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DEPARTMENT OF Ophthalmology

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INSIDE: MARCH 2016 #30

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Ocular Oncology Center of Excellence, Collaborating for a Cure

Ocular oncology involves the study and treatment of tumors that occur in or around the eye. These tumors may cause vision loss or loss of the eye itself; some tumors are potentially fatal, while others may be benign yet severely disfiguring. Each year, more than 2,500 adults in the United States are diagnosed with ocular cancer, with the primary form being ocular melanoma.

Launched in 2013, the HMS Ophthalmology Ocular Oncology Center of Excellence aims to improve the diagnosis and management of rare, but potentially life-threatening, eye tumors. Co-directed by **Bruce Ksander, PhD**, and **Ivana Kim, MD**, this Center includes 11 faculty members and their associated trainees. By leveraging the strengths of members' individual skill sets, the Ocular Oncology Center of Excellence drives advances in clinical care, research, and education through focused collaboration and dialogue. Following are some of the key initiatives occurring in the Center.

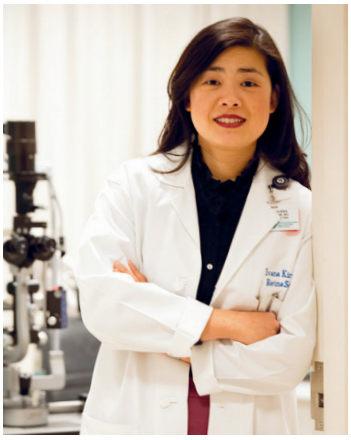

Photo credit: John Earle Photography

Ivana Kim, MD

Bruce Ksander, PhD

Advancing Patient Care

Clinicians in the Ocular Oncology Center of Excellence are world-renowned in their care of patients with eye malignancies, particularly choroidal melanoma, retinoblastoma, and orbital and ocular surface tumors. At Mass. Eye and Ear, much of this care is provided in the Ocular Melanoma Center. Led by Dr. Kim and **Evangelos Gragoudas, MD**, the Ocular Melanoma Center is a premier referral center for the diagnosis and treatment of eye tumors, and draws patients from around the world. Patients can receive

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GUEST COMMENTARY

A Chain Reaction: From Advocacy to Change

Leo Kim, MD, PhD, *(right) Assistant Professor of Ophthalmology, HMS*

Dr. Kim is a vitreoretinal surgeon in the Mass. Eye and Ear Retina Service. As a clinician scientist and a member of the K12 Harvard Vision Clinical Scientist Development Program, which is funded by the National Institutes of Health/National Eye Institute, Dr. Kim focuses his research on understanding the mechanisms of vitreoretinal disease, including retinal toxicity, proliferative diabetic retinopathy, and non-exudative age-related macular degeneration.

Advocacy is critical to the future of vision research. The more we, as researchers and clinician scientists, champion for change, the better our chances of success. In particular, it is important for us to raise awareness about vision research, the importance of funding, and the benefits of improved patient care. Outreach can and does lead to change.

This past October, **Jason Comander, MD, PhD**, and I were invited to participate in the Alliance for Eye and Vision Research Emerging Vision Scientist Program. This program gives scientists the opportunity to meet with members of Congress and their staff to discuss the importance of vision research in advancing treatments and therapies for blinding diseases. I met with a congressional staffer for Massachusetts Representative, Michael E. Capuano, while Dr. Comander met with Massachusetts Representative, Joseph Kennedy III. Additionally, we both met with congressional staffers for Senators Elizabeth Warren and Edward Markey. In our discussions, we reaffirmed the importance of funding for the National Institutes of Health (NIH)/National Eye Institute (NEI).

NIH is the largest public funder of biomedical research in the world, and one of the few federal agencies that provides financial support for basic science research. It is important to remember that many advances start with experiments in the laboratory, not in patients. Unfortunately, due to budget cuts, sequestration, and inflationary losses, NIH has experienced a 22 percent decline in its capacity to fund research since its level peaked in 2003. This reduction in funding has affected the research community significantly. For example, between 2003 and 2013, grant proposal success rates fell to an all-time low; between 1998 and 2013, the number of early career scientists heading their own laboratories dropped by almost half.

As a clinician scientist, I am fortunate that I am able to bring my most pressing clinical challenges directly to the laboratory to search for answers. Less NIH funding, however, means fewer opportunities to build the strong foundation of knowledge that is often crucial to bringing potential advances to fruition. That is why it is so important to reach out to those who have the power to make changes.

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The HMS Department of Ophthalmology strives to provide:

- ✓ Premier clinical care and attention to the patient experience
- ✓ Transformational research that eliminates blinding diseases
- ✓ World-class training of future leaders

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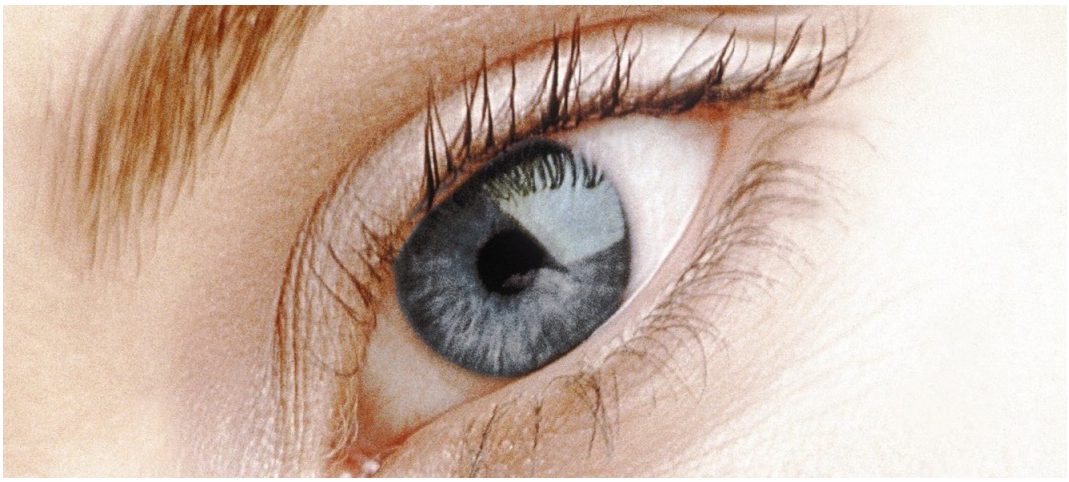
Francis Sutula, MD

Michael K. Yoon, MD



The Ophthalmic Plastic Surgery Service at Mass. Eye and Ear

Led by **Suzanne Freitag, MD**, the Ophthalmic Plastic Surgery Service at Mass. Eye and Ear is a leader in the field of medical and surgical treatment of diseases affecting the eyelids, orbit (eye socket), and lacrimal system (tear drainage system). Five highly-specialized surgeons provide care at outpatient offices located in Boston, East Bridgewater, Stoneham, and Waltham. These specialists performed more than 900 surgeries in 2015, a 33 percent increase since 2011.

The growth and success of the Service is largely due to Dr. Freitag and her predecessor Aaron Fay, MD. Dr. Freitag directed the Ophthalmic Plastic Surgery Service at Boston Medical Center for 10 years before joining Mass. Eye and Ear in 2011. Once here, she met with otolaryngologists, oral maxillofacial surgeons, radiologists, dermatologists, and pathologists at Mass. Eye and Ear and Massachusetts General Hospital to develop new, multidisciplinary collaborations to better serve patient needs.

Cooperative management enables Service members to treat the full range of unique and complex cases presented to Mass. Eye and Ear. These include orbital tumors and fractures, thyroid-related eye disease, eyelid skin cancers, drooping eyelids, blocked tear drains, and trauma to the area surrounding the eyes. Service members also perform cosmetic procedures on the delicate areas surrounding the eyes, such as blepharoplasty (removal of excess eyelid skin) and Botox® and Restylane® injections. Rates of re-operation, infection, and complications remain very low compared to international benchmarks.

"Ophthalmic plastic surgery is a unique specialty that relies on a surgeon's technical ability and artistic skill," commented Michael Yoon, MD, who sees patients in Boston and Stoneham.

In addition to building interdepartmental collaborations, Dr. Freitag is committed to patient outreach. In particular, she organized a free educational event in 2014 for patients with Graves' disease and thyroid eye disease, which was well-attended. In this regional forum, patients had an opportunity to learn more about their diagnoses and have their questions answered by Mass. Eye and Ear specialists – in ophthalmology, otolaryngology, internal medicine, and endocrinology – who are experienced in the management of thyroid-related problems.

"The management of thyroid disease and related eye problems can be challenging for patients and doctors alike," explains Dr. Freitag. "The constellation of symptoms is unique in each patient, as is the way each individual copes with them. By listening to patient questions and concerns, participating physicians can be more attuned to the needs of their patients." Mass Eye and Ear continues to host quarterly thyroid disease patient support groups. ■

Training the Future Leaders of Ophthalmology

AN INTERVIEW WITH CAROLYN KLOEK, MD

Under the leadership of Residency Program Director, **Carolyn Kloek, MD**, and Associate Program Director, **Peter Veldman, MD**, the HMS Ophthalmology Residency Training Program is ranked a top-five residency program nationally and offers one of the premier Ophthalmology training programs in the country. With a historically strong commitment to supporting the development of the future leaders in ophthalmology, the program provides a thriving academic environment, broad clinical and surgical exposure, and unparalleled research opportunities. The program also provides opportunities for residents to hone their interpersonal and teaching skills while under the mentorship of world-class faculty. The program graduates highly trained clinicians, surgeons, scientists, and future leaders of the field with 90 percent of residents pursuing subspecialty training after graduation. We interviewed Dr. Kloek to learn more about HMS Ophthalmology's innovative curriculum and this unique resident experience.

As Residency Program Director, what are some of the ways you are improving the resident experience?

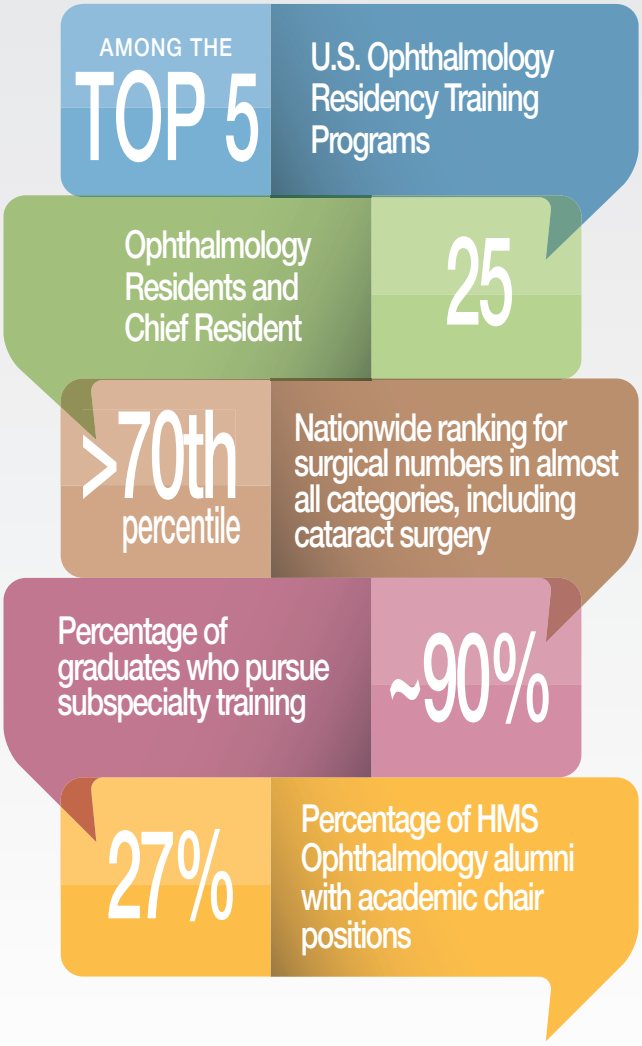
One of our recent focuses has been on improving the surgical training component of our program – taking it from great to superb. Residents now benefit from more pre-operative training opportunities, which boost their confidence and prepare them for more surgical cases in the operating room. Increased surgical training also improves patient safety. We'll also be opening a premier training facility with state-of-the-art training equipment known as the Altschuler Ophthalmology Surgical Training Laboratory. Directed by **Lucy Young, MD, PhD**, this laboratory will provide a cutting-edge venue for trainees to practice pre-operative surgical techniques. But, we're not just focused on improving our surgical program – even though we do that really well. Our curriculum is also designed to develop residents' professional skills, such as communication, public speaking, and teaching.

Would you tell us more about how communication skills fit into the residency curriculum?

The ability to communicate, and communicate well, is critical to success in any field. Every day, residents interact with physicians, patients and their families, colleagues, and collaborators. We want our residents to feel comfortable negotiating a variety of professional interactions. In 2015, Ophthalmology residents attended an innovative, half-day communications workshop at Mass. Eye and Ear. The first of its kind for Ophthalmology, this workshop was held in collaboration with the Institute for Professionalism and Ethical Practice (www.ipepweb.org), an interdisciplinary educational initiative, based at Boston Children's Hospital, which is dedicated to cultivating relational competence in health care. In this workshop, our residents practiced conducting difficult conversations in several 'real-life' scenarios, and learned how they can successfully navigate these discussions in the future.

Are there other opportunities for residents to develop professional skills?

Yes. We developed a residency curriculum for improving quality and safety. As part of this program, each resident conducts a research project that focuses on a topic related to safety and/or quality. For instance, **Aliya Jiwani, MD**, a third-year Ophthalmology resident, collaborated with **Joanne Ricca, RNP**,



Class of 2016 HMS Ophthalmology Residents

Infection Control Director at Mass. Eye and Ear, and me to explore how, why, and when residents get stuck with sharps in the OR. Projects like this teach residents how to collaborate with hospital members, conduct research, interpret their findings, and make suggestions to the community to improve both safety and quality of care. In fact, Aliya is currently designing a one-hour informational workshop for HMS Ophthalmology trainees and faculty related to her research findings.

Is our focus on improving hospital safety, quality, and care for patients on trend with national interests?

Absolutely. In January, I attended the "Educating the Educators" session at the 50th AUPO Annual Meeting, and presented the results of our residency program's quality and patient safety curriculum. Given that the organizers dedicated half a day to discussing resident education related to patient quality and safety suggests that there is growing national interest in this area. I should mention that Aliya also presented her research findings during this session. Though anyone may submit a talk, it is rare to see a resident present.

You've discussed specific ways in which Ophthalmology residents gain expertise in clinical care, research, teaching, and professional skills. Is there anything else that makes this program stand out from the rest?

I think the entire residency experience is what makes our training program truly unique. In addition to preparing residents for careers as ophthalmologists, vision researchers, and educators, we are also helping residents to develop their leadership skills so that they can move Ophthalmology beyond the status quo and improve every facet of the field. By learning how to better communicate, how to conduct transformational research, how to effect change – residents are poised to be future leaders in Ophthalmology. This is what we hope to teach our trainees. ■

Residents Match with Prestigious Training Opportunities

Congratulations to our Chief Resident* and senior residents, who have matched with outstanding fellowship programs:

- **Katherine Talcott, MD*** - Retina, Wills Eye Institute
- **Scott Barb, MD** - Retina, Emory University
- **Lisa Cowan, MD, PhD, MS** - Glaucoma, Duke University
- **Emma Davies, MD** - Cornea, Mass. Eye and Ear
- **Aliya Jiwani, MD** - Glaucoma, Mass. Eye and Ear
- **Ilya Leskov, MD, PhD** - Retina, Northwestern University
- **Avni Patel, MD, MBA** - Retina, Duke University
- **Miin (Irene) Roh, MD, MPH, MSc** - Vitreoretinal, Mass. Eye and Ear

We'd also like to congratulate the following individuals who will be joining us as residents and clinical fellows:

Residents (Class of 2020)

- **Joshua Agranat, MD**
- **Wen Hu, MD, PhD**
- **Victoria North, MD**
- **Lisa Tom, MD**
- **Marisa Gobuty, MD**
- **Wendy Liu, MD, PhD**
- **Edith Reshef, MD**
- **Amy Yuan, MD**

Clinical Fellows (AY 2016-2017)

- **Upneet Bains, MD** - Glaucoma, Mass. Eye and Ear
- **Mark A. Bouffard, MD** - Neuro-ophthalmology, Mass. Eye and Ear
- **Bart K. Chwalisz, MD** - Neuro-ophthalmology, Mass. Eye and Ear
- **Charisma Evangelista, MD** - Cornea, Mass. Eye and Ear
- **Aubrey Gilbert, MD, PhD** - Neuro-ophthalmology, Mass. Eye and Ear
- **Reena Gupta, MD** - Cornea Clinical and Research, Mass. Eye and Ear
- **Maanasa Indaram, MD** - Pediatric Ophthalmology and Strabismus, Boston Children's Hospital/Mass. Eye and Ear
- **Esther Kim, MD** - Vitreoretinal, Mass. Eye and Ear
- **Stephanie Llop, MD** - Uveitis, Mass. Eye and Ear
- **Patrick Oellers, MD** - Vitreoretinal, Mass. Eye and Ear
- **Scott Peterson, DO** - Medical Retina, Joslin Diabetes Center/Mass. Eye and Ear
- **Shiraz Rahman, MD** - Glaucoma, Mass. Eye and Ear
- **Shivani Reddy, MD** - Medical Retina, Mass. Eye and Ear
- **Medha Sharma, MD** - Pediatric Ophthalmology and Strabismus, Boston Children's Hospital/Mass. Eye and Ear
- **Yufei Tu¸ MD** - Ophthalmic Pathology, Mass. Eye and Ear
- **Mauricio Vargas, MD, PhD** - Inherited Retinal Degenerations, Mass. Eye and Ear
- **Gary Yau, MD** - Medical Retina, Joslin Diabetes Center/ Mass. Eye and Ear

Look for more information on our residents and fellows in upcoming issues of *Eye Witness* or online at eye.hms.harvard.edu.

Massachusetts Lions Eye Research Fund, Crusaders Against Darkness

A key foundation partner to the Harvard Medical School Department of Ophthalmology and other Boston-based institutions, the Massachusetts Lions Eye Research Fund (MLERF) has contributed more than $21 million to HMS Ophthalmology since 1958. A staunch supporter of innovative research initiatives, MLERF has played a pivotal role funding investigations into treatments for age-related macular degeneration, diabetic retinopathy, and glaucoma. Additionally, their generosity has fueled the development of novel technologies, such as retinal implants and imaging, and treatment approaches, such as gene therapies, neuroprotection, and regenerative medicine.

The origins of MLERF date back to the summer of 1950, when the plight of so-called "blind babies" or "retrolental fibroplasia babies" came to the attention of a Lions District Governor, E. Daniel Johnson. First discovered by a Massachusetts physician in 1941, the disease we now know as retinopathy of prematurity was, at that time, afflicting four out of five premature babies weighing four pounds or less. The disease baffled the medical community, which had no dedicated resources for research.

Several Lions members mobilized with Al Hirshberg (sports writer for the *Boston Post* and Chairman of the Foundation for Eye Research) and Dr. Edwin B. Dunphy (Chief of Staff at Mass. Eye and Ear).

The group produced and mailed a pamphlet telling this story to all Lions in Massachusetts, and to District Governors in the United States and Canada. In his accompanying cover letter, Mr. Johnson wrote a passionate call to action. "The attached leaflet tells briefly about the lack of research in the field of blindness," the letter stated. Mr. Johnson went on to write, "**it is unbelievable that so little money is spent on trying to prevent a malady... and I shudder to think that probably a child or grandchild of mine or yours might well be the victim of this.**" The condition, which Mr. Johnson called "baby blindness" and noted to strike "rich and poor alike," drove him to call for the underwriting of eye research. "**It seems that this is a challenge to the Lions of Massachusetts, yes to the country!**" he declared.

Several HMS Ophthalmology affiliates – including Mass. Eye and Ear, Boston Children's Hospital, Schepens Eye Research Institute of Mass. Eye and Ear, and Joslin Diabetes Center – have directly benefited from this philanthropy. MLERF funds have provided critical financial support for numerous eye programs, outreach efforts, research initiatives, and technologies that have enabled many medical advances and helped tens of thousands of Massachusetts residents to avoid or mitigate vision loss. Today, Lions support remains steadfast and continues to drive HMS Ophthalmology's mission forward. ■

1917
Lions Club International founded

1925
Embraced Helen Keller's challenge to become "Knights of the Blind"

1952
Eye research becomes the official project of the Massachusetts Lions

1960
Massachusetts Lions Eye Research Fund incorporated

LIONS CLUB INTERNATIONAL TODAY

Guided by its mission to empower community volunteers, meet humanitarian needs, encourage peace, and promote international understanding, the Lions Clubs International donates more than $500 million annually and provides 71 million hours of service each year worldwide.

LEADERSHIP GIVING

A Passion for Partnership

For **Frederick S.** and **Ines E. Yeatts**, philanthropy is all about partnering with individual scientists to accelerate innovation and discovery. The first scientist who caught their attention was Zheng-Yi Chen, DPhil, Associate Professor of Otology and Laryngology at Harvard Medical School. Ines and Fred read about this scientist in *The Boston Globe*. Fascinated, they called him to inquire further and are now big supporters of his research.

Shortly thereafter, Ines and Fred became interested in supporting researchers who were working to prevent age-related vision loss. At that time, **Joan W. Miller, MD**, and **Demetrios Vavvas, MD, PhD**, had started working on a highly innovative research program in neuroprotection. A burgeoning area of investigation, neuroprotection aims to prevent vision loss by rescuing retinal cells before they die. Intrigued by this novel approach, Fred and Ines started supporting the Miller-Vavvas laboratory by making significant gifts each year. In 2015, in addition to funding the research fellows and laboratory expenses, they underwrote the purchase of state-of-the art imaging technology that will enable researchers to study live cells, greatly accelerating the pace of the laboratory's research.

"We really enjoy our visits with Drs. Miller and Vavvas because they are opportunities to ask questions and learn from the best. I must say, we have been very impressed with the productivity that comes out of the Miller-Vavvas laboratory! We are so pleased that we can help out in this small way."

– Ines E. Yeatts

Passionate about finding cures for vision and hearing loss, Fred sees philanthropy as "helping to kick the can forward." Since 2007, Fred and Ines have donated almost $5 million to Mass. Eye and Ear scientists, half directed toward age-related macular degeneration research. Among Mass. Eye and Ear's most generous donors, they have been recognized as Campaign Founding Partners of the hospital's historic $200 million campaign ***Bold Science. Life-Changing Cures.*** ■

AAO in Review: Highlights from the City of Lights

The American Academy of Ophthalmology (AAO) hosted its 2015 annual meeting at the Sands Expo/Venetian in Las Vegas, Nevada from November 14 to 17, with subspecialty days on November 13 and 14.

There was an impressive turnout of HMS Ophthalmology faculty members. Seventeen faculty members were speakers on subspecialty sessions or symposia, four were symposia/subspecialty session chairs, and 15 presented scientific posters.

Notable highlights from the meeting include:

- **Joan W. Miller, MD**, was the keynote speaker for the Young Ophthalmologists Lounge networking events on Sunday, November 15th. **Janey Wiggs, MD, PhD**, as well as **Martine Jager, MD, PhD**, Adjunct Scientist at Schepens Eye Research Institute of Mass. Eye and Ear, also participated. This event was held in collaboration with the Association for Research in Vision and Ophthalmology Members in Training Committee.
- **Seanna Grob, MD, MSc**, HMS Ophthalmology Resident, was awarded second place in the 2015 *Ophthalmology Times* Resident Writer's Award for her case study, "Management of drug-induced cicatricial conjunctivitis and dry eye," which she wrote in collaboration with **Reza Dana, MD, MPH, MSc**, and cornea clinical fellow **Hajirah Saeed, MD**.
- Dr. Miller was also featured in an AAO video showcasing highlights of the first day of the annual meeting (https://youtu.be/px9CqQMjfCs?t=5m12s) ■

Joan W. Miller, MD, Joseph Rizzo III, MD, Debra Rogers (Vice President of Ophthalmology, Mass. Eye and Ear), and John Fernandez (President and CEO, Mass. Eye and Ear)

Miin (Irene) Roh, MD, Seanna Grob, MD, MSc, Roberto Pineda II, MD, and Avni Patel, MD

CONTINUED FROM PAGE 2, A CHAIN REACTION

One fact that became apparent during my trip to the Hill is that Democrats and Republicans alike understand the value of NIH and agree that it needs to be better funded. However, NIH must compete with many other worthy initiatives, some of which may be considered "more pressing" than others. To this point, the political process can affect how NIH funding is prioritized. That is where we can effect change. We need to convince politicians that NIH is, in fact, a pressing matter that cannot be pushed aside while other objectives take center stage.

We are not professional lobbyists who come from Wall Street with campaign donations in hand. We are researchers and physicians who are passionate about what we do. By telling our stories, educating people about our research, and taking the time to advocate for vision research because of how strongly we believe in its value, we make a truly personal impact in a way that professional lobbyists cannot. Politicians do not always know what research entails, or what goes on behind the bench because they do not have our frame of reference. They need us to show them. When we put a "face" to our research, politicians can see that we genuinely believe NIH funding is important, and that a strong, continuous source of NIH support benefits everyone.

Advocacy can and does lead to change. For this coming fiscal year, NIH is receiving a $2 billion increase in funding. NEI received a $31 million increase over 2015. This is huge step in the right direction, but our fight is not over. Advocacy is a long-term process, and it could be years before we really make an impact. But those with the power to make changes are listening, and so we will continue talking. ■

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Glycobiology and Vascular Biology, a Multidisciplinary Collaboration

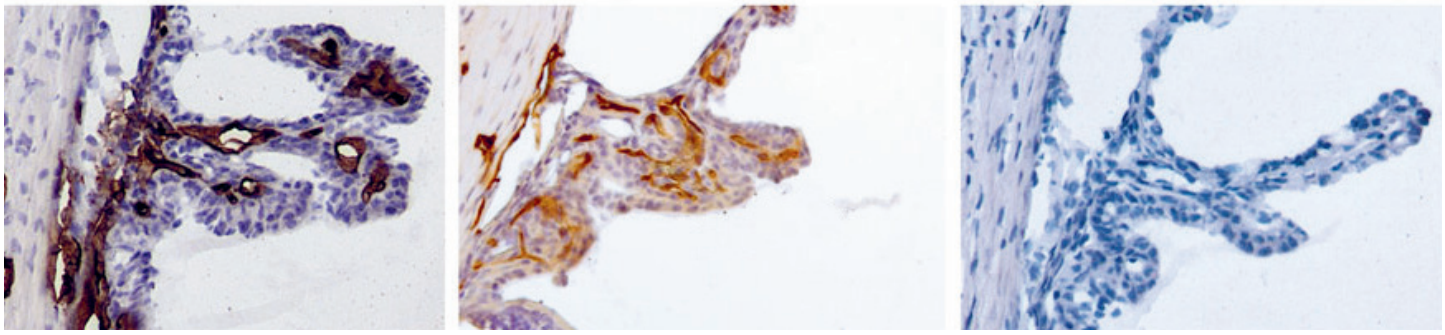


Image credit: Zahr A, et al. *Nature Communications,* 7: 2016.

Pablo Argüeso, PhD

Pablo Argüeso, PhD, and **Patricia D'Amore, PhD, MBA**, of Schepens Eye Research Institute of Mass. Eye and Ear have gained new insight into how a non-inflammatory state is maintained in the body. Their findings, published in the February 2016 issue of *Nature Communications*, represent a shift in our understanding of inflammation. Not only will these findings potentially help treat inflammatory eye diseases, but they may also help physicians manage other inflammatory diseases as well.

Drs. Argüeso's and D'Amore's research story dates back to 2008, when glycobiologist Dr. Argüeso and his laboratory published a paper demonstrating the anti-adhesive properties of mucin in ocular surface epithelial cells. Mucins are heavily glycosylated proteins that are produced by mucosal tissues. Their main role is to protect wet surfaces in the body against damage and infection. At the same time, vascular biologist Dr. D'Amore and her laboratory were investigating downstream targets of vascular endothelial growth factor (VEGF), a signaling protein that promotes the growth of new blood vessels, and their role in vascular morphogenesis. Dr. D'Amore demonstrated that endomucin, a specific type of mucin that is expressed on the surface of endothelium in venules and capillaries, was associated with VEGF. "But what did this mean?" questioned Dr. D'Amore, who noted that the vascular biology field was largely unfamiliar with endomucins and their roles at the time.

During an impromptu hallway discussion, Drs. D'Amore and Argüeso realized that their independent investigations were leading them in a similar direction. With their different backgrounds, and newly shared interest, they were prime candidates for applying for a competitive, internal funding opportunity designed to support collaborative vision research projects. They applied for the "Schepens Eye Research Institute Co-investigative Pilot Project Initiative," and their project was funded.

"First, we decided to look at the expression of endomucin on the surface of vascular endothelial cells. I have studied mucin in the eye, but this was the first time we looked at mucin's role in the vascular system," said Dr. Argüeso. Using a series of experimental techniques, the team discovered that endomucin plays an important role in preventing neutrophils, a type of white blood cell, from sticking to the endothelium under normal, non-inflammatory conditions.

During injury or inflammation, neutrophils are recruited to the endothelium, where they adhere or stick. "Until now, researchers studying the role of the vascular endothelium in inflammation have primarily focused on pro-adhesive molecules that trap the white blood cells at the site of injury," explained Dr. Argüeso. "We wanted to investigate whether there was also a mechanism that regulates the anti-adhesive character of the endothelial surface during inflammation. Specifically, what was the status of endomucin during inflammation, and could we prevent adhesion by modulating endomucin expression in the vascular endothelium?"

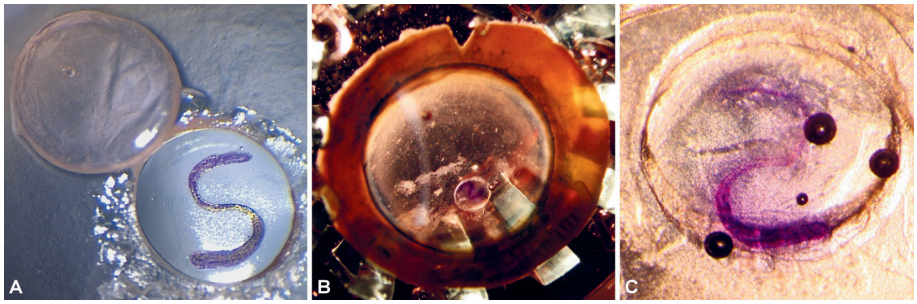
With the help of several postdoctoral fellows – including **Alisar Zahr, PhD**, who was first-author on the paper, and **Pilar Alcaide, PhD,** an expert in vascular immunology – along with HMS Ophthalmology faculty **Meredith Gregory-Ksander, PhD**, and **Bruce Ksander, PhD**, of Schepens Eye Research Institute of Mass. Eye and Ear, the team investigated these questions in both cell cultures and in an animal model of inflammation. They found that inflammatory cytokines decreased endomucin expression while increasing the amount of pro-adhesive molecules. Importantly, they also found that by experimentally expressing excess endomucin in the vascular endothelium, the adherence and infiltration of inflammatory cells could be blocked.

These findings showed that there is a way to interfere with inflammatory processes by promoting the expression of endomucin. "We were very excited that our work was published in *Nature Communications*, as this is a significant advance," said Dr. Argüeso. "Many diseases, not just eye diseases, have an inflammatory component. By targeting endomucin, we believe we can reduce unnecessary inflammation." This work was supported by the Schepens Eye Research Institute Co-Investigative Pilot Project Initiative, the National Eye Institute, and the National Heart, Lung and Blood Institute. ■

Visual Outcomes of Proton Beam Therapy

Ivana Kim, MD, and **Evangelos Gragoudas, MD**, of Mass. Eye and Ear; HMS Ophthalmology resident **Avni Patel, MD**; and colleagues conducted a retrospective review to assess how proton beam therapy affects vision in patients with choroidal melanomas involving the most critical part of the retina called the fovea (February 2016, *Ophthalmology*). They found that many patients maintained useful vision after a full dose of radiation to the fovea. Choroidal melanoma is the most common type of eye cancer in adults. Proton beam therapy is often used as a first-line of defense against the disease. When the tumor involves the fovea, vision loss is an unfortunate consequence of radiation, but outcomes may be better than previously thought. In this study, researchers reviewed the outcomes of 351 patients with choroidal melanoma involving the fovea who received proton beam therapy between 1975 and 2009. These melanomas were located 1 disc diameter or less from the fovea and more than 1 disc diameter away from the optic nerve. The authors found that more than 35.5 percent of patients retained 20/200 vision five years after therapy. Sixteen percent of patients with a baseline of 20/40 or better maintained that level of vision five years after therapy. Smaller tumors (less than 5 mm) and baseline visual acuity of 20/40 were associated with significantly better visual outcomes. In a subgroup of 203 patients with small and medium choroidal melanomas, the effects of 50 Gy of radiation were compared to 70 Gy of radiation. The results showed that reducing the dose from 70 to 50 Gy did not significantly affect the number of patients who retained vision of 20/200 or 20/40. This work was supported by the Grimshaw-Gudewicz Charitable Foundation. ■

The S-Stamp Eliminates the Primary Cause of Graft Failure in DMEK



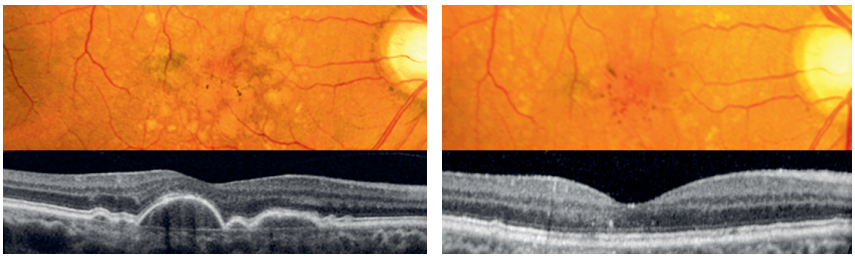
Peter Veldman, MD, of Mass. Eye and Ear was first author on two publications related to the S-stamp for Descemet membrane endothelial keratoplasty (DMEK), a novel orientation technique that has eliminated upside-down graft implantation in DMEK. Dr. Veldman has been helping to validate and successfully implement this technique since 2012, and in the September 2015 issue of *Cornea*, Dr. Veldman detailed a validation study of six cadaveric human corneas. He demonstrated that the application of the S-stamp using his novel technique resulted in minimal endothelial cell loss. Additionally, he provided a detailed step-by-step description of this validated stamping technique so that it can be successfully and safely incorporated in other eye banks around the world. The clinical utility of the S-stamp was then demonstrated in a second article published in *Ophthalmology* (October 2015), in which Dr. Veldman and colleagues presented six-month clinical outcomes from a series of 165 consecutive DMEK procedures before and after the introduction of the stromal-sided S-stamp. Not only did the S-stamp not adversely affect early postoperative complications or six-month endothelial cell loss, it notably eliminated graft failure due to upside-down implantation, the most common cause of graft failure in DMEK. As a result of these publications and data previously presented by Dr. Veldman at national meetings, the S-stamp has undergone widespread adoption by corneal surgeons nationwide and has improved the safety profile for DMEK. The research published in *Ophthalmology* was supported by grants from Moria and Bausch & Lomb Surgical. ■

Peter Veldman, MD

Findings Emphasize Importance of Retinal Imaging in Patients with Diabetes

In a study comparing imaging techniques used in an ocular telehealth program, **Paolo Silva, MD**, **Lloyd Paul Aiello, MD, PhD**, and colleagues from the Joslin Diabetes Center's Beetham Eye Institute found that standard field nonmydriatic fundus photography and nonmydriatic ultrawide field imaging similarly identified nondiabetic retinal findings in eyes of patients with diabetes (*JAMA Ophthalmology*, 2016). Gaining popularity in tele-ophthalmology programs, ultrawide field imaging also may allow the identification of important peripheral retinal abnormalities that are not readily imaged on standard field photography. Researchers found that even in eyes without retinopathy, nondiabetic retinal findings were present in approximately 27 percent of the eyes imaged, which emphasizes the role of retinal imaging in patients with diabetes mellitus regardless of the severity of retinopathy. This study was supported by the Massachusetts Lions Eye Research Fund. ■

Patients with High-risk Macular Degeneration Show Improvement with High-dose Statin Treatment



Left: before statin treatment; right: same patient, one year after statin treatment

In a Phase I/II clinical trial, researchers from Massachusetts Eye and Ear/ Harvard Medical School and the University of Crete found that intensive doses of statins carry the potential for clearing the lipid debris that can lead to vision impairment in patients with high-risk macular degeneration. Their findings, which were published in *EBioMedicine* – a new online journal led by editors of the journals *Cell* and *The Lancet* – not only further the connection among lipids, age-related macular degeneration (AMD), and atherosclerosis, but also present a potential therapy for some patients with non-neovascular ("dry") AMD. Although effective treatments are available for neovascular ("wet") AMD, they are currently lacking for the more prevalent dry form.

Ophthalmologists and vision researchers have long suspected that there may be a connection between dry AMD and atherosclerosis. In dry AMD, physicians often see soft, lipid-rich drusen in the outer retina, similar to the build-up of lipid material in the inner walls of blood vessels in atherosclerosis. Statin use is widespread in middle-aged and older individuals, who also have an increased risk of AMD; however, previous studies have shown very little correlation between regular statin use and improvements in AMD. The authors of the *EBioMedicine* paper hypothesized that, due to the heterogeneous nature of the disease, patients with soft, lipid-rich drusen may respond better to statins prescribed at higher dosages.

Twenty-three patients with dry AMD marked by soft lipid deposits in the outer retina were prescribed a high dose (80mg) of atorvastatin, the generic name of the statin marketed as Lipitor® and several generic equivalents. "Atorvastatin is a very accessible, FDA-approved drug that we have tremendous experience with," said **Demetrios Vavvas, MD, PhD**, of Mass. Eye and Ear. "Millions of patients take it for high cholesterol and heart disease."

Of the 23 patients included in the study, 10 experienced an elimination of the deposits under the retina and mild improvement in visual acuity. "We found that intensive doses of statins carry the potential for clearing up the lipid debris that can lead to vision impairment in a subset of patients with macular degeneration," said **Joan W. Miller, MD, FARVO**. "We hope that this promising preliminary clinical trial will be the foundation for an effective treatment for millions of patients afflicted with AMD." As the next step for this line of research, the investigators plan to expand to a larger prospective multicenter trial to further investigate the efficacy of the treatment in a larger sample of patients with dry AMD.

This work was supported by the Yeatts Family Foundation (see story on page 7), the Loefflers Family Foundation, and Research to Prevent Blindness. ■

Three Primary Open-angle Glaucoma Genes Identified

In the largest genome-wide association study of its kind, **Janey Wiggs, MD, PhD**, of Mass. Eye and Ear and collaborators from HMS Ophthalmology and Case Western Reserve University School of Medicine, identified three genes that contribute to the most common type of glaucoma, primary open-angle glaucoma. Researchers conducted a meta-analysis of genome-wide association study (GWAS) results from 3,853 people with primary open-angle glaucoma and compared them with a control group of 33,480 people of European descent using human genomes collected through the NEIGHBORHOOD consortium, a National Eye Institute (NEI) collaborative. After replicating the analysis using data from an Australian study, and comparing the analysis to three more data sets (Australia, Europe, China), three susceptibility loci were identified: *TXNRD2*, *ATXN2* and *FOXC1*. The findings, published in the February 2016 of *Nature Genetics*, provide key insight that ultimately may be used to develop gene-based testing and treatment strategies for glaucoma. According to NEI Director, Paul A. Sieving, "this unprecedented analysis provides the most comprehensive genetic profile of glaucoma to date." This analysis was funded by NEI. ■

Janey Wiggs, MD, PhD

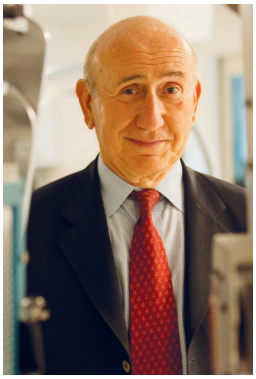
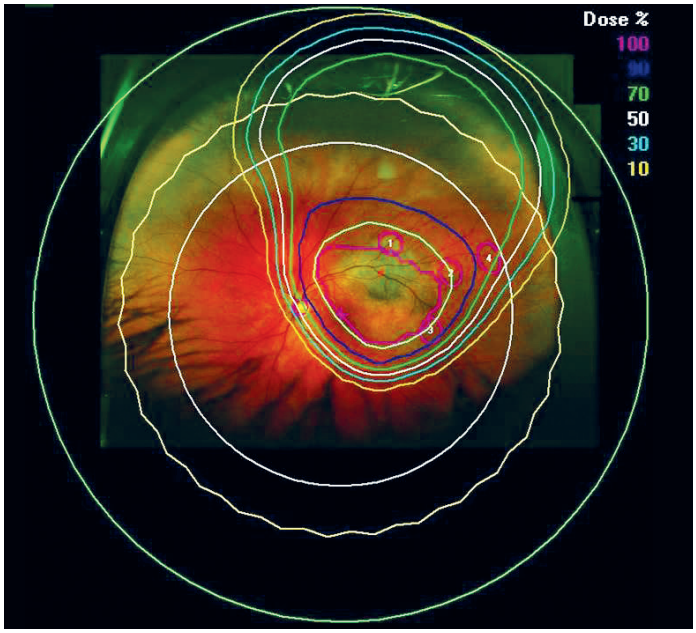


Photo credit: John Earle Photography

Evangelos Gragoudas, MD

proton beam irradiation (PBI), the most broadly applicable therapy for ocular melanoma.

Pioneered 40 years ago by Dr. Gragoudas, PBI enables physicians to deliver high, consistent doses of radiation to eye tumors while sparing normal healthy tissue. Adjunctive procedures are available to patients, such as fine needle aspiration biopsy for molecular prognostic testing, anti-VEGF therapy for prevention or treatment of radiation complications, and vitrectomy surgery, if necessary. Notably, Dr. Kim is currently leading a clinical trial at Mass. Eye and Ear in collaboration with Genentech to investigate the safety and tolerability of ranibizumab, an anti-VEGF agent, in combination with PBI for the treatment of choroidal melanoma.



Example of a treatment plan for proton beam irradiation. Colored lines show the areas receiving various doses of radiation.

A newly launched component of the Ocular Oncology Center of Excellence is the Orbit and Thyroid Eye Disease Center at Mass. Eye and Ear. Here, oculoplastics specialist **Suzanne Freitag, MD**, is working to improve the current management of orbital and ocular adnexal tumors. Along with a multispecialty surgical team that includes specialists in rhinologic surgery and ophthalmic plastic surgery, Dr. Freitag is advancing minimally invasive endoscopic techniques to improve orbital tumor removal. In addition, Dr. Freitag and colleagues are reviewing sentinel lymph node biopsies performed at Mass. Eye and Ear for a variety of ocular surface and eyelid tumors. The results of this review will help inform other specialists about the indications for this procedure and how it may affect patient survival.

Transformational Research

In many cases, breakthroughs in clinical care start in a laboratory setting. For example, Mass. Eye and Ear researchers identified and isolated the *Rb* gene, the first known human tumor-suppressor gene, which is altered in retinoblastoma and several other cancers. This finding provided an important cornerstone in understanding the molecular basis of cancer. Researchers in the Ocular Oncology Center of Excellence continue to probe the molecular and genetic underpinnings of ocular tumors.

Anne Marie Lane, MPH

Since the 1980s, the Mass. Eye and Ear Uveal Melanoma Registry has enabled researchers to better understand melanoma risk, identify biomarkers of melanoma incidence and progression, and evaluate outcomes after treatment. The ultimate goal of these efforts is to develop treatment strategies that will preserve visual function and improve patient survival. **Anne Marie Lane, MPH**, an epidemiologist and biostatistician at Mass. Eye and Ear, oversees the Registry, which contains a serum, plasma, and tissue archive with specimens from nearly 2,000 patients with uveal melanoma. An example of work made possible by this registry is a recent study by Drs. Kim and Gragoudas, which was published in *JAMA Ophthalmology* in August 2015. They sequenced the DNA in blood samples from 507 patients and found that about 2 percent of patients with uveal melanoma have germline mutations in *BAP1*, a gene involved in a recently characterized tumor predisposition syndrome. They also found that germline BAP1 mutations are associated with larger tumors and higher rates of ciliary body involvement, two known risk factors for metastasis. This study was supported by the Grimshaw-Gudewicz Charitable Foundation.

World-class Training

A third goal of the Ocular Oncology Center of Excellence is to provide world-class training to residents and fellows, as well as to educate physicians outside the Department about progress in the diagnosis and management of ocular cancers. Members share their knowledge through Grand Rounds, formal didactics, invited lectures, reports, and presentations at national and international conferences, among others. ■

HARVARD MEDICAL SCHOOL

DEPARTMENT OF Ophthalmology

ANNUAL MEETING & ALUMNI REUNION

June 10-11, 2016 | Boston, MA

Please join us for the 2016 Harvard Medical School Department of Ophthalmology Annual Meeting and Alumni Reunion. All current and former residents, fellows, postdocs, and faculty members are invited to attend this exciting two-day event of scientific exchange and networking.

FRIDAY, JUNE 10: ANNUAL MEETING

- Faculty lectures spanning basic, translational, and clinical research
- Mariana D. Mead lecturer: **Kathryn A. Colby, MD, PhD**
- Tours of Mass. Eye and Ear and Schepens Eye Research Institute
- Annual poster contest for trainees during the cocktail reception at the Four Seasons

FRIDAY, JUNE 10: GALA DINNER AT THE FOUR SEASONS

SATURDAY, JUNE 11: ALUMNI REUNION

- Scientific and clinical lectures from our 10 honored alumni classes (1966, 1971, 1976, 1981, 1986, 1991, 1996, 2001, 2006, and 2011)
- 2016 Department Update
- 2016 Distinguished Clinical Achievement Award lecturer: **Roger Steinert, MD**
- 2016 Distinguished Research Achievement Award lecturer: **Richard H. Masland, PhD**

For more information on program, registration, and accomodations, visit:
eye.hms.harvard.edu/annualmeeting

The Harvard Medical School designates this live activity for a maximum of **10.25** ***AMA PRA Category 1 Credits™****.*

Upcoming Events

Frederick A. Jakobiec Lecture

Mass. Eye and Ear, Meltzer Auditorium
March 21, 2016, 1:00 pm
Alan D. Proia, MD, PhD, Associate Professor in Ophthalmology, Director of Autopsy Services, Duke University Medical Center presents, "Lessons from postmortem eye examination."

Inaugural Pei-Fei Lee Lecture

Mass. Eye and Ear, Meltzer Auditorium
April 13, 2016, 5:00 pm

The F. Bruce Fralick Professor and Chair of Ophthalmology and Visual Sciences at University of Michigan, **Paul P. Lee, MD, JD**, established the Pei-Fei Lee Lectureship in Ophthalmology to honor his late father, who was a dedicated clinician scientist. Dr. Pei-Fei Lee was the first Mass. Eye and Ear glaucoma fellow and was mentored by two luminaries – Drs. Paul Chandler and Morton Grant. Dr. Paul Lee also completed a glaucoma fellowship at Mass. Eye and Ear (1990-91), and will present the inaugural Pei-Fei Lee lecture.

Pediatric Ophthalmology Visiting Professor

Boston Children's Hospital, 300 Longwood Ave, Boston, Karp 11 Conference Room
April 13, 2016, 7:30 am
Robert F. Hess, PhD, DSc, Professor and Director of Research, Department of Ophthalmology, Director, McGill Vision Research Unit, Department of Ophthalmology, McGill University

Pediatric Ophthalmology Visiting Professor

Boston Children's Hospital, 300 Longwood Ave, Boston, Karp 11 Conference Room
June 1, 2016, 7:30 am
Christine Wildsoet, PhD, Professor of Optometry and Vision Science, University of California – Berkeley

National Institutes of Health Renews K12 Support

The National Institutes of Health/ National Eye Institute renewed funding for the K12 Harvard-Vision Clinical Scientist Development Program, directed by **Reza Dana, MD, MSc, MPH, FARVO**. "The K12 Program has been a significant mechanism for us to recruit, train, and in most cases, retain the very best clinician scientist talent in ophthalmology in our nation," said Dr. Dana, who is also Director of the Cornea and Refractive Surgery Service at Mass. Eye and Ear.

Thus far, the program has awarded 10 junior clinician scientists with career development grants that have provided financial support, mentorship, and 75 percent protected research time to pursue and build independent research careers. Current K12 Scholars include **Jason Comander, MD, PhD**, and **Brian Song, MD**, (Mass. Eye and Ear); and **Mary Whitman, MD, PhD**, (Boston Children's Hospital). When asked how the program is helping her career, Dr. Whitman responded, "The K12 has been instrumental in my ability to combine basic neurobiology research with my clinical and surgical practice. Having 75 percent protected time for research has allowed me to immerse myself in the science and spend the time required to develop new techniques."

Established in 2004, the K12 Program has graduated six faculty who have gone on to develop successful programs in cornea, genetics, retina, and low vision research. **Milica Margeta, MD**, will join HMS Ophthalmology/Mass. Eye and Ear this summer as the next K12 Scholar. Her research will focus on elucidating the connection between M2 macrophages/microglia and glaucoma. ■

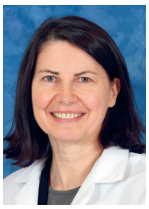
Awards, Grants, and Honors

AWARDS

Aubrey Gilbert, MD, PhD, a clinical fellow in pediatric ophthalmology and strabismus at Mass. Eye and Ear/ Boston Children's Hospital, received the 2015/2016 Fight for Sight-North American Neuro-Ophthalmology Society Research Award for her project, "Radiographic features in pediatric idiopathic intracranial hypertension."

Clifford Kim received the Research to Prevent Blindness Medical Student Fellowship in the amount of $30,000 over one year. Under the mentorship of **Kip Connor, PhD**, Assistant Professor of Ophthalmology at HMS, Mr. Kim aims to investigate the role of retinal microglia and infiltrating immune cells in the early (vascular regression) and late (neovascularization) stages of retinopathy.

Anders Näär, PhD, Professor of Cell Biology at HMS, received a RPB Stein Innovation Award in the amount of $300,000 over two years. This award is given to researchers outside of HMS Ophthalmology (but within HMS) with a common goal of understanding the visual system and the diseases that compromise its function. Dr Näär will be collaborating with **Patricia D'Amore, PhD, MBA, FARVO**, of Schepens Eye Research Institute of Mass. Eye and Ear to study cholesterol accumulation in the eye.



Lois Smith, MD, PhD, of Boston Children's Hospital received the 2015 Heed-Gutman Award from the Society of Heed Fellows at the American Academy of Ophthalmology Annual Meeting on November 14, 2015. Given annually to a former Heed Fellow, this prestigious award recognizes contributions to the field of Ophthalmology through original discoveries and investigations along with distinguished leadership service.

Michael Stahl, a visiting graduate student who works with **Eli Peli, OD, MSc**, at Schepens Eye Research Institute of Mass. Eye and Ear, received a 2015 Educational Award from Edmund Optics. Specifically, he received the Bronze Award for the Americas for the development of a device using structured light to sense and delineate tripping hazards for the visually impaired.

Congratulations to **David A. Sullivan, PhD**, of Schepens Eye Research Institute of Mass. Eye and Ear, who is a 2016 Association for Research in Vision and Ophthalmology (ARVO) Gold Fellow.

GRANTS

Alex Bowers, PhD, received nearly $3 million over five years from the National Eye Institute for her project, "Scanning and detecting at intersections."

Dong Feng Chen, MD, PhD, of Schepens Eye Research Institute of Mass. Eye and Ear received a R01 grant from the National Institutes of Health/National Eye Institute in the amount of nearly $2.5 million over five years for her project, "The molecular basis underlying optic nerve growth in development and regeneration."

Tatjana Jakobs, MD, of Schepens Eye Research Institute of Mass. Eye and Ear received a grant renewal from the National Institutes of Health/National Eye Institute for nearly $1.7 million over four years for her project, "Cell biology of astrocytes in optic nerve head."

Eli Peli, OD, MSc, of Schepens Eye Research Institute of Mass. Eye and Ear received a grant of nearly $3 million from the Department of Defense/ Congressionally Directed Medical Research Programs for his project, "Active confocal imaging system for visual prostheses." **Jae-Hyun Jung, PhD**, is a co-investigator on this grant.

Eric Pierce, MD, PhD, Basil Pawlyk, MSc, Michael Sandberg, PhD, and **Luk Vandenberghe, PhD**, of Mass. Eye and Ear received a grant of $1,241,368 from the Foundation Fighting Blindness to support pre-clinical studies of AAV-mediated gene augmentation therapy for *RPGRIP1*-associated retinal degeneration.

Joseph Rizzo III, MD, of Mass. Eye and Ear received a $1,548,602 grant from the National Institutes of Health to support the development of a retinal prosthesis with penetrating electrodes, which has the potential to provide patients with safer stimulation while also enhancing vision. Dr. Rizzo also received a grant

Demetrios Vavvas to Receive Carl Camras Translational Research Award at ARVO 2016

Photo credit: Kevin Caldwell Photography

Demetrios Vavvas, MD, PhD, Associate Professor of Ophthalmology at HMS and the Joan W. Miller Scholar in Retinal Research at Mass. Eye and Ear, was selected to receive a 2016 ARVO Foundation/ Pfizer Ophthalmics Carl Camras Translational Research Award. The award will be presented at the 2016 Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting in May.

Established in 2010, the award honors the late Carl B. Camras, MD (1953-2009)—a glaucoma specialist and research scientist most widely recognized for developing prostaglandin analogues for the treatment of elevated intraocular pressure in patients with glaucoma. Dr. Camras had a personal interest in developing the next generation of eye and vision researchers.

"It is through the support and guidance of my department chair and colleagues, and the trust of the award committee and referees, that I accept this prestigious award," said Dr. Vavvas, who also co-directs the HMS Ophthalmology Ocular Regenerative Medicine Institute. "Dr. Camras was an outstanding clinician scientist, and a true role model for us all. I hope to proudly follow in his footsteps."

At Mass. Eye and Ear, Dr. Vavvas cares for patients with diabetic retinopathy, ocular tumors, and the "dry" form of age-related macular degeneration (AMD) for which effective treatments are currently lacking. He also conducts research on neuroprotection strategies that aim to preserve photoreceptor cell loss, and prevent vision loss in patients with degenerative eye diseases. By elucidating the mechanisms of neuroprotection, Dr. Vavvas has helped identify viable therapeutic targets. Currently, Dr. Vavvas is investigating the role of inflammation and necroptosis in neuronal survival and regeneration. He also is studying the role of autophagy in drusen deposits, and the role of AMPK, a sensor that maintains energy homeostasis in neurovascular health. ■

from the Department of Defense in the amount of $310,000 to support his work with John Pezaris, PhD, of the Massachusetts General Hospital Department of Neuro-surgery. Drs. Rizzo and Pezaris are modifying a retinal prosthesis to create a novel prosthetic that could be implanted at the level of the lateral geniculate nucleus, which has the potential to help a much broader group of visually-impaired patients.

Janey Wiggs, MD, PhD, received nearly $2.5 million over four years from the National Eye Institute for her project "NEIGHBORHOOD Consortium for POAG genetics."

HONORS

Pablo Argüeso, PhD, **Alex Bowers, PhD**, and **Demetrios Vavvas, MD, PhD**, have been accepted into the 2016 HMS Leadership Development Course for Physicians and Scientists.

Courtney Bovee, MD, has been named the 2015-2016 Ruthanne and Richard Simmons Glaucoma Fellow in the Harvard Medical School Department of Ophthalmology.

HMS Ophthalmology resident, **Lisa Cowan, MD**, was first author on a paper entitled, "Introducing a new surgical technology: Controversies in femtosecond laser-assisted cataract surgery and impact on resident surgical training." This article was published in the Fall 2015 issue of *International Ophthalmology Clinics,* and was one of the top 10 articles read in 2015 in ophthalmology.

Reza Dana, MD, MSc, MPH, FARVO, of Mass. Eye and Ear received the Kersley Medal from the British Ocular Surface Society and delivered an associated lecture entitled, "Ocular surface inflammation - lab to bedside," at the Society's 22nd Annual Scientific Meeting in London on December 4, 2015. **Dr. Dana** also will receive the 2016 Endre A. Balazs Prize and present a Plenary Lecture at the XXII Biennial Meeting of International Society for Eye Research (ISER), which will take place in Tokyo, Japan from September 25-29, 2016. This prize honors a distinguished scientist whose outstanding contributions lead to significant progress in the field of experimental eye research. Past HMS Ophthalmology recipients include **Patricia D'Amore, PhD, MBA, FARVO** (2014) and **Ilene Gipson, PhD, FARVO** (2008).

Miguel Gonzalez, MD, PhD, a cornea KPro research fellow at Mass. Eye and Ear, was accepted into the Royal Academy of Medicine and Surgery of Eastern Andalucia, in his home country of Spain. He also received the 2015 Arruga Award from the Spanish Society of Ophthalmology.

In October 2015 **Joan W. Miller, MD, FARVO**, was elected into the National Academy of Medicine, a national resource for independent, scientifically informed analysis, and recommendations on health issues.

Six members of HMS Ophthalmology were highlighted in the December issue of *Boston Magazine* as "Top Doctors." Included in this list are **Reza Dana, MD, MSc, MPH**; **Joan W. Miller, MD**; **Joseph Rizzo III, MD**; **Ernest Kornmehl, MD**, and **Bradford Shingleton, MD,** of Mass. Eye and Ear; and **David Hunter, MD, PhD**, of Boston Children's Hospital. Doctors included in the *Boston Magazine* list are selected via an online nomination process established by Castle Connolly Medical Ltd., a healthcare research and information company.

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Janey Wiggs and Reza Dana Represent HMS at Academia Ophthalmologica Internationalis Annual Meeting

HMS Ophthalmology was well-represented by **Reza Dana, MD, MSc, MPH, FARVO**, and **Janey Wiggs, MD, PhD, FARVO**, of Massachusetts Eye and Ear at the February 2016 Academia Ophthalmologica Internationalis (AOI) annual meeting in Mexico. As one of eight ophthalmologists elected to membership in 2015, Dr. Wiggs was inducted into AOI after presenting her inaugural lecture entitled, "Genome-wide studies in glaucoma." Dr. Dana was one of four ophthalmologist elected to AOI membership at the 2016 meeting.

"Election into AOI is one of the highest honors conferred in the field of ophthalmology," said **Joan W. Miller, MD, FARVO**, *who is also a member of AOI.*

Photo credit: John Earle Photography

Dr. Wiggs has been a frontrunner in glaucoma research for more than three decades. As the principal investigator of the NEIGHBORHOOD consortium, she aims to identify genes that contribute to glaucoma, gain insight into the underlying disease mechanisms, and ultimately develop novel gene-based therapies and diagnostic tests. At Mass. Eye and Ear, Dr. Wiggs directs the Genetic Diagnostic Testing Laboratory, where she helped develop the GEDi test, a panel test for mutations in 250 genes known to contribute to inherited retinal degenerations. She also has mentored numerous HMS students and research fellows from China, Japan, the United Kingdom, India, and the United States.

Dr. Dana is an internationally recognized clinician scientist and a leader in the field of corneal immunology and transplantation biology. As an ophthalmologist and an immunologist, he has a particular interest in the cellular and molecular mechanisms of inflammation as they pertain to ocular surface and anterior segment pathologies, including dry eye, allergy, wound healing responses, and transplant rejection. At Mass. Eye and Ear, he directs the Cornea and Refractive Surgery Service. He has mentored more than 100 clinical and research trainees, and directs the K12 Harvard-Vision Clinical Scientists Development Program (see page 14 for details).

AOI is one of the most prestigious international academic organizations in ophthalmology. With an emeritus and active membership spanning 33 countries, AOI includes some of the most acclaimed ophthalmologists worldwide. Eligible candidates who meet the Academia's high standards of scholarly excellence are formally nominated and elected by other members to fill vacancies; current membership is limited to 100 chairs. ■

Patricia D'Amore and Joseph Arboleda-Velasquez Selected for 2015-2016 HMS Excellence in Mentoring Awards

Patricia A. D'Amore, PhD, and **Joseph Arboleda-Velasquez, MD, PhD**, of Schepens Eye Research Institute of Mass. Eye and Ear, were selected for 2015-2016 HMS Excellence in Mentoring Awards. Dr. D'Amore received a prestigious William Silen Lifetime Achievement in Mentoring Award and Dr. Arboleda-Velasquez received a Young Mentor Award.

Dr. D'Amore is a 2004 graduate of The Academy at HMS and a 2006 recipient of the A. Clifford Barger Excellence in Mentoring Award. A passionate crusader of finding cures for blinding retinal diseases, she is equally committed to ensuring that her protégés have the depth of knowledge and leadership acumen to push the boundaries of vision research. She has mentored more than 100 trainees during her career, many of whom are now leading experts in the field, including seven who are full Professors, and eight who are Senior Scientists at companies such as Genzyme and Invitrogen. Dr. D'Amore also collaborates with David Hunter, MD, PhD, to implement a mentoring program that supports the professional development and career advancement of HMS Ophthalmology faculty members at every stage of their research careers.

Dr. Arboleda-Velasquez joined the full-time HMS faculty in 2014 after completing a postdoctoral fellowship in Dr. D'Amore's laboratory. Still in the early stages of his career, Dr. Arboleda-Velasquez currently mentors three postdoctoral fellows. Through his research, he aims to elucidate the biology and pathophysiology underlying small-vessel diseases, including diabetic retinopathy. ■

About HMS Excellence in Mentoring Awards

The Office for Diversity Inclusion and Community Partnership at HMS established three Excellence in Mentoring Awards to recognize the value of quality mentoring relationships and the impact they have on professional development and career advancement in basic/clinical medicine, research, teaching, and administration. These include the William Silen Lifetime Achievement in Mentoring Award, the A. Clifford Barger Excellence in Mentoring Award, and the Young Mentor Award. For the 2015-2016 awards cycle, 17 mentors were selected from of a pool of more than 18,000 faculty members HMS-wide. Awardees will be honored during a celebration on May 23, 2016 in the Carl Walter Amphitheater, Tosteson Medical Education Center, Harvard Medical School.

Who Benefits from Genetic Diagnostic Testing?

In the February 2016 issue of *Eye Insights*™, Mass. Eye and Ear specialists published vital information about the current state of genetic diagnostic testing for eye diseases. Board-certified in ophthalmology and medical genetics, **Janey Wiggs, MD, PhD**, provided guidelines for integrating genetic diagnostic testing into clinical care for patients with inherited retinal degenerations, early-stage glaucoma, and primary optic atrophy. Also included was information on how to order tests through the Ocular Genomics Institute at Mass. Eye and Ear. Created to educate and inform ophthalmologists about various topics in ophthalmic care, *Eye Insights* is sponsored by Mass. Eye and Ear and Massachusetts General Hospital and mailed to more than 18,500 practicing ophthalmologists across the nation. Visit **eye.hms.harvard.edu/newsletters** for more details. ■

Personnel Updates

HMS APPOINTMENTS

Kinga Bujakowska, PhD, Mass. Eye and Ear, Instructor in Ophthalmology

Sarah Jacobo, PhD, Schepens Eye Research Institute of Mass. Eye and Ear, Instructor in Ophthalmology

Deborah Jacobs, MD, Mass. Eye and Ear, Associate Professor of Ophthalmology, Part-time

Jae-Hyun Jung, PhD, Schepens Eye Research Institute of Mass. Eye and Ear, Instructor in Ophthalmology

Leo Kim, MD, PhD, Mass. Eye and Ear, Assistant Professor of Ophthalmology

Anna Kirillova, OD, Boston Children's Hospital, Instructor in Ophthalmology

Magdalena Krzystolik, MD, Mass. Eye and Ear, Assistant Professor of Ophthalmology

Gang Luo, PhD, Schepens Eye Research Institute of Mass. Eye and Ear, Associate Professor of Ophthalmology

Jason Mantagos, MD, Boston Children's Hospital, Assistant Professor of Ophthalmology

Preeti Mokka, OD, Boston Children's Hospital, Instructor in Ophthalmology

Ankoor Shah, MD, PhD, Boston Children's Hospital, Assistant Professor of Ophthalmology

Carolyn Wu, MD, Boston Children's Hospital, Assistant Professor of Ophthalmology

LEADERSHIP APPOINTMENTS

Kathryn Hatch, MD, became Site Director of Mass. Eye and Ear, Waltham effective March 1, 2016. In this role, she collaborates with Mass. Eye and Ear's operational leadership to manage medical, administrative, recruitment, and financial aspects for the Waltham outpatient office. Physicians in this office offer a range of specialty care, including cataract surgery, on-site laser vision correction, corneal crosslinking, and ocular oncology and optometric services. In 2016, specialty care for patients with glaucoma will be added. Dr. Hatch completed her cornea fellowship at Mass. Eye and Ear, and is a member of the Mass. Eye and Ear Cornea and Refractive Surgery Service.

NEW RECRUITS

Jan Kylstra, MD, joined the HMS Ophthalmology faculty in February 2016, and works full-time in Mass. Eye and Ear's Retina Service. His clinical interests focus on the retina, and in particular, the management of diabetic retinopathy, macular holes, epiretinal membranes, retinal detachments, age-related macular degeneration, non-surgical retinopathy of prematurity, and retinal infectious disease. Dr. Kylstra completed his Ophthalmology residency at Harvard Medical School, and a vitreoretinal fellowship at Mass. Eye and Ear. Previously, he was Professor of Ophthalmology at the Medical University of South Carolina.

After completing subspecialty training in glaucoma at Duke Eye Center/Duke University, **Milica Margeta, MD**, will join Mass. Eye and Ear's Glaucoma Service in the summer of 2016. As the tenth K12 Harvard-Vision Clinical Scientist Development Program Scholar she will receive financial support, mentorship, and 75 percent protected research time to develop her independent research career. Funded by the National Institutes of Health/National Eye Institute, the K12 Program will facilitate Dr. Margeta's research on the connection between M2 macrophages/microglia and glaucoma. Dr. Margeta earned her MD and PhD from Stanford University, and attended Duke University for her ophthalmology residency. During residency, she received the prestigious Robert Machemer Resident Research Award and the Duke Ocular Innovation Award.

Veena Rao, MD, will join Mass. Eye and Ear's Glaucoma Service in September 2016 following completion of a glaucoma fellowship at Duke Eye Center/Duke University. She will see patients at Mass. Eye and Ear outpatient offices in Waltham and Longwood. Dr. Rao earned her medical degree from Yale University, and completed her ophthalmology residency at Duke Eye Center. In 2015, she received the K. Alexander Dastgheib, M.D. Eye Surgery Award, which recognized her outstanding surgical skills and judgment.

Second-year HMS Ophthalmology resident, **Tomasz (Tommy) Stryjewski, MD**, will serve as Chief Resident and Director of the Mass. Eye and Ear Eye Trauma Service for the 2017-2018 academic year. In this role, he will join the leadership of one of the busiest ocular trauma centers in the country and serve as teacher and mentor

Outreach



Second Academic Training Mission in Haiti

In January 2016, **Roberto Pineda II, MD**, and **Shizuo Mukai, MD**, completed a second academic training mission to Haiti State University Hospital in Port-au-Prince, where they educated Ophthalmology residents about integrating ophthalmology fundamentals with modern innovations. Dr. Pineda demonstrated how to transplant corneal tissue, which was donated by the Lions Eye Institute (Tampa). Dr. Mukai showed residents how to use smartphone-based retinal photography in the absence of expensive equipment (*middle photo*). Both this trip and the earlier mission in July 2015 were coordinated by the Mass. Eye and Ear Office of Global Surgery and Health.

Dr. Mukai also had the opportunity to examine a former patient (*right photo*) for the first time in six years. Back in 2010, an American doctor working in Haiti noticed that the three-year old had leukocoria (white pupil), which indicated a retinoblastoma. She contacted Dan Deshler, MD, of HMS Otolaryngology, who arranged to have the boy come to Mass. Eye and Ear. Dr. Mukai performed surgery to remove the retinoblastoma, which was followed by chemotherapy treatments at Massachusetts General Hospital. Dr. Mukai's recent examination of the boy showed that he is now cancer-free at age nine years. ■

to the Department's cadre of 24 residents. In addition to his clinical responsibilities, Dr. Stryjewski will also serve as a key member of the HMS Ophthalmology Residency Training Program leadership team and teaching faculty. His appointment will follow that of **Seanna Grob, MD**, who will serve as Chief Resident and Director of the Eye Trauma Service for the upcoming academic year, 2016-2017.

Richard Watson, MD, MS, will join the Mass. Eye and Ear Retina Service in the late summer of 2016 after completing subspecialty training in vitreoretinal surgery at the West Virginia University Eye Institute. Along with current retina specialists **Magdalena Krzystolik, MD,** and **Paul Greenberg, MD**, he will see patients at the Plainville and Providence outpatient offices. Dr. Watson earned his MD from Tulane University School of Medicine where he also completed his ophthalmology residency. Currently, he is involved with several clinical trials related to age-related macular degeneration and geographic atrophy.

Yoshihiro Yonekawa, MD, will join the HMS Ophthalmology faculty in the summer of 2016, following the completion of a vitreoretinal fellowship at William Beaumont Hospital. His focus will be adult and pediatric vitreoretinal surgery. Prior to this fellowship, he was an Ophthalmology resident at HMS and the recipient of many awards, including the Gragoudas Award and Heed Ophthalmic Foundation Fellowship. In 2015, he received the prestigious Ronald G. Michels Fellowship Foundation Award, and the Retina Society Fellowship Research Award.

DEPARTURES

Lloyd M. Aiello, MD, of Joslin Diabetes Center, retired from his position as part-time Professor of Ophthalmology in June 2015, after 52 years with HMS. Dr. Aiello is an internationally recognized expert on diabetic retinopathy. He was a founding director of the Beetham Eye Institute at Joslin Diabetes Center, and a co-founder of the Joslin Vision Network (JVN) and Center for the Humanities in Diabetes Eye Care. Along with William P. Beetham, he pioneered the use of lasers to treat diabetic retinopathy, and by doing so set a new standard for diabetic eye care that is still used today.

Clint Makino, PhD, left the department in January 2016 to join the Department of Physiology and Biophysics at the Boston University Medical Campus. For more than 10 years, Dr. Makino has conducted research on the molecular mechanisms of visual transduction at Mass. Eye and Ear. He discovered that some retinal cones express mixtures of visual pigments, that the expression level of rhodopsin impacts rod outer segment structure, and that light activation of rhodopsin can be mimicked by the binding of vitamin A.

Robert Webb, PhD, of Schepens Eye Research Institute of Mass. Eye and Ear retired as Associate Professor of

Ophthalmology in June 2015, after 36 years with HMS. An inventor of many diagnostic medical instruments, Dr. Webb is widely known for co-inventing the award-winning scanning ophthalmoscope, which is used to view the retina of the living human eye.

Alumni News

Dimitri Azar, MD, MBA, Dean of the College of Medicine and Head of the Department of Ophthalmology and Visual Sciences at the University of Illinois, recieved the 2016 Castroviejo Award from the Cornea Society. This is the Society's highest award. Prior to joining University of Illinois, Dr. Azar was a tenured Professor of Ophthalmology at HMS and Director of the Cornea and Refractive Surgery Service at Mass. Eye and Ear. He also completed his Ophthalmology residency at HMS.

Hee Yoon Cho, MD, PhD, has been appointed Chief and Chair of the Department of Ophthalmology at Hanyang University in Seoul. Dr. Cho was a postdoctoral fellow at Mass. Eye and Ear with **Joan W. Miller, MD**, and **Lucia Sobrin, MD, MPH**.

Deborah Pavan-Langston, MD, is the 2016 recipient of the Cornea Society's Dohlman Award, to be presented at the American Academy of Ophthalmology (AAO) Annual Meeting in Chicago. Dr. Pavan-Langston is the first woman to win this award, which is given in recognition of a lifetime of teaching excellence in the field of cornea and external disease, and for contributions to the profession. Dr. Pavan-Langston was the first female resident in ophthalmology at Harvard Medical School. She was a Professor of Ophthalmology at HMS until her retirement in 2015.

Joel S. Schuman, MD, has been appointed Chair of the Department of Ophthalmology at New York University Langone Medical Center. Dr. Schuman completed clinical and research glaucoma fellowships at Mass. Eye and Ear/HMS.

SEND US YOUR NEWS!
Please forward news, comments, and mailing changes to eyenews@meei.harvard.edu

Harvard Medical School Department of Ophthalmology and Massachusetts Eye and Ear Alumni Association

ALUMNI RECEPTION AT ARVO

Sunday, May 1, 2016 • The Arctic Club, Seattle, WA • 7:30pm - 10:00pm

Joan W. Miller, MD, and **Joseph F. Rizzo III, MD**
of Harvard Medical School Department of Ophthalmology

and

Frank G. Berson, MD and **B. Thomas Hutchinson, MD**
of Massachusetts Eye and Ear Alumni Association

welcome faculty, alumni, and friends to an evening reception at The Arctic Club, located at 700 3rd Avenue, during the annual meeting for the Association for Research in Vision and Ophthalmology (ARVO).

Please RSVP by April 15 to Ophthalmology_Events@meei.harvard.edu

HARVARD MEDICAL SCHOOL
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upcoming events in ophthalmology

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Annual Meeting and Alumni Reunion

June 10-11, 2016
Boston, MA

See page 13 for details or visit eye.hms.harvard.edu/annualmeeting