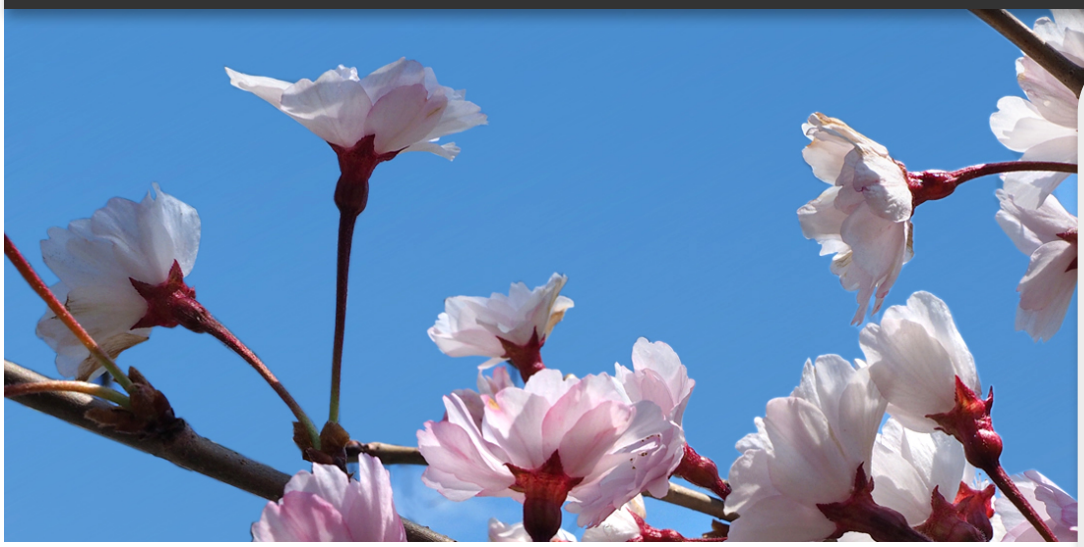
UMass Insight

University of Massachusetts Medical School

Department of Ophthalmology & Visual Sciences

UMassMemorial Medical Center

News from the Department of Ophthalmology & Visual Sciences Issue: 2 Spring 2017



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Find us online for the latest, research, publications, faculty updates & more http://www.umassmed.edu/ophthalmology/

Insight from the Dean

The University of Massachusetts Medical School (UMMS) looks forward with great anticipation to the ongoing growth and maturation of the Department of Ophthalmology and Visual Sciences, under the leadership of Shlomit Schaal, MD, PhD, our dynamic new Chair.

The new leadership in the department has provided opportunities for growth and improvement of each of the missions of the department, clinical care, education and research. It is our expectation that UMMS Ophthalmology will provide the highest quality care, as the basis for exemplary education of UMMS medical students and, in the future, UMMS Ophthalmology residents.

We have been very pleased with the success of UMMS students who have chosen to pursue careers in Ophthalmology. These students have had a very high success rate in the match, but we know that their (continue on page two)

(Insight from the Dean)

opportunities will further improve as we initiate our UMMS Ophthalmology residency.

In the research arena, the department has already demonstrated a very strong history of accomplishment in basic research, particularly in the realm of gene therapy. In the future, we anticipate that this success will translate more readily into clinical research opportunities for our patients and providers right here at UMass.

In addition to basic research, Dr. Schaal and her colleagues are focused on clinical research that could address some of the most pressing problems faced by our patients today. I very much look forward to working with her and all of the faculty as we move forward together to make this vision a reality.

Terence R. Flotte, MD

Celia and Isaac Haidak Professor of Medical Education
Dean, Provost and Executive Deputy Chancellor

Insight from the Chair

Dear Colleagues and Friends,

I am delighted to invite you to read the 2017 spring edition of UMass Insight. During the past few months our department has shown tremendous progress, thanks to the clinic-wide LEAN process we undertook as a team.

We implemented a series of original ideas brought up by team members, and were able to improve clinic flow. We have been able to double clinic availability for new patients, and have decreased wait time in the eye clinic to less than 5 minutes.

This spring, we proudly celebrated Yellow Belt graduation of all our clinic staff. Happy Spring!

Shlomit Schaal, M.D., Ph.D.

Professor and Department Chair

University of Massachusetts Medical School

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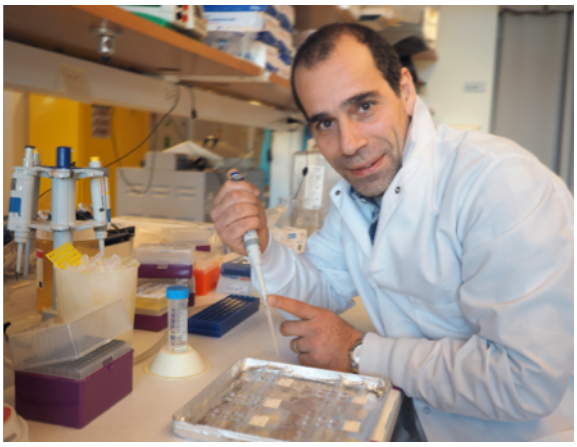
Faculty Insight



Dr. Punzo investigates macular degeneration

Claudio Punzo, PhD, is a basic science faculty who obtained his degree from the University of Basel, Switzerland. He studied the function and evolution of the master regulatory gene of eye development in the fruit fly.

Dr. Punzo joined UMMS in 2010, as an Assistant Professor after completing his post-doctoral research fellowship at Harvard Medical School.

In 2009, while at Harvard, Dr. Punzo together with Dr. Cepko proposed a new mechanism for why individuals affected by the blinding disease Retinitis Pigmentosa lose vision.

Since joining UMMS, Dr. Punzo has successfully prolonged vision in mice with the disease, and is currently working on a translational approach to develop a therapy that is also applicable to humans. Recently, Dr. Punzo has developed a new mouse model for AMD, which will allow for the first time the study of how Age-related Macular Degeneration develops and progresses.

Dr. Khanna studies inherited retinal diseases

Hemant Khanna, PhD, completed his graduate studies in 2001 from the University of Delhi, India. He later joined the Department of Ophthalmology, at the University of Michigan, and was appointed Assistant Professor in 2008.

In 2010, he joined the Department of Ophthalmology and Horae Gene Therapy Center at UMMS.

His laboratory focuses on understanding the molecular mechanisms of inherited blindness disorders and utilizing this knowledge to develop novel treatment strategies.

Both animal models as well as patient-derived cells are utilized in the studies. Dr. Khanna serves on NIH study sections, as well as on the editorial boards of scientific journals, including Scientific Reports, Molecular Vision and BMC Ophthalmology.

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Clinical Insight

LEAN Transformation of Patient Care at UMass Memorial Eye Center

Marissa O'Connor, a Process Improvement Specialist within the Center for Innovation and Transformational Change (CITC), began working with the Eye Center team in December 2016. She holds a BS in Chemical Engineering from WPI. Marissa worked on a customized approach to teaching the lean awareness introductory class "Lean White Belt".

The course uses a simulation developed by Dr. Eric Dickson, in which teams are required to assemble Mr. Potato heads per their electronic health record (picture), in a constrained amount of time.

This practical teaching approach proves to be an effective way to connect the team in a new way, focusing on engagement through the idea system and making the work better for the staff and patients. This new learning approach demonstrated a new best practice of delivering the Lean White Belt training to intact teams.

The team uses a "real" problem and implements countermeasures while learning the A3 problem solving process, coupling the knowledge with the understanding and implementation. The team will obtain Yellow Belts and Dr. Schaal, Green Belt in the process. The team aspires to identify opportunities to improve patient flow and to optimize patient care, empowering the Eye Center to become the "Best Place to Give Care and the Best Place to Get Care".

Patient Insight

Living with Blinding Eye Disease

My name is **Diane McBride**, I am 54-year-old mother of three. My nightmare began nearly 10 years ago, it was at that time that I began to lose my sight. I was scared and worried, and immediately called my ophthalmologist, who told me that my eye looked fine.

However, he did suggest that I see a specialist. I took his advice and made an appointment. At that time, I was diagnosed with Retinal Vasculitis, explained to me as an inflammation of the retina. (Continue on page five)

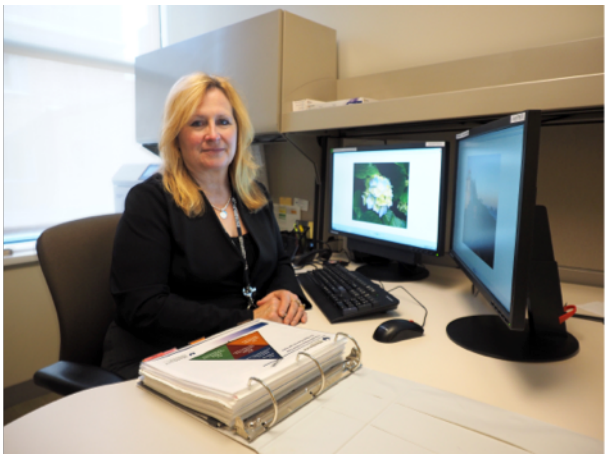
Patient Insight

My fears grew as I wondered if I would ever get my sight back. My next cause of treatment would be steroid shots in my eyes, remicade infusions to help get the inflammation down and the eye pressure under control. The last treatment I received was a form of chemotherapy. To my dismay, my eyesight continued to get worse.

My biggest fear is losing my independence and relying on others for transportation. I can't just get up and go anywhere. Although I'm trained to ride the bus, I still have fears. I thank God for my family every day, my sisters and my children have been overwhelmingly supportive, but I still feel like a hindrance. With the support of my family, friends, and the eye experts at the UMass Memorial Eye Center I have discovered a new normal.

I would like to thank Sharon, Brendon, and Anna from the Massachusetts for the Commission for the Blind, for all their help.

Staff Insight



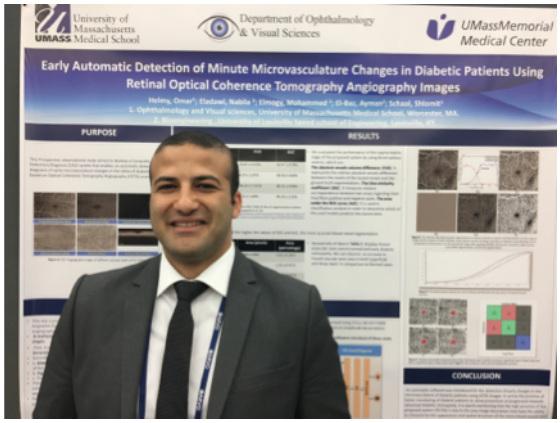
The Eye Center Welcomes New Clinic Manager

Darlene Bocash-Winn started her career in ophthalmology at Boston University School of Medicine Ophthalmic Technology Program. After graduation, she earned her C.O.M.T. (Certified Ophthalmic Medical Technologist) from the Joint Commission of Allied Health Personnel in Ophthalmology.

In her 33 years in ophthalmology, she has held many leadership positions including Chief Technologist, Practice Administrator, and Clinical Manager in both Academic and private practices. Darlene serves as a professor of the Ophthalmic Assisting programs at Benjamin Franklin Institute and Massasoit Community College.

She has traveled to many ophthalmology practices within the United States to teach Certified Ophthalmic Assistants (COA) and those who want to become COAs, many skills with the company EyeTechs. "I have a strong passion for the work I do and nothing brings me greater joy than to see the successes of others with the same passion", said Darlene as she was welcomed by ophthalmology clinic faculty and staff members.

National Insight



UMass Faculty and Students attend ARVO - Annual Conference for Eye and Vision Research

The Department of Ophthalmology and Visual Sciences was proud to be well represented this year at the annual conference of Association for Research in Vision and Ophthalmology (**ARVO**). The conference was held in **Baltimore**, **Maryland**, from May 7-11, 2017.

A team of brilliant scientists, postdoctoral associates, and medical students represented the Department of Ophthalmology and Visual Sciences, at the University of Massachusetts Medical School (UMMS).

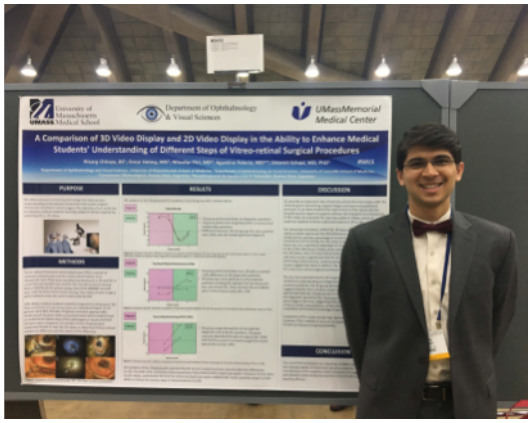
Ten original research projects presented by the department composed of both basic science and clinical research. The team was led by **Shlomit Schaal, MD, PhD**, who moderated panels, workshops, abstracts and posters. Dr. Schaal was recently elected to serve as Chair of Professional Development and Educational Committee of ARVO.

Various clinical research projects were represented in the poster session, starting with **Omar Helmy, MD,** poster, titled *Early Automatic Detection of Minute Microvasculature Changes in Diabetic Patients Using Retinal Optical Coherence Tomography Angiography Images*. The purpose of this study was to develop an original automated algorithm that detects early minute changes of retinal vasculature from OCT images in diabetic patients. Early detection of pathology can provide an opportunity for early prevention and treatment of diabetic eye complications. Still in the OCT Angiography world but with a distinct perspective.

Lauren Lombardi, first-year medical student at UMMS, presented a poster, titled *Characterization of Retinal and Choroidal Microvasculature Changes in Obstructive Sleep Apnea Patients by Optical Coherence Tomography Angiography Analysis.* The purpose of this study was to identify whether OCTA imaging of the retina could be quantitatively and qualitatively measured to provide new insights into the diagnosis, follow up, and management of obstructive sleep apnea. Correlations between severity of obstructive sleep apnea and changes in the retinal and choroidal microvasculature were determined.

Nisarg Chhaya, fourth-year medical student at UMMS, introduced new applications of technology that can change education in a poster, titled A comparison of 3D video display and 2D video display in the ability to enhance medical students' understanding of different steps of vitreoretinal surgical procedures. (Continue on page seven)

National Insight



The goal was to determine whether 3D technology, when compared to 2D, has an effect on medical students' learning of vitreoretinal procedures. Surgical procedures were recorded with a 2D camera and 3D HD system simultaneously, side by side.

One hundred medical students were placed in either 2D or 3D groups, watched the corresponding videos, and then answered various questions about the procedures. When students' answers were compared, the data suggested that 3D video may have value in teaching ophthalmic surgeries to medical students, especially for intraocular procedures.

On cellular level, our basic science research was eventful this year. **Hemant Khanna, PhD**, and his lab researchers were authors of papers in Mutations *in zebrafish cep290 result in age-related cone degeneration*. The research project aimed to better understand the disease pathogenesis associated with CEP29 mutations. Two posters were presented from Dr. Khanna's lab, titled *Digenic Inheritance and Physical Interactions of CYP1B1 and TEK in Primary Congenital Glaucoma and* Interocular Symmetry of Rod and Cone Topography in Human ORF15-RPGR-XLRP Disease Despite Large Intraretinal, Intrafamilial and Interfamilial Variation.

Lolita Petit, PhD, a postdoctoral associate in **Dr. Claudio Punzo's lab** presented a poster, titled *Rod outer segments influence the efficiency of AAV-mediated rod transduction*. The aim of this project was for better understanding the shift in tropism from cones to rods.

Haijian Lin, MD, PhD, presented a poster which was considered to be a hot topic for this year, titled *Accumulation of damaged nDNA promotes RPE cellular senescence and pro-inflammation*. With increasing evidence to support a role for chronic inflammation in the pathogenesis of age-related macular degeneration (AMD). This study contributes to our understanding of the molecular mechanism in the development of AMD.

All the Department's papers and posters received considerable admiration among participants, which established a presence in the same capacity as other prestigious institutions. For more detailed information about the Department's presence in ARVO and authors contributions, kindly visit our news section on our website.

Community Insight

UMass Eye Doctors Participate in Multicultural Women's Health Summit

Dr. Priya Janardhana, **Dr. Shlomit Schaal**, and **Ms. Darlene Bocash-Winn** participated in the annual Multicultural Women's Health Summit held at the UMass Medical School on Saturday, April 29th. This event, headed by Dr. Deborah Plummer, and chaired by Dr. Julia Johnson and Dr. Mary Lee is an annual community out-reach event that aims to increase health awareness in women of our local Worcester community.

UMass Eye Doctors handed out flyers discussing common eye disorders, such as dry eyes, age related macular degeneration, diabetic retinopathy, cataracts, and glaucoma, and answered all questions raised by the public. Multicultural Women's Health Summit is an event sponsored by the UMass Medical School and UMass Memorial Healthcare.

The Department of Ophthalmology & Visual Sciences is wishing you a Happy Spring!

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