiology research investigator Guan Xu, Ph.D., to develop an ocular imaging system, called photoacoustic imaging, a non-invasive, low cost imaging technology for structural and functional imaging.

David A. Antonetti, Ph.D., Professor, was the co-recipient of a challenge grant for his project *Sustained Drug Delivery for Restoration of Blood Retinal Barrier in Macular Edema*. Dr. Antonetti will collaborate with Steven P. Schwendeman, Ph.D., the Ara G. Paul Professor and Chair of the U-M Department of Pharmaceutical Sciences, to develop drug delivery devices for novel drugs that target vessel permeability in the retina, a problem in many leading vision-threatening diseases, including diabetic retinopathy and age-related macular degeneration.

“Collaborations with groups such as the U-M Biointerfaces Institute can provide important avenues that allow us to turn our discoveries into novel treatments for eye diseases.”
—David A. Antonetti, Ph.D.

Rajesh C. Rao, M.D., Assistant Professor, received a challenge grant for his proposal *Direct Reprogramming of Fibroblasts into Photoreceptors by Defined Factors: A Novel Therapeutic Approach for Dry Age-Related Macular Degeneration, A Common and Untreatable Cause of Blindness*. Dr. Rao will work with Kellogg postdoctoral fellow Qiang Li, M.D., Ph.D.; U-M Department of Pathology research investigator Luis Villa Diaz, Ph.D.; and Paul H. Krebsbach, D.D.S., Ph.D., the Roy H. Roberts Professor of Dentistry, Professor of Biomedical Engineering, and Chair of the Department of Biologic and Materials Sciences and Division of Prosthodontics at the U-M School of Dentistry. Dr. Rao will work with Dr. Krebsbach to reprogram skin cells to retinal cells without going through an intermediate embryonic stem cell stage.
David A. Antonetti, Ph.D., Professor, has received the renewal of his NIH R01 grant *Mechanisms of Retinal Vascular Permeability in Diabetes*. Dr. Antonetti studies the cellular mechanisms by which endothelial cells, the cells that make up blood vessels, proliferate and are altered during diabetic retinopathy and macular edema. Recent clinical trials have demonstrated that targeting vascular endothelial growth factor (VEGF) can effectively prevent progression of vision loss and, for some patients, restore visual acuity. However, not all patients respond to anti-VEGF therapies, which require repeated intraocular injections. Therefore, understanding how VEGF prevents vessel alterations is critical.

Dr. Antonetti also studies inflammatory factors that are elevated in patients with diabetic retinopathy. Understanding the mechanisms underlying the effects of growth and inflammatory factors, as well as proteins such as occludin that are involved in vessel permeability, is expected to provide new insight into the nature of blood vessel growth and maturation. “My ultimate goal is to identify new targets for therapeutic intervention that are effective against growth factors and inflammatory cytokines,” says Dr. Antonetti.

Bret A. Hughes, Ph.D., Professor, has received the renewal of his NIH R01 grant *Ion Conductances in the Retinal Pigment Epithelium*. Dr. Hughes’ overall goal is to understand how ion channels in the cell membranes of the retinal pigment epithelium (RPE) operate to maintain the salt and water balance of the photoreceptor environment. Mutations in several genes that encode ion channels expressed in the RPE have been found to cause retinal degeneration, underscoring the crucial role that these membrane proteins play in maintaining retinal health and integrity.

Dr. Hughes hopes that further research on ion channels in the RPE will identify additional ion channel genes that are essential to keeping the photoreceptors healthy. “This research is relevant as it will fill large gaps in our knowledge of how the healthy RPE works to sustain the photoreceptors and may also shed new light on what causes retinal degeneration,” he says.

Thomas W. Gardner, M.D., M.S., Professor, and Steven F. Abcouwer, Ph.D., Associate Professor, have received the renewal of their NIH R01 grant *Regulation of Retinal Cell Death in Diabetes*. The ultimate goal of their research is to develop treatments that will prevent vision loss in persons with diabetes. This project focuses on how diabetes impacts the retinal neurons that provide vision. Recently developed anti-VEGF therapies can limit damage in many patients with advanced diabetic retinopathy. These treatments are employed late in the disease process, when blood vessels are affected, but do not address the earlier damage to the neurosensory retina caused by diabetes.

Drs. Gardner and Abcouwer are continuing their studies, which identify novel pathways that cause dysfunction and death of these neurons, in the hope that therapies intervening at earlier stages of diabetes will prevent severe damage. The specific goals of this study are to define the role of proteins called “mechanistic target of rapamycin complexes” (mTORC) in retinal neuron function and survival, and to define the ways in which diabetes affects these protein complexes to cause diabetic retinopathy. “We hope that understanding the mechanisms underlying changes in these protein complexes will enable development of therapies to prolong the survival of retinal neurons and prevent the onset of sight-threatening diabetic retinopathy,” says Dr. Gardner.
Automated Scalable Heat Shock Modification for Standard Aquatic Housing Systems

Inventors: Alfonso Saera-Vila, Ph.D., Phillip E. Kish, Ph.D., and Alon Kahana, M.D., Ph.D.

Aquatic organisms are very useful for the experimental study of human disorders. Changing the growth conditions of aquatic model organisms, including water temperature and pharmacologic exposure, is a very common research tool.

In order to improve the technology for changing temperature (i.e. “heat shock”) or drug delivery to aquatic colonies for experimental and drug-screening purposes, Kellogg’s team of inventors developed a parallel manifold system with continuous water flow that reduces labor and improves reproducibility of treatment conditions.

Mapping of Internal Features on En Face Imagery

Inventors: Lawrence E. Kagemann, Jr., Ph.D., (University of Pittsburgh), Joel S. Schuman, M.D., FACS (University of Pittsburgh), and Sayoko E. Moroi, M.D., Ph.D.

Minimally invasive glaucoma surgeries (MIGS) are a new classification of glaucoma procedures designed to lower the pressure inside the eye. A major assumption of surgical success is that abnormal resistance resides in the trabecular network and, once this resistance is bypassed, the outflow through Schlemm’s canal and beyond is unimpeded. Outcomes, however, are not predictable and these procedures are performed with no prior knowledge of the morphology of the patient’s aqueous humor outflow tract.

In order to better predict the outcome of MIGS procedures, the team of inventors developed a system that will display optical coherence tomography images that a surgeon can use to select anatomical features, biomarkers and other features of interest. The system can then translate the location of these features to an en face image and generate a map used for surgical planning.

Magnetoelastic Actuator for Glaucoma Drainage Devices

Inventors: Yogesh B. Gianchandani, Ph.D. (U-M College of Engineering), Venkatram Pepakayala, M.S.E. (U-M College of Engineering), and Joshua D. Stein, M.D., M.S.

Glaucoma drainage devices (GDDs) divert aqueous humor from the anterior chamber to an external reservoir, where a fibrous capsule forms about 4-6 weeks after surgery and regulates flow. GDDs have been successful in controlling intraocular pressure and preventing the worsening of glaucoma.

One issue with these devices has been the resistance to aqueous flow through the GDDs across the fibrous capsule around the end plate. To ease this resistance, the team invented an enhancement to the GDDs using actuators with customized geometries and 3D curvatures. These actuators, which are remotely excited to resonance with a magnetic field generated by external coils, produce mechanical vibrations that can improve aqueous flow, prevent adhesion of scar tissue to the implant and facilitate removal of cells responsible for the development of dense fibrous tissues around the implant. By limiting scar tissue around the GDDs, the device can more effectively control the intraocular pressure.
Elizabeth Du, M.D., has developed a Coursera online class for ophthalmologists.

**Introduction to Cataract Surgery is Offered Globally, Free of Charge**

Elizabeth Du, M.D., Assistant Professor, saw a need to make learning the fundamentals of performing successful cataract surgery more accessible to residents and trainees in the United States and worldwide.

To meet this need, Dr. Du developed a comprehensive four-week Coursera online class *Introduction to Cataract Surgery*. The course has run twice—in October 2014 and February 2015—with 545 people in 131 different countries completing the instruction and 2,610 people visiting the course site and watching at least a lecture.

“We wanted to create a course to teach the basics of cataract surgery on the Coursera platform for a number of reasons,” says Dr. Du. “First, we thought it would benefit our residents and other trainees as they prepare to become cataract surgeons to have a comprehensive course delivered in a high-yield, high-impact fashion. Second, we wanted to see what the interest in this type of course was globally and if it would be an effective tool to help those in developing countries to have a more accessible training resource.”

“The text contains hyperlinks to supplemental images, narrated animations and videos that illustrate the clinical and teaching points. A picture-based, multiple-choice quiz allows users to assess their knowledge,” says Dr. Trobe. A well-known educator, Dr. Trobe is the author of *The Physician’s Guide to Eye Care*, now in its 4th edition.
RESIDENT PURSUES INNOVATION IN IMAGING

With a background in physics and bioengineering, it is no wonder that Tyson N. Kim, M.D., Ph.D., joined Kellogg’s residency program with a promising project already in hand. “Kellogg was my top choice for residency because its support for resident research and innovation is bar none,” says Dr. Kim. Upon starting his residency, Dr. Kim immediately benefitted from that support by enrolling in the House Staff Innovation & Entrepreneurship Program. Designed for residents and fellows at the University of Michigan and guided by experienced instructors from across campus and in private industry, the 34-week program provides participants with the tools and resources needed to creatively address patient needs through medical innovation.

Dr. Kim plans to continue work on the CellScope Retina device born of a multi-institutional team including the laboratory of Daniel A. Fletcher, Ph.D., at the University of California, Berkeley, and Todd P. Margolis, M.D., Ph.D., and Jeremy Keenan, M.D., M.P.H., at the University of California, San Francisco. The device enables a smartphone to take high-quality, wide-field images of the retina by leveraging the high-resolution imaging, portability, computational power and wireless data transfer capability of smartphones.

According to Dr. Kim, the implications of this technology are far-reaching. For example, he points out that diabetic retinopathy is one of the leading causes of preventable blindness in the world, and nearly half of diabetic patients in the United States fail to receive the recommended annual eye screening. If more people can be screened by this device, more people can be treated to prevent or delay vision loss from this disease.

To push the project forward, Dr. Kim came to Kellogg a month before beginning his residency to screen diabetic patients with the device. As he continues to gather data, he hopes to prove that this technology can be used to screen for other blinding eye diseases. Dr. Kim says that the next step is to collaborate with physicians in the primary care setting to see if medical assistants can acquire images as high quality as those captured by trained eye care professionals.

“We want to create a powerful, easy-to-use tool that primary care physicians and other health care providers can use to easily screen for several eye diseases,” says Dr. Kim. “This allows ophthalmologists to do fewer screenings while receiving far more referrals for disease treatment. Our hope is that health care costs will be lowered, time saved and, most importantly, that patients receive the vision care they need.”

To learn more about the residency program at Kellogg, visit: www.kellogg.umich.edu/education/residency.html
First-year resident Lev Prasov, M.D., Ph.D., chose Kellogg for his residency because of the broad support for research endeavors. Dr. Prasov, who earned a Ph.D. from the U-M Department of Human Genetics, will now be able to complete a research project he started during his fourth year of medical school with the help of a $100,000 grant from the BrightFocus Foundation. He will study a newly discovered angle-closure glaucoma gene.

The new gene, called MTRR, is involved in homocysteine metabolism. It was discovered by studying a large family with iris cysts, which can block the fluid outflow channels in the eye, leading to an increase in eye pressure and glaucoma. Collaborating with Ruma Banerjee, Ph.D., Professor and Associate Chair in the U-M Department of Biological Chemistry, and Rima Rozen, Ph.D., Professor of Human Genetics and Pediatrics at McGill University in Montreal, Dr. Prasov will perform biochemical and functional studies on the protein that has been changed by the mutation. The team will also study the role of the normal protein in the eye and screen for mutations in the gene in patients with the forms of glaucoma with which this biochemical pathway has been associated. Their findings will detail the role of the MTRR gene and its broader metabolic pathway in glaucoma and could lead to the development of future therapies.

“I was drawn to this project because it offered a look into a rare condition that has not been explored much in ophthalmology literature.”
—Lev Prasov, M.D., Ph.D.
EYE CARE GOES BACK TO SCHOOL

Kellogg Partners to Bring Vision Care Services to Underserved Areas

A few years ago, Kellogg optometrist Courtney A. Dewey, O.D., spoke to Ypsilanti middle-school students about eye health. That talk sparked a partnership between Kellogg and the University of Michigan Health System (UMHS) Regional Alliance for Healthy Schools (RAHS) to establish an eye clinic at Ypsilanti Community High School.

RAHS, whose mission is to provide school-based health programs and clinical services that improve the well-being of students, their families and communities, was looking for a way to provide vision services to Ypsilanti’s underserved areas. Dr. Dewey knew Kellogg could help. In February 2015, the Community Eye Clinic opened as part of a newly-renovated, school-based health center featuring a U-M medical team that provides services such as physical examinations, immunizations, laboratory testing and counseling.

Kellogg equipped the eye clinic for Dr. Dewey, who examines patients two Tuesdays per month, serving approximately 10 students per day. She initially worked through a backlog of students who needed vision care. When the public schools are in session, Dr. Dewey has a steady stream of 7th through 12th graders who come to the clinic if they are having visual symptoms or are referred by other members of the medical team.

If students need eyeglasses, Dr. Dewey notifies Kellogg’s Optical Shop staffers, who obtain the information from Mi-Chart, UMHS’ electronic medical records system, and arrange for the eyeglasses to be manufactured. One of Kellogg’s opticians then delivers the eyeglasses to the clinic in Ypsilanti.

“RAHS is a great program that has really flown under the radar,” says Dr. Dewey. “It’s a great example of how UMHS can help schools serve students and the community. Kellogg would love to eventually have a presence in all RAHS locations and to serve as a model for comprehensive school-based health centers statewide.”

KELLOGG FACULTY MEMBER RECOGNIZED FOR LEADING OPHTHALMOLOGY AT THE HOPE CLINIC

Providing Ophthalmic Care for the Uninsured in Our Community

Paula Anne Newman-Casey, M.D., M.S., Assistant Professor, is the recipient of the 2015 University of Michigan Medical School (UMMS) Dean’s Award for Local Community Service for her efforts as the director of the Hope@UMHS-KEC ophthalmology clinic program to provide ophthalmic care for the uninsured in Ann Arbor and the surrounding areas.

"It is quite an honor to receive this award and I feel that it is really a shared accomplishment with all of the faculty and staff from the Kellogg Eye Center who have generously donated their Saturday mornings to provide eye care for those in our community who do not have insurance," says Dr. Newman-Casey. "Over the last four years, we have provided ophthalmic care to over 850 patients who would have otherwise gone without. I know this program will continue into the future because my colleagues are just that generous."

Recognizing UMMS faculty that have made extraordinary contributions to the local, national or global community, this honor carries a $5,000 discretionary academic award.
The University of Michigan Medical School and the VA Ann Arbor Healthcare System (VA) have a decades-long history of collaborating to provide outstanding health care to military veterans. Kellogg is the main eye care provider at the VA, where more than 90 patients per day are seen. To better handle growing patient volume, the VA eye clinic recently underwent an expansion.

The renovated clinic increased in size from 10 to 17 exam lanes, all with updated equipment. To improve patient flow, ophthalmology services have been moved to one side of the clinic and optometry services are on the other. Kellogg has also gained access to more operating room space 6-8 times per month.

In addition, Kellogg has added more providers so that there are now 20 physicians providing VA care each week. To supplement comprehensive care, Kellogg offers a different subspecialty clinic each day. The physicians are supported by a clinic supervisor, 11 ophthalmic technicians and six residents.

“In recent years, improving patient access while maintaining our high quality has been our goal,” says Denise A. John, M.D., FRCS, Assistant Professor and Chief of Ophthalmology at the VA. “And with more providers, more exam lanes, more technicians and more surgery time, we are better able to meet the demands of our patients.”

Dr. John oversees the day-to-day operations of the eye clinic, including the residents who complete two, seven-week rotations in each year of their training program. A new feature is a resident continuity clinic, which allows two third-year residents and four second-year residents to manage—with the appropriate level of faculty supervision—their own patients.

“The veterans are extremely appreciative of the care they receive,” says Dr. John. “And we all work together as a team to put them first.”

Innovative Safety Checklist Improves Quality of Patient Care

Jennifer S. Weizer, M.D., director of the Kellogg Quality Assurance team, recently led efforts to devise an innovative safety checklist program for ophthalmologists to use in the operating room before, during and after surgery. Once it was put into place, the team monitored surgical adherence to the checklist.

Results were shared with Kellogg surgeons and staff and then educational interventions were instituted, which led to improved adherence rates.

“Collaboration and open communication among our surgical team were the keys to improving adherence rates and making the operating room an even safer place for our patients,” says Dr. Weizer.

Upon completion of the checklist project, Dr. Weizer worked with both the University of Michigan Health System and the American Board of Ophthalmology Maintenance of Certification (ABO MOC) programs to obtain approval for Kellogg surgeons to earn ABO MOC credit for their participation.

The ABO MOC program is a patient-centered, continuous professional development tool designed to assess and develop the core competencies essential for providing high-quality patient care. Kellogg’s checklist met the certification requirements of Part 4 of the program—Demonstrating Quality Improvement.

“This is the first program of its kind in the country for which the ABO has granted this type of credit,” says Dr. Weizer. “More importantly, it improves patient safety by making it easier for our faculty to achieve the goals of the ABO MOC program.”
Jerome Jacobson suffered from glaucoma for most of his life. Diagnosed as a young adult, Mr. Jacobson’s vision presented daily concerns and challenges for him. “In all the time I spent with Jerry, I never knew a day or occasion where, at least in some way, sight didn’t come up,” says John R. Breen, longtime friend and co-trustee of the Jerome Jacobson Foundation. “It was a serious fight he had with the disease.”

In the early 1970s, just after relocating to Michigan, Mr. Jacobson became a patient of Kellogg glaucoma specialist Paul R. Lichter, M.D., M.S., Professor, a relationship that endured until Mr. Jacobson passed away in 2008.

Mr. Breen describes Mr. Jacobson as a passionate philanthropist, supporting a long list of causes with an eye toward fairness and justice. One of his philanthropic causes was the Kellogg Eye Center, which became a focus of the Foundation’s priorities over the past seven years with major grants awarded for basic research in glaucoma and international ophthalmology efforts.

Last year, the Jerome Jacobson Foundation awarded Kellogg a gift in the amount of $3.5M to support the establishment of the Jerome Jacobson Professorship, a fully endowed glaucoma professorship ($2.5M), and the endowed Jerome Jacobson Vision Research Fund ($1M). The gift was announced by Mr. Breen at Kellogg’s 30th Anniversary celebration held at the University of Michigan Museum of Art.

“Jerry was a humble man. He was shy about putting his name to his philanthropy and usually gave gifts anonymously. This time, we wanted to endow a professorship in Jerome Jacobson’s name, highlighting his belief in the work that is done at the Kellogg Eye Center, as he was deeply appreciative of the treatment he received there,” says Mr. Breen, who directs the Foundation with co-trustee Louis P. Rubinfeld, a relative of Mr. Jacobson. “It is our hope that these endowments will ensure that the Eye Center continues to make strides toward eventually conquering glaucoma.”

Born in New Jersey in 1921, Mr. Jacobson built a distinguished career as an economist, holding management posts for both the Bendix Corporation and Burroughs Corporation in Michigan, and as president of Robert Nathan Associates, an economic consulting firm headquartered in Washington, D.C. He also served as Deputy Assistant Secretary for Economic Affairs in the U.S. State Department during the John F. Kennedy administration.

“As I came to know Mr. Jacobson over more than 35 years, I began to realize that he was a particularly careful and thorough person in everything he did,” says Dr. Lichter. “The fact that he chose Kellogg as the institution where he would receive his glaucoma care was an important vote of confidence, especially after he relocated to Washington, D.C., yet continued to fly back to Michigan to see me regularly for his care. We became good friends.”

Dr. Lichter explains that Mr. Jacobson’s approach to philanthropy was as careful as his selection of medical care. “Mr. Jacobson evaluated and thought about the causes that he decided to support. His decision to support Kellogg was another important endorsement,” says Dr. Lichter. “Mr. Jacobson considered Kellogg to be on the cutting edge of research and patient care and an organization that has what it takes to find better treatments, and even a cure, for glaucoma.”

It is our hope that these endowments will ensure that the Eye Center continues to make strides toward eventually conquering glaucoma.

—John R. Breen
Paula Anne Newman-Casey, M.D., M.S., Assistant Professor, has created the eyeGuide, a counseling program supported by a web-based, tailored educational tool that addresses adherence rates to glaucoma medications.

The program helps medical assistants and technicians provide high-quality, individualized patient counseling that might otherwise be possible only with an ophthalmologist. It begins by showing patients photographs of a healthy optic nerve, an optic nerve with glaucoma and their own optic nerve so that they can see the disease progression. The eyeGuide also features patient stories to address specific issues such as the expense or side effects of glaucoma medications. It concludes with the development of an action plan to help patients integrate taking glaucoma medications into their daily routine.

“At least one third of glaucoma patients do not take their medications regularly, creating a significant segment of people who go on to develop needless vision loss,” says Dr. Newman-Casey. “We’ve found that this personalized approach really resonates with our glaucoma patients.”

Brenda L. Bohnsack, M.D., Ph.D., Assistant Professor, is studying the PAX6 gene and its mutations that are associated with aniridia, an eye disorder that leads to malformation of almost all structures of the eye. Approximately 50 percent of individuals with aniridia have glaucoma and the disorder can be difficult to treat and can lead to significant vision loss and blindness.

To learn more about PAX6, Dr. Bohnsack and her team are collaborating with the U-M Human Embryonic Stem Cell Center. “We have human embryonic stem cells which were derived from a family that is affected by aniridia and carries a mutation in PAX6,” says Dr. Bohnsack. “We are characterizing these mutant stem cells to better understand the role of this gene in early human development and as a stepping-off point for creating potential stem cell treatments for those with aniridia. With this information, we can try to regenerate or reverse the dysfunctional tissue we see in this condition.”

Philip J. Gage, Ph.D., Associate Professor, studies Axenfeld-Rieger Syndrome (ARS), a congenital syndrome that is characterized by abnormalities of the front part of the eye. Children with ARS suffer from elevated intraocular pressure which can lead to early onset glaucoma in over half of this young population.

Unlike glaucomas that develop in adults, ARS is particularly resistant to conventional therapies and surgical techniques. To address these challenges, Dr. Gage and his team have generated a designer mouse model to study what Pitx2, a type of regulatory gene in the cell, does in the normal course of eye development. “We study the outcomes when the lab genetically mimics what happens in patients who suffer from this disease,” says Dr. Gage. “One amazing finding is that this model develops a similar ocular disease to what humans develop, with alterations in the anterior ocular segment, elevated intraocular pressure and optic nerve head cupping.”

Julia E. Richards, Ph.D., the Harold F. Falls Collegiate Professor of Ophthalmology and Visual Sciences, and Sayoko E. Moroi, M.D., Ph.D., Professor, have joined the International Glaucoma Genetics Consortium to study samples from more than 35,000 subjects for genetic risk factors associated with glaucoma.

“Through the use of genome-wide technologies, this group identified four new genetic risk factors for elevated intraocular pressure, the only known modifiable risk factor for glaucoma,” says Dr. Richards. “The group also provided data to confirm three other genetic risk factors for glaucoma that are associated with elevated intraocular pressure.”

Pooling the resources of many different research groups was invaluable to the study. “We were able to assemble a large enough study population to let us detect genetic risk factors that were not detectable in the smaller study populations assembled by each of the separate research groups,” says Dr. Richards. “The samples and data contributed by the group represented more than 20 years of work by many doctors and researchers.”
The Kellogg Eye Center for International Ophthalmology Facilitates International Clinical and Research Activities

The Kellogg Eye Center for International Ophthalmology held its third annual International Night on October 12, 2015. The keynote speaker was 2015 Scholar-in-Residence Thomas Lietman, M.D., the Ruth Lee and Phillips Thygeson Distinguished Professor and Director of the F. I. Proctor Foundation for Research in Ophthalmology at the University of California, San Francisco. The Foundation was established in 1947 with the purpose of eradicating trachoma worldwide. Dr. Lietman delivered a presentation \textit{Will the Last Case of Trachoma Please Stand Up?}

Dr. Lietman’s work centers around mass antibiotic distributions for eliminating trachoma and the possible collateral effects of these distributions, including selecting for resistant organisms and impact on childhood mortality. “At the Proctor Foundation, we’re looking for research questions where, if we are lucky enough, an answer could have leverage and impact on a far larger population,” says Dr. Lietman. “Whether that research is done in San Francisco—or Nepal, Ethiopia or South India—that’s what we’re looking for.”

For the past 20 years, Dr. Lietman has studied trachoma and infectious corneal ulcers, working in Egypt, Nepal, Ethiopia, India and Niger. Dr. Lietman has been the principal investigator on several NIH-NEI and Gates Foundation randomized trials. He is also part of the infectious disease modeling group at Proctor.

Dr. Lietman explained that, at the present time, there is a reasonable solution for controlling trachoma with mass antibiotic treatments and other measures. “I think we’re going to be able to control the disease to a level that the World Health Organization currently sees as satisfactory,” says Dr. Lietman.
“I’m a little worried about what is going to happen after that. I don’t think trachoma is going to rebound and come back with a vengeance if we stop control programs, but I do think we have an opportunity to completely eradicate trachoma. And if we don’t jump on that opportunity now, I don’t think the resources are going to be available in the future. Trachoma could become a forgotten disease and linger on for a few decades if we don’t stamp it out right now. On the other hand, trachoma could be the first bacterial disease that we eradicate.”

Dr. Lietman expressed great admiration for the scope of Kellogg’s international program. “The Kellogg Eye Center for International Ophthalmology has quickly become one of the leading programs in the country. It’s difficult to believe that it has only been in existence for three years,” says Dr. Lietman. “The Center has forged strong international collaborations with top institutions on different continents. While I knew that the U-M Department of Ophthalmology was one of the preeminent departments in the world, this visit let me see how wonderful the people are at this institution.”

Dr. Lietman commented on the components of global outreach in academic health centers, including patient care, education and research. “I think the Kellogg Eye Center is perhaps the leader in the educational aspect of global health,” he says. “Kellogg is really living the idea that teaching goes both ways. Residents at Kellogg, along with fellows and medical students at the University of Michigan Health System, have the opportunity to travel to incredible locations and hospitals around the globe to meet amazing physicians and surgeons who can teach them about complex eye diseases. In turn, those physicians and surgeons can come to to Kellogg to participate. Kellogg faculty members also teach abroad, so it’s really a very reciprocal relationship.”

Ariane D. Kaplan, M.D., Instructor and ophthalmology medical student clerkship director, served as moderator for this event. Presentations included: 1) An Academic Approach to Global Health Engagement by Timothy R.B. Johnson, M.D., Professor and Chair of the U-M Department of Obstetrics and Gynecology; 2) Planting Rice in Haiti: Starting out in Global Health by Vicky Koski-Karell, M2; 3) Engineering Innovations for Patient Care, Teaching, and Research in Ophthalmology by Roland Chen, Ph.D., Research Investigator at the U-M College of Engineering; and 4) Kellogg in Ethiopia by Zvi A. Kresch, M.D., Instructor.
Jonathan B. Greene, M.D., Assistant Professor, and Monte A. Del Monte, M.D., the Skillman Professor of Pediatric Ophthalmology, led the Kellogg team that has served as advisors to St. Paul Hospital Millennium Medical College in Addis Ababa, Ethiopia, in establishing a four-year residency training program for ophthalmologists.

Drs. Greene and Del Monte collaborated with St. Paul’s Ophthalmology Chair Bezawit Tadegegne, M.D., and Ophthalmology Program Director Lemlem Tamrat, M.D., in developing the new program, one of only four such programs in Ethiopia.

“The first six residents began their training last September and we are excited to see how our faculty and experience with medical education can be used to enable the growth of their program,” says Dr. Greene. “We hope to assist our Ethiopian colleagues in building a training program and eye care center that will become a regional center of excellence. Graduates will be instrumental in elevating the quality of eye care not only in Ethiopia but in the entire East Africa region.”

During the preliminary stages of development, Drs. Tadegegne and Tamrat spent an intensive week at Kellogg visiting the clinics and operating rooms, attending conferences and interviewing residents and faculty to find out how our program works. “We are impressed with the Hospital’s knowledge, energy and determination to succeed in this critical enterprise in ophthalmic education,” says Jonathan D. Trobe, M.D., Professor and co-director of the Kellogg Eye Center for International Ophthalmology.

The initiative was spearheaded by Senait Fisseha, M.D., Professor of Obstetrics and Gynecology at the University of Michigan, who has had a major role in developing training programs in obstetrics and gynecology, internal medicine, radiology and general surgery at St. Paul Hospital Millennium Medical College.

 flavored in a fruity and slightly sweet syrup, and it is often enjoyed with milk or as a dessert.
Kellogg scientists and their laboratory groups work steadily to find new treatments and cures for blinding eye diseases, such as diabetic retinopathy, age-related macular degeneration and retinitis pigmentosa. The University of Michigan A. Alfred Taubman Medical Research Institute plays a key role in funding our research initiatives.

**Thomas W. Gardner, M.D., M.S.,** Professor, was named a Taubman Institute Scholar by the University of Michigan A. Alfred Taubman Medical Research Institute. Dr. Gardner’s research focuses on understanding why diabetes damages the retina, with the goal of helping people with the disease maintain their vision. With this honor, he will receive a three-year renewable research grant of $50,000 annually, followed by $5,000 per year indefinitely.

“The Taubman Institute fosters high-risk new ideas and this funding provides the opportunity to determine if retinal function can be restored in people who have diabetic retinopathy,” says Dr. Gardner. “It would be very difficult to conduct this early-stage work without the support of the Taubman Institute. Mr. Taubman has left an enduring legacy for which we are most grateful.”

**Rajesh C. Rao, M.D.,** Assistant Professor, was appointed the Leslie H. and Abigail S. Wexner Emerging Scholar by the University of Michigan A. Alfred Taubman Medical Research Institute. Dr. Rao’s research focuses on using stem cell biology and epigenetics as languages to decipher the pathogenesis of retinal disease and future treatments. With this award, he will receive support for his research for a period of five years at $50,000 per year for the first three years and $25,000 per year for the last two years.

“I am grateful for the transformative gift that Mr. and Mrs. Wexner and the A. Alfred Taubman Medical Research Institute have provided to further our work in finding new ways to diagnose and treat blinding eye diseases,” says Dr. Rao. “Their support will enable us to use epigenetics and stem cell biology to better understand the basic biological mechanisms that control stem cell behavior so that cells that are lost in blinding eye diseases can be regenerated. Their gift will accelerate our collaborative, precision medicine efforts with fellow Taubman Scholars to link patients with lethal diseases like eye cancer to targeted treatments based on a tumor’s unique genetic and epigenetic profile.”

The Institute’s Emerging Scholars Program was created to support and encourage early-career physician-scientists whose laboratory work aims to translate basic research into new treatments for disease. The program connects U-M Medical School faculty members at the assistant professor level with philanthropists who pledge to support the physicians’ research.
For the first time in its history, the Retina Society and its 650 distinguished members are being led by a Kellogg physician. At the 48th annual meeting of the Society in Paris last year, Mark W. Johnson, M.D., Professor, began his two-year term as president.

“It is a tremendous privilege for me to have this opportunity to serve my wonderful colleagues in the Retina Society who have been huge sources of inspiration throughout my career,” says Dr. Johnson. “I believe this appointment is, in part, an indication of the esteem with which ophthalmologists around the country regard the programs and faculty of the Kellogg Eye Center and the University of Michigan.”

Prior to taking over as president, Dr. Johnson served on the Society’s executive committee for six years. He was elected secretary in 2009 and then served as treasurer and vice president. Throughout his 25-year career, Dr. Johnson, who is a fellow of the American Academy of Ophthalmology (AAO), has amassed many accolades, including the AAO Honor Award (1995) and the AAO Senior Achievement Award (2005). He was elected to active membership in the American Ophthalmological Society in 2005 and is recognized in Best Doctors in America and Guide to America’s Top Physicians. Dr. Johnson has served as the Associate Examiner for the American Board of Ophthalmology since 1995 and serves on the editorial boards of the American Journal of Ophthalmology, Retina and Retinal Physician.

Dr. Johnson heads Kellogg’s Retina and Uveitis Service. His clinical research interests include pharmacotherapies for macular diseases and pathogenesis and treatment of vitreomacular interface disorders. Dr. Johnson served as principal investigator and Data and Safety Monitoring Committee member for numerous national multicenter clinical trials in age-related macular degeneration, retinal vascular disease and vitreoretinal disorders. He lectures widely on topics in macular and vitreoretinal disease and has published over 175 articles and book chapters. Dr. Johnson completed medical school at the University of Utah in 1984 and residency at Kellogg in 1988, serving as chief resident in his final year. He completed medical retina and vitreo-retinal surgery fellowships at the Bascom Palmer Eye Institute in 1990 and then joined the Kellogg faculty as an assistant professor.

KELLOGG RETINAL SPECIALIST AWARDED THE RETINA SOCIETY AWARD OF MERIT IN RETINA RESEARCH

Thomas W. Gardner, M.D., M.S., Professor, is the recipient of the Retina Society Award of Merit in Retina Research honoring Charles L. Schepens. This honor recognizes outstanding national achievement in retina research and provides a $50,000 cash prize that includes $45,000 for the recipient’s research and a $5,000 honorarium. The award was presented at the annual meeting of the Retina Society in Paris.

“The Award of Merit in Retina Research is greatly appreciated because it is given by the Retina Society, a leading international organization of retinal specialists,” says Dr. Gardner. “This award recognizes the contributions of many faculty members at the Kellogg Eye Center. The funds from the prize will support additional research.”

The mission of the Retina Society is to reduce worldwide visual disability and blindness by promoting the education and professional interaction of vitreoretinal specialists, providing optimal care for patients with vitreoretinal diseases, and encouraging, through clinical and basic research, the discovery and development of new means to further patient care.
Our residents and fellows are the future leaders in ophthalmology and visual sciences. After training, most residents go on to fellowships at other major institutions and our fellows pursue their subspecialties in private practice or at academic medical centers. See where our 2015 graduating residents and fellows are now:

**2015 GRADUATING RESIDENTS**

Courtney Y. Kauh, M.D., M.S., fellow in oculoplastics, University of Wisconsin, Madison, Wisconsin

Mehnaz Khan, M.D., M.S., fellow in vitreo-retinal surgery, Cleveland Clinic, Cleveland, Ohio

Lee M. Kiang, M.D., Ph.D., Graduate Chief Resident, Kellogg Eye Center, Ann Arbor, Michigan

Matthew W. Manry, M.D., comprehensive ophthalmologist, Kellogg Eye Center, Ann Arbor, Michigan. He will enter a vitreo-retinal fellowship.

Monica A. Michelotti, M.D., fellow in vitreo-retinal surgery, Oregon Health & Science University, Portland, Oregon

Melisa Nika, M.D., fellow in glaucoma, Kellogg Eye Center, Ann Arbor, Michigan

Andrew W. Stacey, M.D., M.S., fellow in ocular oncology, Moorfields Eye Hospital, NHS Foundation Trust, London, England

**2015 GRADUATING CLINICAL FELLOWS**

Victoria M. Addis, M.D., assistant professor and glaucoma specialist, University of Pennsylvania, Philadelphia, Pennsylvania

Sejal Rajendra Amin, M.D., cornea specialist, Henry Ford Hospital, Detroit, Michigan

Lulu Bursztyn, M.D., FRCSC, assistant professor and neuro-ophthalmology specialist, Western University, London, Ontario

Catherine S. Choi, M.D., assistant professor and pediatric ophthalmology and strabismus specialist, Tufts University, Boston, Massachusetts

Steven R. Cohen, M.D., retina specialist, Retina Associates, PA, Kansas City, Missouri

Marina A. Eisenberg, M.D., pediatric ophthalmology and strabismus specialist, Cleveland Clinic, Cleveland, Ohio

Kristopher M. Kowal, M.D., neuro-ophthalmology specialist, Surrey Memorial Hospital, Surrey, British Columbia

Andrew W. Lewis, M.D., glaucoma specialist, U.S. Army, Wilford Hall Ambulatory Surgical Center, San Antonio, Texas

Steven G. Odaibo, M.S., M.D., retina specialist, Medical Associates, Dubuque, Iowa

Dolly A. Padovani-Claudio, M.D., Ph.D., assistant professor and pediatric ophthalmology and strabismus specialist, Vanderbilt University, Nashville, Tennessee

Fatemeh Rajaii, M.D., Ph.D., assistant professor and oculoplastics specialist, Johns Hopkins University, Baltimore, Maryland

Daniel Sand, M.D., cornea specialist, Kaiser Permanente Medical Group, Los Angeles, California

**2015 GRADUATING RESEARCH FELLOWS**

Mark T. Bolinger, Ph.D., Molecular and Integrative Physiology, University of Michigan, Ann Arbor

Devon Ghodasra, M.D., Kellogg vitreo-retinal surgical fellow, won the prestigious Raymond R. Margherio Award at the 48th Annual Retina Society Meeting in Paris last year for his research on vitreous cytokines.

Established to support research into macular disease and the development of new technologies for macular surgery, the fund supports an award to a vitreo-retinal fellow of an active member of the Society. Dr. Ghodasra was sponsored by Professor Thomas W. Gardner, M.D., M.S. The award covered the travel and lodging costs of attending the annual meeting, where Dr. Ghodasra presented his research findings.

Dr. Ghodasra is Kellogg’s second recipient of the Margherio Award, joining former fellow Edward F. Hall, M.D., who won the award in 2008 with the support of Professor David N. Zacks, M.D., Ph.D.

**FELLOWSHIPS AT KELLOGG**

To learn more about the fellowship opportunities at Kellogg, visit: www.kellogg.umich.edu/education/fellow.html
Two of Kellogg’s most capable young faculty members earned career development professorships to advance their research. Brenda L. Bohnsack, M.D., Ph.D., Assistant Professor, was installed as the Helmut F. Stern Career Development Professor of Ophthalmology and Visual Sciences, and Joshua D. Stein, M.D., M.S., Associate Professor, was installed as the Edward T. and Ellen K. Dryer Career Development Professor in Ophthalmology and Visual Sciences. Both professorships were established to provide junior faculty with important research support and are held for five years.

Dr. Bohnsack, a member of the Pediatric Ophthalmology and Adult Strabismus Service, as well as the Glaucoma, Cataract, and Anterior Segment Disease Service at Kellogg, specializes in the medical and surgical management of congenital eye diseases. The goal of her research is to create molecularly targeted therapies to cure these diseases.

“This professorship will allow me to continue my work in understanding the basis of congenital eye diseases in the hopes of applying this knowledge to prevent childhood blindness,” says Dr. Bohnsack.

Dr. Bohnsack earned her Ph.D. in molecular and cellular biology in 2004 and her M.D. in 2006 from the Baylor College of Medicine. She went on to complete her residency (2010) and a postdoctoral fellowship (2011) at Kellogg and a Pediatric Ophthalmology and Adult Strabismus fellowship at Duke University (2012). Dr. Bohnsack then returned to Kellogg to join the faculty.

The Stern Professorship, previously held by Alon Kahana, M.D., Ph.D., Associate Professor, was established by Mr. Stern, an Ann Arbor businessman and philanthropist. Mr. Stern grew up in Germany and settled in Ann Arbor in 1942, where he served as president of Industrial Tectonics and later as president of Arcanum Corporation. Mr. Stern generously supports numerous schools and projects at the University of Michigan and believes in bolstering the University’s excellence as a whole. He is a longtime supporter of the mission of the Kellogg Eye Center and served as chairman of the Community Advisory Board for Kellogg’s expansion campaign.

Joshua D. Stein, M.D., M.S., a member of the Glaucoma, Cataract, and Anterior Segment Disease Service, heads Kellogg’s Center for Eye Policy and Innovation, which performs cutting-edge research that translates billions of individual data points into results that can ultimately save patients’ vision and improve their lives.

“I am enormously grateful to the Dryer Charitable Foundation for supporting our ongoing efforts to push technological boundaries with the ultimate aim of improving the quality and affordability of eye care and patients’ access to it,” says Dr. Stein. “Edward and Ellen Dryer’s beautiful decades-long partnership and their respective pioneering careers will provide meaningful inspiration as my colleagues and I forge ahead with exciting collaborative research projects.”

Dr. Stein earned his M.S. in Evaluative Clinical Sciences from Dartmouth Medical School in 1997 and his M.D. from Thomas Jefferson University in 2001. He completed his residency at New York University (2005) and a Glaucoma fellowship at Duke University (2007). Dr. Stein joined the faculty at Kellogg in 2007 and then earned a second M.S. in Health and Health Care Research at U-M in 2010.

The Dryer Professorship was established by the Dryer Foundation, which was formed through the estate of the Dryers, who lived in Detroit and passed away within months of each other in 2010. Mr. Dryer, an international banking executive, was struck with blindness in the middle of his career. Mrs. Dryer was an advertising pioneer who served as the first woman media director at W.B. Doner & Company. The Dryer Professorship was previously held by Grant M. Comer, M.D., M.S., Assistant Professor.
Meet Kellogg’s New Faculty

Angela R. Elam, M.D., clinical lecturer, has joined the faculty of the Glaucoma, Cataract, and Anterior Segment Disease Service and sees patients in Kellogg’s Northville and Ypsilanti offices. Dr. Elam earned her medical degree from Duke University and completed her residency at the University of Pittsburgh. She then completed her fellowship in glaucoma at Kellogg. Dr. Elam’s research focuses on disparities in eye care, eye care utilization and health services.

Yannis M. Paulus, M.D., assistant professor, has joined the faculty of the Retina and Uveitis Service and sees patients in Kellogg’s Grand Blanc office. Dr. Paulus earned his medical degree and completed his residency at Stanford University. He then completed a medical and surgical vitreoretinal fellowship at the Wilmer Eye Institute of Johns Hopkins University. Dr. Paulus holds a joint appointment in the U-M Department of Biomedical Engineering and his research focuses on the development of novel retinal imaging systems and therapeutic techniques and technologies, including photoacoustic imaging, molecular imaging, restorative retinal laser therapy and surgical techniques.

Julie M. Rosenthal, M.D., clinical instructor, has joined the faculty of the Retina and Uveitis Service and sees patients in Kellogg’s Grand Blanc office as well as at the VA Ann Arbor Healthcare System. Dr. Rosenthal earned her medical degree from the University of Pennsylvania and completed her residency at the Wills Eye Institute of Thomas Jefferson University. She completed her fellowship in vitreoretinal surgery at the Casey Eye Institute at the Oregon Health & Science University and, before joining Kellogg, Dr. Rosenthal served as a retinal specialist at Retinal and Ophthalmic Consultants, P.C., in Northfield, New Jersey.

Manjool Shah, M.D., clinical instructor, has joined the faculty of the Glaucoma, Cataract, and Anterior Segment Disease Service and sees patients in Kellogg’s Ann Arbor and Grand Blanc offices. Dr. Shah earned his medical degree from Washington University in St. Louis and completed his residency at the Casey Eye Institute at the Oregon Health & Science University. He then completed a fellowship in glaucoma and advanced anterior segment surgery at the University of Toronto.

Upcoming CME Programs

Each year, Kellogg offers an informative series of continuing medical education programs designed to share new approaches to the diagnosis and management of eye disease across subspecialties. Below are our upcoming programs:

Saturday, March 12, 2016
Tri-City Regional Update Conference
9 a.m. – noon
The Conference Center at Apple Mountain
Freeland, Michigan

Application will be submitted for 3.0 AMA PRA Category 1 continuing medical education credits

Friday, June 10 – Saturday, June 11, 2016
88th Annual Spring Postgraduate Conference and 32nd Annual Research Day
8 a.m. – 5 p.m.
Kellogg Eye Center
Ann Arbor, Michigan

Application will be submitted for 15.0 AMA PRA Category 1 continuing medical education credits.

Friday, September 30, 2016
22nd Annual Fall Reunion Day
8 a.m. – 4:15 p.m.
Kellogg Eye Center
Ann Arbor, Michigan

Application will be submitted for 5.5 AMA PRA Category 1 continuing medical education credits.

For more information or to register for these programs, visit: www.kellogg.umich.edu/education/cmeoverview.html

For questions, contact Jennifer Burkheiser, CME Coordinator, at 734.763.2357 or kelloggCME@umich.edu.
FACULTY HONORS AND RECOGNITION  JULY 1, 2014 — SEPTEMBER 30, 2015

David A. Antonetti, Ph.D.
Editor, Tissue Barriers
Study Section, Diseases and Pathophysiology of the Visual System,
National Institutes of Health

Steven M. Archer, M.D.
Best Doctors in America
Castle Connolly Top Doctors
Senior Achievement Award, American Academy of Ophthalmology

Cagri G. Besirli, M.D., Ph.D.
Best Doctors in America
Top 40 under 40 Power List, The Ophthalmologist
Commercial Relationships Committee, Association for Research in Vision and Ophthalmology

Jill E. Bixler, M.D.
Best Doctors in America

Brenda L. Bohnsack, M.D., Ph.D.
Best Doctors in America

César A. Briceño, M.D.
Best Doctors in America

Grant M. Comer, M.D., M.S.
Best Doctors in America

Theresa M. Cooney, M.D.
Best Doctors in America
Regional Director, Michigan Society of Eye Physicians and Surgeons

Wayne T. Cornblath, M.D.
Best Doctors in America

Lindsey B. De Lott, M.D.
Best Doctors in America

Monte A. Del Monte, M.D.
America’s Top Doctors
Castle Connolly Top Doctors
Life Fellow, American Academy of Ophthalmology
Lifetime Achievement Award, American Association for Pediatric Ophthalmology and Strabismus
Chairman and Annual Meeting Organizer, American Association for Research in Strabismus
Fellowship Directors’ Committee, American Association for Pediatric Ophthalmology and Strabismus
Grant Reviewer, Scientific Review Committee, Medical Advisory Board, Knights Templar Eye Research Foundation

Monte A. Del Monte, M.D. (cont.)
Grant Reviewer, Scientific Advisory Committee, National Priorities Research Program, Qatar National Research Fund
Section Chair, Editorial Committee for Eye Wiki Online Encyclopedia, American Academy of Ophthalmology
Section Chair, Pediatric Ophthalmology and Strabismus, American Academy of Ophthalmology
Senior Consultant, International Affairs Committee, American Association for Pediatric Ophthalmology and Strabismus
Vice President and President-Elect, The Costenbader Pediatric Ophthalmology Society

Hakan Demirci, M.D.
Best Doctors in America
Senior Achievement Award, American Academy of Ophthalmology
Anwar Shah Retina Lecture, Alumni & Residents Day 2015, Department of Ophthalmology, St. Louis University

Raymond S. Douglas, M.D., Ph.D.
Best Doctors in America

Susan G. Elner, M.D.
Best Doctors in America

Victor M. Elner, M.D., Ph.D.
Best Doctors in America
Castle Connolly Top Doctors

Jerome I. Finkelstein, M.D.
Best Doctors in America

Patrice E. Fort, Ph.D., M.S.
Academic Editor, Ophthalmology Research: An International Journal
Editorial Board, Journal of Clinical and Experimental Ophthalmology
Grant Reviewer, Research Grant Review Committee, American Diabetes Association
Grant Reviewer, "Societal challenges” Grant Applications, French National Research Agency
Grant Reviewer, “Tender offers” Grant Applications, Institut Carnot Voir et Entendre, Paris, France

Bruce A. Furr, C.O., Ph.D.
Lancaster Medal, American Association of Certified Orthoptists
Board of Directors, Foundation for Orthoptic Research in America

Christopher Gappy, M.D.
Best Doctors in America
Rules and Bylaws Committee, American Association for Pediatric Ophthalmology and Strabismus
Thomas W. Gardner, M.D., M.S.
Best Doctors in America
Gold Fellow, Association for Research in Vision and Ophthalmology
Associate Editor, *Diabetes*
Grant Review Panel, American Diabetes Association
The Retina Society Award of Merit in Retina Research
Charles L. Schepens Lecture, The Retina Society Annual Meeting
3rd Joseph Sassani Alumni Lecture, Department of Ophthalmology, Penn State College of Medicine

Hilary M. Grabe, M.D.
Best Doctors in America

John R. Heckenlively, M.D.
Best Doctors in America
Castle Connolly Top Doctors
Associate Editor, *Eye*
Editorial Board and Founding Editor, *Documenta Ophthalmologica*
Grant Reviewer, National Institutes of Health
Grant Reviewer, Foundation Fighting Blindness
Grant Reviewer, Fight for Sight

K. Thiran Jayasundera, M.D.
Top 40 under 40 Power List, *The Ophthalmologist*

Denise A. John, M.D.
Best Doctors in America

Mark W. Johnson, M.D.
Best Doctors in America
Castle Connolly Top Doctors
President-Elect and Vice President, The Retina Society
Scientific Program Chair, The Retina Society Annual Meeting 2015
Mark J. Daily Retina Lecture, Department of Ophthalmology, Loyola University

Alon Kahana, M.D., Ph.D.
Best Doctors in America
Editorial Board, Oculoplastic Surgery Section, *Ocular Surgery News*
Editorial Group, Basic and Clinical Science Course, Section 2: Fundamentals, AAO Publications
Physician-Scientist Award, Research to Prevent Blindness

Paul P. Lee, M.D., J.D.
Best Doctors in America
Castle Connolly Top Doctors
Editorial Board, *JAMA-Ophthalmology*
Advisory Board, Hoskins Center for Patient Safety and Quality, Foundation of the American Academy of Ophthalmology
Board of Directors, American Board of Ophthalmology
Board of Governors/Immediate Past Chair, Association for Research in Vision and Ophthalmology Foundation
8th Annual M. Bruce Shields Lectureship, Yale University
American Glaucoma Society Lecture, American Glaucoma Society Annual Meeting
Robertson Lecture, University of Texas Medical Branch
Shaffer-Hetherington-Hoskins Lecture, 19th Annual Glaucoma Symposium, Glaucoma Research Foundation
J. Britto Distinguished Lecture, University of Sao Paulo, Sao Paulo, Brazil

Paul R. Lichter, M.D., M.S.
Best Doctors in America
Castle Connolly Top Doctors
Associate Editor, *American Journal of Ophthalmology*
Foundation Board of Directors, International Council of Ophthalmology
Knauer Lecture, American Eye Study Club
Fralick Lecture, Department of Ophthalmology, University of Michigan

Michael J. Lipson, O.D.
Secretary, Scleral Lens Education Society

Shahzad I. Mian, M.D.
Best Doctors in America
Castle Connolly Top Doctors
Editorial Board, *Cornea*
Guest Editor, *Current Opinion in Ophthalmology*
Board of Directors, Cornea Society
Board of Directors, Eye Bank Association of America
Co-Chair, Cornea Sub-specialty Day, American Academy of Ophthalmology
Council Credentials Committee, American Academy of Ophthalmology
Medical Director, Eversight Michigan
Program Directors Council, Association for University Professors in Ophthalmology
Vice Chair, Accreditation Board, Eye Bank Association of America
Vice Chair, Residency Review Committee, Accreditation Council for Graduate Medical Education
Senior Achievement Award, American Academy of Ophthalmology
Sayoko E. Moroi, M.D., Ph.D.
Best Doctors in America
Cohen-Merck Lecture, 37th Midwest Glaucoma Symposium, Indiana University School of Medicine

David C. Musch, Ph.D., M.P.H.
Editorial Board, Eye and Vision
Editorial Board, JAMA Ophthalmology
Editorial Board, Retina
Advisory Group, Cochrane Collaboration Eyes and Vision Group US Project
Ophthalmic Technology Assessment Committee, American Academy of Ophthalmology
Preferred Practice Patterns Committee, American Academy of Ophthalmology
Review Committee, Prevent Blindness Joanne Angle Investigator Award
Grant Application Reviewer, Special Emphasis Panels, National Institutes of Health
Scientific Reviewer, Health and Medical Research Fund and Innovation Technology Support Programme, Government of the Hong Kong SAR, People’s Republic of China
Scientific Reviewer, National Medical Research Council, Government of Singapore
Chair, Data and Safety Monitoring Committee, Corneal Preservation Time Study, National Institutes of Health
Chair, Data and Safety Monitoring Committee, Sirolimus Treatment of Geographic AMD, National Institutes of Health and Santen, Inc.
Chair, Data and Safety Monitoring Committee, Study of Comparative Treatments for Retinal Vein Occlusion 2 (SCORE2), National Institutes of Health
Data & Safety Monitoring Committee, META-MUST trials, National Institutes of Health
Data & Safety Monitoring Board, Stopping Anti-TNF Agents in Rheumatoid Arthritis (STARA), National Institutes of Health and MedStar Health Research Institute

Christine C. Nelson, M.D.
Best Doctors in America
Co-Chair, Oculoplastics Curriculum Development Committee, International Council of Ophthalmology

Howard R. Petty, Ph.D.
Special Emphasis Panel, Member Conflict: Biology, Pathophysiology and Diseases of the Visual System (ZRG1BDCN-L 02M), National Institutes of Health
Special Emphasis Panel, Ocular Diseases Pathophysiology and Therapeutic Approaches (ZRG1BDCN-R 5M), National Institutes of Health

Donald G. Puro, M.D., Ph.D.
Best Doctors in America

Rajesh C. Rao, M.D.
Grant Review Panel, France Ministry of Health
Delegate, Congressional Briefing and Emerging Vision Scientists Reception, National Alliance for Eye and Vision Research Emerging Vision Scientists Program
Editorial Panel, Innovative Retina Surgical Video Series, American Society of Retina Specialists

Julia E. Richards, Ph.D.
Editorial Board, G3: Genes, Genomes, Genetics
Scientific Advisory Board, The Glaucoma Foundation
Scientific Reviewer, International Retina Research Foundation
Dr. Douglas H. Johnson Award in National Glaucoma Research, Bright Focus Foundation

Frank W. Rozsa, Ph.D.
Communicators Award, Association for Research in Vision and Ophthalmology

Roni M. Shtein, M.D., M.S.
Medical Advisory Board, Eye Bank Association of America
Delegate, Congressional Briefing and Emerging Vision Scientists Reception, National Alliance for Eye and Vision Research Emerging Vision Scientists Program

Terry J. Smith, M.D.
Best Doctors in America

Michael W. Smith-Wheelock, M.D.
Best Doctors in America

H. Kaz Soong, M.D.
Best Doctors in America
Medical Director, Eversight Michigan

Joshua D. Stein, M.D., M.S.
Best Doctors in America
Leadership Development Program XVIII, class of 2016, American Academy of Ophthalmology Academy
Standing Committee on Eye Care and Ear, Nose, and Throat Conditions, National Quality Forum
Shaffer Grants for Innovative Research, Glaucoma Research Foundation
22nd Annual Roger P. Mason, Sr., M.D. Lecture, Howard University, Washington D.C.
FACULTY HONORS AND RECOGNITION
JULY 1, 2014 — SEPTEMBER 30, 2015

UNIVERSITY OF MICHIGAN AWARDS

David A. Antonetti, Ph.D.
B-EYE Challenge Award, University of Michigan Biointerfaces Institute

Cagri G. Besirli, M.D., Ph.D.
University of Michigan Coulter Translational Research Program Award
University of Michigan Translational Research and Commercialization for Life Sciences Program Kickstart Award

Brenda L. Bohnsack, M.D., Ph.D.
Helmut F. Stern Career Development Professor of Ophthalmology and Visual Sciences

Hakan Demirci, M.D.
B-EYE Challenge Award, University of Michigan Biointerfaces Institute

Thomas W. Gardner, M.D., M.S.
Senior Scholar at the University of Michigan A. Alfred Taubman Medical Research Institute

K. Thiran Jayasundera, M.D.
University of Michigan Translational Research and Commercialization for Life Sciences Program Award

Shahzad I. Mian, M.D.
Gilbert Whitaker Fund for the Improvement of Teaching, University of Michigan Center for Research on Learning and Teaching

Paula Anne Newman-Casey, M.D., M.S.
Community Service Award, University of Michigan Medical School

Howard R. Petty, Ph.D.
University of Michigan Translational Research and Commercialization for Life Sciences Program Award

Rajesh C. Rao, M.D.
Leslie H. and Abigail S. Wexner Emerging Scholar at the University of Michigan A. Alfred Taubman Medical Research Institute
University of Michigan Biointerfaces Institute Award

Joshua D. Stein, M.D., M.S.
Edward T. and Ellen K. Dryer Career Development Professor in Ophthalmology and Visual Sciences

Alan Sugar, M.D.
League of Clinical Excellence, University of Michigan Medical School

Maria A. Woodward, M.D.
Project Award, University of Michigan Health System Fostering Innovations Grants (FIGS) Program

Alan Sugar, M.D.
Best Doctors in America
Editor-in-Chief, Cornea, Journal of the Cornea Society
Medical Director, Eversight Michigan
Medical Advisory Board, Eye Bank Association of America
Research Committee, Eye Bank Association of America
Frank Polack, M.D., Memorial Lecture in Cornea, University of Florida

Debra A. Thompson, Ph.D.
Editorial Board, Experimental Eye Research

Susan S. Thoms, M.D.
Best Doctors in America

Jonathan D. Trobe, M.D.
Best Doctors in America
Castle Connolly Top Doctors
Arthur Wolintz Memorial Lecture, Department of Ophthalmology, State University of New York (SUNY) Downstate Medical Center
Philip C. Hessburg Lecture, 2015 Annual Alumni Meeting, Department of Ophthalmology, Henry Ford Hospital
A.E. Finley Distinguished Visiting Professor, Department of Ophthalmology, University of North Carolina

Joshua P. Vrabec, M.D.
Best Doctors in America

Sara Weidmayer, O.D.
Admittance Committee, American Academy of Optometry

Jennifer S. Weizer, M.D.
Best Doctors in America

Kwoon Y. Wong, Ph.D.
Editorial Board, Current Eye Research
Grant Reviewer, Velux Foundations
Special Emphasis Panel, Molecular and Cellular Substrates of Complex Brain Disorders [ZRG1 MDCN-P 57], National Institutes of Health
Special Emphasis Panel, Neurobiology of Visual Perception and Decision Making [ZRG1 IFCN-Q 02)], National Institutes of Health

Maria A. Woodward, M.D.
Medical Director, Eversight Michigan
Achievement Award, American Academy of Ophthalmology

Dongli Yang, M.D., Ph.D.
Editorial Board, Austin Journal of Clinical Ophthalmology

David N. Zacks, M.D., Ph.D.
Best Doctors in America
Achievement Award, American Academy of Ophthalmology


Boynton GE, Raoof D, Niziol LM, Hussain M, Mian SI. Prospective randomized trial comparing efficacy of topical loteprednol etabonate 0.5% versus cyclosporine-a 0.05% for treatment of dry eye syndrome following hematopoietic stem cell transplantation. Cornea. 2015 Jul;34(7):725-32.


FACULTY PUBLICATIONS  
JULY 1, 2014 — SEPTEMBER 30, 2015


Helm JE, Lavieri MS, Van Oyen MP, Stein JD, Musch DC. Dynamic forecasting and control algorithms of glaucoma progression for clinician decision support. Operations Research. 2015 Sep 9. [Epub ahead of print]


Lagina AL. Soft contact lens optimizes visual goals for a patient with keratoectasia. Optom Vis Sci. 2015 Sep 18. [Epub ahead of print]


Peeler CE, **De Lott LB**, Nagia L, Lemos J, Eggenberger ER, **Cornblath WT**. Clinical utility of acetylcholine receptor antibody testing in ocular myasthenia gravis. *JAMA Neurol*. 2015 Aug 10. [Epub ahead of print]


Singh RK, Mallela RK, Cornuet PK, Reifler AN, Chervenak AP, West MD, Wong KY, Nasonkin IO. Characterization of three-dimensional retinal tissue derived from human embryonic stem cells in adherent monolayer cultures. Stem Cells Dev. 2015 Sep 10. [Epub ahead of print]


Sugar A, Sugar J, Schwab I, Perry H, de Luise V, Soong HK, Weiss J. Do it right the first time: advice for cornea authors. *Cornea.* 2014 Sep;33(9):879.


Wong SH, Plant GT, Cornblath W. Does treatment of ocular myasthenia gravis with early immuno-suppressive therapy prevent second-arly generalization and should it be offered to all such patients? J Neuroophthalmol. 2015 Jul 24. [Epub ahead of print]


<table>
<thead>
<tr>
<th>FACULTY NAME</th>
<th>PROJECT TITLE</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Abcouwer, Ph.D.</td>
<td>Bone Marrow Neuropathy Drives Diabetic Retinopathy; multi-PI</td>
<td>NIH</td>
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<td>Regulation of Retinal Cell Death in Diabetes; multi-PI</td>
<td>NIH</td>
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<td>Role of Interferon-gamma in the Retinal Neuroinflammatory</td>
<td>ADA</td>
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<td>Control of Innate Inflammatory Responses in the Retina; multi-PI</td>
<td>BrightFocus Foundation</td>
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<td>CCL2 Trap for Diabetic Retinopathy; multi-PI</td>
<td>Novo Nordisk</td>
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<td>D. Antonetti, Ph.D.</td>
<td>Mechanisms of Retinal Vascular Permeability in Diabetes</td>
<td>NIH</td>
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<td>The Retinal Microenvironment in Diabetic Retinopathy,</td>
<td>Subcontract with Northwestern University</td>
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<td>Novel Therapies to Inhibit Diabetic Retinopathy,</td>
<td>Subcontract with Case Western University</td>
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<td>Discovering Novel Atypical PKC Inhibitors as \textit{in vivo} Chemical Probes</td>
<td>NIH</td>
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<td>Structural Studies of Tight Junction Proteins,</td>
<td>Subcontract with Pennsylvania State University</td>
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<td>Targeting aPKC as a Therapy for Diabetic Retinopathy</td>
<td>JDRF</td>
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<td>CCL2 Trap for Diabetic Retinopathy; multi-PI</td>
<td>Novo Nordisk</td>
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<td>Jules and Doris Stein RPB Professorship</td>
<td>RPB</td>
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<tr>
<td>S. Archer, M.D.</td>
<td>Ocular Toxicity of Combined Carboplatin and Etoposide Phosphate Intravitreal</td>
<td>The Knights Templar Foundation, Inc.</td>
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<td>Injection Therapy (IViT) for Retinoblastoma, Award for Stephen Smith, M.D.</td>
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<td>C. Besirli, M.D., Ph.D.</td>
<td>Neuroprotection in Pediatric Retinal Detachment</td>
<td>NIH</td>
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<td>Cryoanesthesia</td>
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<td>Testing of ONL Compounds in Retinal Cell Apoptosis Models</td>
<td>ONL Therapeutics</td>
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<td>Career Development Award</td>
<td>RPB</td>
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<td>B. Bohnsack, M.D., Ph.D.</td>
<td>Regulation of Ocular Neural Crest and Its Implications in Congenital Eye Diseases</td>
<td>NIH</td>
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<td>Zebrafish Model of Primary Congenital Glaucoma: Understanding CYP1B1</td>
<td>Edward Mallinckrodt Jr. Foundation</td>
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<td>Regulation of Eye Development</td>
<td>RPB</td>
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<td>Career Development Award</td>
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<td>G. Comer, M.D., M.S.</td>
<td>Treatment for Central-Involved Diabetic Macular Edema in Eyes,</td>
<td>NIH/Clinical Trial</td>
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<td>Coordinating Center: Jaeb Center for Health Research</td>
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<td>Structural and Functional Relationships of the Retina in Diabetic Macular Edema</td>
<td>JDRF</td>
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<td>A Natural History Study of Macular Telangiectasia—The MacTel Study</td>
<td>LMRI/Clinical Trial</td>
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<td>A Phase 2 Multicenter Randomized Clinical Trial of Ciliary Neurotrophic</td>
<td>LMRI/Clinical Trial</td>
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<td>Factor (CNTF) for Macular Telangiectasia Type 2 (MacTel)</td>
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<td>W. Cornblath, M.D.</td>
<td>A Randomized, Placebo-Controlled, Parallel-Group, Double-Blind Efficacy</td>
<td>Merck Research Labs</td>
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<td>&amp; Safety Trial of MK-8931 in Subjects with Mild to Moderate Alzheimer's Disease</td>
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<td>M. Del Monte, M.D.</td>
<td>A 3-month, Multi-Center, Double-Masked Safety and Efficacy Study of</td>
<td>Alcon Laboratories, Inc.</td>
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<td>Travoprost Ophthalmic Solution, 0.004% Compared to Timolol</td>
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<td>(0.5% or 0.25%) in Pediatric Glaucoma Patient</td>
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<td>Study of Binocular Computer Activities for Treatment of Amblyopia</td>
<td>JAEB Center/NIH/Clinical Trial</td>
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<td>FACULTY NAME</td>
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<tr>
<td>R. Douglas, M.D., Ph.D.</td>
<td>Role of CD40+ Fibrocytes in Thyroid-Associated Ophthalmopathy</td>
<td>NIH</td>
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<td>A Multicenter, Double-Masked, Placebo-Controlled Efficacy and Safety Study</td>
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<td>of RV001, an Insulin-like Growth Factor-1 Receptor (IGF-1R) Antagonist</td>
<td>River Vision LLC</td>
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<td>Antibody (fully human), Administered Every 3 Weeks (Q3W) by Intravenous</td>
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<td>(IV) Infusion in Patients Suffering from Active Thyroid Eye Disease (TED)</td>
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<td>Lew R. Wasserman Merit Award</td>
<td>RPB</td>
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<tr>
<td>S. Elner, M.D.</td>
<td>Multicenter Uveitis Steroid Treatment (MUST) Trial,</td>
<td>NIH/Clinical Trial</td>
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<td>Coordinating Center: Johns Hopkins University</td>
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<td>Macular Edema Treatment Trials Associated with MUST (META-MUST)</td>
<td>NIH/Clinical Trial</td>
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<td>Intravitreal Injections of DE-109 for the Treatment of Active, Non-Infectious Uveitis</td>
<td>Santen Pharmaceutical</td>
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<td>P. Fort, Ph.D., M.S.</td>
<td>Progressive Impact of Diabetes on Retinal Neuroprotection by α-Crystallins</td>
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<td>Characterization of Crystallin Proteins Expression in Human Retina: Effect of Diabetes</td>
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<td>Regulation of Crystallin Neuroprotective Function in the Retina During Diabetes: Impact on Retinal Ganglion Cell Death</td>
<td>International Retinal Research Foundation</td>
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<td>P. Gage, Ph.D.</td>
<td>Pitx 2: Molecular Mechanisms in Eye Development and Disease</td>
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<td>An Inducible and Rapid Model of Glaucoma in Mice</td>
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<td>Analysis of Ocular Functions of CHD7 in Mouse Models of CHARGE</td>
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<td>New Mouse Models of Human CHARGE Syndrome</td>
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<td>T. Gardner, M.D., M.S.</td>
<td>Metabolic Reprogramming in Diabetic Complications; multi-PI</td>
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<td>Regulation of Retinal Cell Death in Diabetes; multi-PI</td>
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<td>Prompt Panretinal Photocoagulation (Protocol S), Coordinating Center: Jaeb</td>
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<td>Clinical Research Training in Diabetic Macular Edema,</td>
<td>Bayer HealthCare</td>
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<td>Award with Vinicius Monteiro de Castro, M.D., Ph.D.</td>
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<td>A Diabetic Retinopathy Risk of Progression Calculator</td>
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<td>Evaluation of Retinal Sensory Neuropathy</td>
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<td>Center for the Study of Retinal Degenerative Diseases</td>
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<td>Clinical Evaluation of Individuals with X-linked Retinoschisis (XLRS)</td>
<td>FFB and Applied Genetic Technologies Corp.</td>
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<td>A Phase II, Multiple-Site, Randomized, Placebo-Controlled Trial of Oral Valproic Acid for Retinitis Pigmentosa</td>
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<td>Retinitis Pigmentosa Natural History Study of Patients with the P23H Mutation of the Rhodopsin Gene</td>
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<td>P. Hitchcock, Ph.D.</td>
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<td>B. Hughes, Ph.D.</td>
<td>Core Center for Vision Research (five core modules)</td>
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<td>Ion Conductances in the Retinal Pigment Epithelium</td>
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<td>Novel Quantification Methods for Fundus Flavoprotein Fluorescence and Lipofuscin Fluorescence to Detect Progression in Stargardt Disease</td>
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<td>EyeAnalyze: Automated Identification and Quantification of Changes in Retinal Diseases</td>
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<td>M. Johnson, M.D.</td>
<td>Efficacy and Safety of Lampalizumab Administered Intravitreally to Patients with Geographic Atrophy Secondary to Age-Related Macular Degeneration</td>
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<td>A. Kahana, M.D., Ph.D.</td>
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<td>Investigating the Roles of Retinoic Acid and Thyroid Hormone in the Pathogenesis of Thyroid Eye Disease</td>
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<td>VIImodegib as Neo-adjuvant for ORBital and Periocular Basal Cell Carcinoma (VISORB)</td>
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<td>P. Lee, M.D., J.D.</td>
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<td>S. Mian, M.D.</td>
<td>Eye Bank Preparation of Donor Tissue for Descemet’s Membrane Endothelial Keratoplasty</td>
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<td>D. Musch, Ph.D., M.P.H.</td>
<td>Factors Predictive of Rapid Visual Field Loss in Early Glaucoma,</td>
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<td>Statins to Prevent Glaucoma Trial (STOP Glaucoma Trial) Planning Grant; multi-PI</td>
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<td>Assessing the Impact of Glaucoma and Its Treatment on the Person</td>
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<td><strong>P. Newman-Casey, M.D., M.S.</strong></td>
<td>Adherence to Glaucoma Medications</td>
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<td>Retinovascular Pathophysiology: Focus on Proliferative Retinopathy</td>
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<td><strong>R. Rao, M.D.</strong></td>
<td>Sustaining Early-Born Retinal Neuron Potency from Stem Cells: An Epigenetic Approach Targeting EZH2, a Histone Methyltransferase, as a Novel Therapy for Human Retinoblastoma</td>
<td>RPB, The Knights Templar Foundation, Inc.</td>
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<td><strong>J. Richards, Ph.D.</strong></td>
<td>Genetics of Homocysteine Metabolism in Glaucoma A Study of Ocular Aging Mechanics of Intraocular Pressure Increase Associated with Genetic Factors; multi-PI</td>
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<td><strong>T. Smith, M.D.</strong></td>
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| J. Stein, M.D., M.S. (cont.) | Do Patients with Vision Loss Use More Healthcare Services  
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Are Medications Used to Treat HIV and Hepatitis Beneficial in Preventing Macular Degeneration | Lighthouse Guild  
MEEI  
RPB  
University of California  
San Francisco  
University of Kentucky |
| A. Sugar, M.D. | Corneal Preservation Time Study, Coordinating Center: Jaeb | NIH/Clinical Trial |
| D. Thompson, Ph.D. | Control of Innate Inflammatory Responses in the Retina; multi-PI  
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FFB  
FFB  
RDH12 Fund for Sight |
| J. Trobe, M.D. | Automated Diplopia Assessment System (ADAS); multi-PI, Award with Lindsey De Lott, M.D. | Medar Corporation/Michigan Corporate Relations Network |
| K. Wong, Ph.D. | Physiology of Intrinsically Photosensitive Retinal Ganglion Cells  
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| M. Woodward, M.D. | Telemedicine For Anterior Eye Diseases | NIH |
| D. Zacks, M.D., Ph.D. | Autophagy and Control of Photoreceptor Apoptosis  
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Center for the Study of Retinal Degenerative Diseases  
Dysregulation of RPE Autophagy and Age-related Macular Degeneration | NIH  
Bayer HealthCare  
FFB  
RPB |

SOURCE ABBREVIATIONS

ADA ...... American Diabetes Association  
FFB ...... Foundation Fighting Blindness  
JDRF ...... Juvenile Diabetes Research Foundation International  
MEEI ...... Massachusetts Eye and Ear Infirmary  
MEDC ...... Michigan Economic Development Corporation  
NIH ...... National Institutes of Health  
NNRI ...... National Neurovision Research Institute  
NSF ...... National Science Foundation  
RPB ...... Research to Prevent Blindness
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Alan Sugar, M.D., Monte Del Monte, M.D., Paul Lee, M.D., J.D.,
Christine Nelson, M.D., Denise John, M.D., Mark Johnson, M.D.,
Shahzad Mian, M.D., Thomas Gardner, M.D., M.S., Donna Wicker, O.D.,
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Kari Bronham, M.S., Naheed Khan, Ph.D., Dongli Yang, M.D., Ph.D.,
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Kristopher Kowal, M.D.

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www.kellogg.umich.edu/about/faculty_bios.html

All of us at the Kellogg Eye Center are committed to improving lives through curing, preventing, and treating eye disease.
Our guiding principles are teamwork, caring, innovation, and integrity.

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Kellogg has seen extraordinary growth in all aspects of patient care, research and education since the department was established in 1872. Every day, our clinicians, scientists, trainees and staff work together to shape the future of eye care and vision science. The Kellogg team is especially proud of these recent accomplishments:

- Kellogg retinal surgeons performed the first four surgeries in the United States to implant an artificial retina, or “bionic eye,” since the FDA approved the device in 2013.
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