Fall 2013

ARVO® News

The Association for Research in Vision and Ophthalmology

arvo.org

ARVO 2013: Seattle welcomes us with record-breaking temperatures and sunshine

Above: Cynthia von Zee describes her research. Center: Welcome sign among the fish at- Pike Place. Below: Singing at ARVO Karaoke.

Above: Keynote speaker and Nobel Laureate Oliver Smithies, DPhil, charms attendees. Below: Warm temperatures and an outdoor terrace worked well for networking.

For a look back at the ARVO 2013 Annual Meeting, see page 18.

Call him Sir: Former ARVO president knighted

Peng T. Khaw, MD, PhD, FARVO

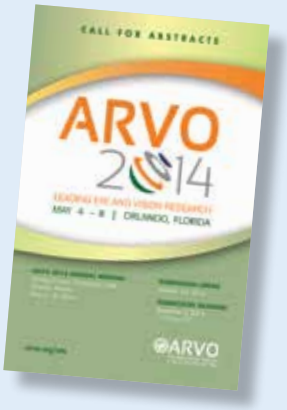
ARVO Immediate Past President Peng Tee Khaw, MD, PhD, FARVO, is the first member of ARVO to be knighted in the Queen's birthday honors. Sir Peng is the only U.K.-based member to have served as president in the association's 85-year history. He presided over the ARVO 2013 Annual Meeting in Seattle, Wash., themed "Life-changing Research," with nearly 11,500 attendees from across the globe.

"ARVO has played a very important role in my scientific career, particularly through the outstanding and inspirational people I have met and learned from over the years," said Sir Peng.

Sir Peng is professor of glaucoma and ocular healing, and consultant ophthalmic surgeon at Moorfields Eye Hospital and UCL Institute of Ophthalmology. He is also

See **Sir Peng,** page 3

2014 Annual Meeting Highlights and Call for Abstracts enclosed



The ARVO Foundation needs your support

See enclosed envelope

TVST: Gaining momentum

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ARVO 2014 fact:
Orlando is known by locals as O-Town, even though the official nickname is "The City Beautiful."

President's message

Addressing gender inequality will help to strengthen ARVO

Justine R. Smith, FRANZCO, PhD, FARVO

If I lived in the Northern Hemisphere, "Scientists" is an exhibition I would not miss. The exhibition — currently showing at The Royal Society in London — features portraits and drawings of Fellows and other awardees of the world's oldest scientific academy. The unusual feature of this exhibition is that all the featured scientists are female.

In a science blog published on the website of *The Guardian* ahead of the opening Uta Frith[1], a Fellow of The Royal Society and curator of the exhibition, comments, "Women in science have an image problem." She explains that the problem is one of "invisibility," and while she seeks to fill "a void in representations of women in science," "Scientists" is also intended to encourage women's involvement within science in a broad sense. This is certainly a laudable goal.

The topic of women in eye and vision research was featured in many of my discussions during and after the ARVO 2013 Annual Meeting, at forums ranging from the Board of Trustees meeting to informal "chats" in the poster hall to post-meeting electronic feedback. Such discussions are not peculiar to ARVO, of course. The involvement of women across all fields of science is receiving considerable attention at the present time, in the popular press and scientific literature, and at educational and academic, business and industrial, and political events. This attention is very appropriate.

In March 2013, *Nature* dedicated an issue of the journal to Women in Science, and the issue made for rather shocking reading. Clearly times have moved ahead since my mother was considered unsuitable for postgraduate training by senior academic faculty, because she was married and had small children. However, as highlighted by the articles in this issue, there continues to be substantial discrimination against women in science. Examining current statistics, *Nature* Journalist Helen Shen[2] notes that although women are awarded approximately half of the doctorates in the U.S. and Europe, there is a progressive decline in female representation at increasing postdoctoral levels, with women accounting for approximately 10 – 20% of senior faculty in different scientific disciplines. Women are underrepresented on peer-review bodies such as scientific review panels for granting bodies and journal editorial boards. Statistics generated in the United States suggest that while women are as successful as men in terms of securing research grants today, sizes of their awards are relatively smaller. Additionally, as a group, female scientists earn lower salaries than their male colleagues.

Some women leave careers in science due to family related responsibilities. Like many institutions across the globe, the Australian university where I am based has enacted many policies that allow one to balance work and family life, including onsite childcare, allowance for changes in employment fraction and/or part-time work, and flexible working hours. The concept of "performance relative to opportunity," considering career interruptions due to child or other family care-related responsibilities and illness, has been embraced by federal granting bodies in Australia and many other countries.

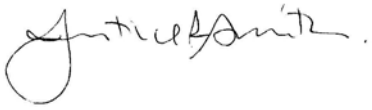
However, as highlighted in her commentary, *Sexist attitudes: Most of us are biased,* the neurobiologist Jennifer Raymond, PhD[3], cites multiple pieces of evidence for a widespread bias against women in science, which is promoted by men and women alike. A particularly illuminating study was published recently in *Proceedings of the National Academy of Sciences of the United States of America*[4]. In a randomized double-blind study, two resumes that were identical save for the names – male or female – were provided to science faculty at six U.S.-based research-intensive universities. Participants were asked to consider the two candidates for a laboratory manager position. Both female and male faculty rated the female candidate as having

significantly less competence and hireability, and suggested a significantly lower salary for the female applicant, in comparison to the male applicant.

This leads to the question of how women fare at ARVO. Our membership statistics are consistent with those for the field of science in general; 48% of members-in-training are female, while 31% of the more senior membership are female. Achievements in addressing gender inequality at ARVO are apparent. In 2014, the Board of Trustees has a record number of female trustees — five females and 11 males — and in myself, ARVO has its fourth female president. At the 2013 Annual Meeting, 34% of paper session chairs were female. The ARVO Foundation for Eye Research's Women in Eye and Vision Research (WEAVR) initiative has been highly successful in promoting the career paths of women in eye and vision research; activities include networking opportunities and travel grants to support female scientists' attendance at the Annual Meeting.

However, concerns regarding gender inequality remain, as a few examples illustrate. Although the ARVO membership includes many highly accomplished female scientists, over the past 15 years, women have received just 10% of ARVO Achievement Awards for scientific contributions (i.e., Proctor Medal, Friedenwald Award, Mildred Weisenfeld Award and Cogan Award). The Keynote Series became part of the Annual Meeting in 2000; a female keynote speaker is yet to be programmed. Women make up over one-third of the large editorial board of *Investigative Ophthalmology & Visual Science*, but just one of the eight associate editors is female.

How to correct gender inequality in science most effectively remains a big question that I will not attempt to address. There are arguments for and against quota systems, which require a specific number of women be appointed or selected for particular roles or awards. As members of ARVO, we should be proud of the efforts our organization has made to address gender inequality, but we also should look forward to further movement. Such equality will only strengthen ARVO's leadership in the eye and vision research community. ■



Justine R. Smith, FRANZCO, PhD, FARVO

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2. Shen H. Inequality quantified: Mind the gender gap. Nature 2013;495:22-24.
3. Raymond J. Sexist attitudes: Most of us are biased. Nature 2013;495:33-34.
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2014 Distinguished Service Awards

The Distinguished Service Award is presented to elected ARVO officers and editors-in-chief upon completion of their terms in appreciation for dedicated service to ARVO.

Peng T. Khaw, MD, PhD, FARVO
NIHR Biomedical Research Centre, Moorfields UCL Institute
Immediate Past President

Jacob Pe'er, MD, FARVO
Hadassah-Hebrew University Medical Center
Vice President

Sir Peng, continued from page 1

director of the U.K. National Institute for Health Research Biomedical Research Centre in Ophthalmology at Moorfields Eye Hospital and UCL Institute of Ophthalmology, London. He serves as director of Research & Development at Moorfields and director of the Eyes and Vision Programme of UCL Partners, one of the five U.K. Academic Health Science Centres of excellence.

A passionate advocate for eye and vision research, Sir Peng has raised over £80 million (U.S. $125 million) for research programs and new clinical facilities. His innovative research includes developing therapies particularly for glaucoma surgery, surgical techniques that have markedly improved the safety of glaucoma surgery and anti-scarring regimens that have been used internationally. He and his team have been awarded over 20 national and international awards, including the first ARVO Pfizer Ophthalmic Translational Research award in 2005. ■

Meet the 2014 ARVO Trustee Candidates

These six members are running to represent the IM, RC and VI Sections as trustees on the ARVO Board. If you are a member in one of these sections, you will see their names on the ballot in 2014. Here are some highlights about each candidate; please see their full biosketches at arvo.org/elections.

Immunology/Microbiology (IM) Section

Andrew D. Dick, MBBS, MD, FMedSci, qualified in medicine with an additional degree in biochemistry from the University of London. Dick contributes nationally (U.K.) with work for the Royal Colleges of Ophthalmologists and Royal College of Physicians, as well as the Academy of Medical Sciences and National Institute for Health Research, U.K., for the promotion of training, science and scholarship. He is currently heading ophthalmology as well as the faculty of medicine and dentistry as faculty research director at the University of Bristol. Dick now leads the Inflammation and Immunotherapeutics theme as a faculty member at the National Institute for Health Research Biomedical Research Centre at Moorfields Eye Hospital NHS Foundation Trust and UCL Institute of Ophthalmology, London.

Dick's extracurricular duties include serving ARVO as a member of the Annual Meeting Program Committee for the IM Section.

Douglas (Doug) A. Jabs, MD, MBA, is chief executive officer of the Mount Sinai Doctors Faculty Practice, dean for Clinical Affairs of the Icahn School of Medicine at Mount Sinai, senior vice president of Mount Sinai Medical Center, and professor and chairman of the Department of Ophthalmology at the Icahn School of Medicine at Mount Sinai in New York.

Jabs received his undergraduate degree from Dartmouth College and his MD from Johns Hopkins University School of Medicine. He received his MBA from Johns Hopkins University in 2000.

Jabs served on ARVO's Annual Meeting Program Committee for the IM Section from 2000 to 2003. His areas of expertise include the treatment of uveitis and other ophthalmic inflammatory disorders, immunology, cytomegalovirus retinitis, AIDS and clinical research, including cohort studies and clinical trials, and research methodology.

Retinal Cell Biology (RC) Section

Steven J. Fliesler, PhD, FARVO, is the Meyer H. Riwchun Endowed Chair Professor of Ophthalmology, as well as vice-chairman and director of research in the Department of Ophthalmology at the University at Buffalo/State University of New York (SUNY-Buffalo) School of Medicine and Biomedical Sciences. He concurrently holds positions as professor of biochemistry at SUNY-Buffalo and a staff position as health research scientist at the Western New York Healthcare System (Buffalo VAMC).

His ARVO service activities include having served twice (including currently) on the RC Section of the Annual Meeting Program Committee, as well as serving on the Publications Committee (chair, 2013 – 2015).

He is an expert in the area of lipid (particularly cholesterol) metabolism in the retina, with more than 100 peer-reviewed publications, plus numerous book chapters, reviews, editorials and abstracts. Fliesler obtained his PhD in biochemistry from Rice University, then did postdoctoral research and was a research assistant professor at the Cullen Eye Institute/ Baylor College of Medicine.

Peter Koulen, PhD, is the Felix and Carmen Sabates Missouri Endowed Chair in Vision Research and tenured professor of ophthalmology, the director of basic research of the Vision Research Center, School of Medicine, as well as a professor in the Department of Basic Medical Sciences, School of Medicine, and a professor of cell biology and biophysics, School of Biological Sciences, at the University of Missouri – Kansas City.

Koulen served from 2003 to 2006 on the ARVO Exhibits Committee and currently serves on the ARVO Commercial Relationships Committee (2011 – 2014).

Koulen's professional career has been devoted to vision research, with a particular emphasis on understanding the mechanism and regulation of neurotransmitter signaling, retinal cell biology and physiology. His lab contributed seminal studies in the field of retinal neurobiology with over 100 peer-reviewed publications, and his research programs, involving both fundamental as well as translational research, have been continuously funded by NIH through multiple institutes, including the National Eye Institute (NEI) since 2003.

Visual Psychophysics/ Physiological Optics (VI) Section

Professor Raymond "Ray" A. Applegate, OD, PhD, FARVO, holds the Borish Chair of Optometry and is the director of the Visual Optics Institute at the College of Optometry, University of Houston.

He received his OD and MS from Indiana University before going on to receive his PhD in physiological optics from the University of California, Berkeley in 1983.

Applegate has served on the ARVO Long Range Planning Committee and the Annual Meeting Program Committee and as liaison between ARVO and the American Academy of Optometry to form the annual ARVO/Academy symposium held at Academy meetings for over 15 years.

Applegate's research focuses on translational research in visual optics and visual psychophysics and has been funded by the NEI for over 20 years. He publishes widely in the optometric and ophthalmologic literature with over 100 publications,

and he routinely lectures nationally and internationally.

Joseph "Joe" Carroll, PhD, is an associate professor in the Departments of Ophthalmology, Biophysics and Cell Biology, Neurobiology and Anatomy, as well as the co-director of the Advanced Ocular Imaging Program at the Medical College of Wisconsin. Carroll also currently serves as an associate editor for *Biomedical Optics Express*, an Optical Society of America journal.

He served on the ARVO Advocacy Committee, ARVO Commercial Relationships Committee and the Annual Meeting Program Committee. He has been a member of both the Advisory Committee for the ARVO Multidisciplinary Ophthalmic Imaging Group and the ISIE/Imaging Conference Program Committee since 2008. Carroll participated in the 2007 ARVO Strategic Planning retreat and served on the Members-in-Training Working Group, as well as the Annual Meeting Site Selection working group. He has also served on the Members-in-Training Committee starting in 2006.

Carroll's research is focused on elucidating structure-function relationships in the human visual system. He has contributed to the development and application of non-invasive methods for assessing retinal structure and function and has spent his career focusing on understanding various retinal diseases. ■

ARVO 2014 fact:
Walt Disney World is so huge that you could fit two cities the size of Manhattan or one city the size of San Francisco inside the resort.

Meet the new Member-in-Training Board member

Megan E. Capozzi, Vanderbilt University

Megan Capozzi is a research assistant at Vanderbilt Eye Institute, Vanderbilt University. She was appointed by the ARVO Board of Trustees as the new Member-in-Training (MIT) board member for 2013 – 2015.

ARVONews: What do you look forward to about being on the Board of Trustees?

Capozzi: I'm really looking forward to working alongside the leaders of the organization to see exactly how they make important decisions and implement new plans for such a large and diverse scientific community. For example, this year the new strategic plan is beginning, and it will be interesting to see exactly how the Board assesses its execution over time. Additionally, I'm looking forward to the invaluable opportunity to network with and be mentored by influential scientists and clinicians across different scientific sections of ARVO. I also hope to contribute a new perspective to the Board. Since this position is still so new, I will try to learn from what Anton (Kolomeyer, who rotates off the Board as MIT Trustee this year) has brought to the Board and continue to grow the position during my term.

ARVONews: Why do you feel MITs need a voice in ARVO?

Capozzi: MITs account for about a third of the membership, so our voices matter. ARVO is always considering ways to make the MIT experience better; so I believe input from trainees can go a long way in shaping the organization.

ARVONews: Tell us more about yourself.

Capozzi: Under the guidance of Dr. John Penn, I'm currently studying retinal angiogenesis and inflammation in the context of diabetic retinopathy. My thesis project focuses on the role of a class of arachidonic acid-derived lipid mediators, epoxyeicosatrienoic acids (EETs), in the diabetic retina. Ultimately, we would like to define the role of these lipid mediators and determine if modulation of EET levels will be a viable therapy for diabetic retinopathy.

ARVONews: How have you been involved with ARVO since joining?

Capozzi: I joined ARVO four years ago as a junior undergraduate at Vanderbilt. My first meeting was the 2010 conference in Fort Lauderdale. Since joining, I've had the opportunity to moderate a poster session and to serve on the MIT Committee. My experience with the MIT Committee has shown me just how much ARVO does to reach out to trainees in the membership. I really encourage MITs to take advantage of all the programming specifically designed to help them in their path to becoming successful vision scientists and clinicians! ■

Visit **arvo.org/MIT_Trustee** *to read Capozzi's full interview.*

BRAVO and AIVO organize translational research symposia

Two ARVO International Chapter Affiliates — the Brazilian Research Association in Vision and Ophthalmology (BRAVO) and the Asociación de Investigación en Visión y Oftalmología (AIVO) — organized their first session together during the Pan-American Council of Ophthalmology Congress in Rio de Janiero, Brazil.

The meeting, entitled Ocular Translational Research: From the Lab to the Patient, brought BRAVO and AIVO members together to discuss their research and to plan joint future projects.

The event included four symposia about ocular translational research, advances in vitreoretinal diseases, basic research in ophthalmology and visual sciences, as well as new approaches for ocular stem cell therapy and cellular degeneration/regeneration in eye diseases.

Members met with Sally A. Atherton, PhD, FARVO, ARVO's executive director, to discuss their research interests and needs, networking and funding opportunities, and how international chapter affiliates and ARVO can work together to benefit both members and vision research in general.

The groups are discussing a possible BRAVO-AIVO activity during the ARVO 2014 Annual Meeting in Orlando, Fla., in May, as well as joint sessions during each chapter affiliate's annual meeting. ■

Members of ARVO, the Brazilian Research Association in Vision and Ophthalmology (BRAVO) and the Asociación de Investigación en Visión y Oftalmología (AIVO) met at PAAO to discuss benefits of working together and organizing a joint activity at ARVO 2014 in Orlando, Fla. Back row, from left: Dr. Luis Politi, Dr. Ruth Rosenstein, Dr. Nora Rotstein, Dr. Ana Contin, Dr. Horacio Marcelo Serra, Dr. Julio Urrets-Zavalía and ARVO Director of Membership and Global Development Francis George. Front row, from left: BRAVO President Dr. Dania Hamassaki, AIVO President Dr. Juan Gallo, ARVO Executive Director Dr. Sally S. Atherton and Dr. Angela Suburo.

Visit ARVO this autumn

If you're traveling to any upcoming vision and ophthalmology meetings, please visit us. ARVO will be exhibiting and having events at the following meetings:

- **American Academy of Optometry**
  Oct. 23 – 26, Seattle, Wash.
  ARVO Booth #231
  www.aaoptom.org

- **Society for Neuroscience**
  Nov. 9 – 13, San Diego, Calif.
  ARVO Booth #3918
  www.sfn.org

- **American Academy of Ophthalmology**
  Nov. 16 – 19, New Orleans, La.
  ARVO Booth #804
  www.aao.org

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ARVO-NED — affiliated 2008
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oogheelkunde.org

Asociación de Investigación en Visión y Oftalmologia (AIVO) — affiliated 2007
Buenos Aires, Argentina
aivo.com.ar

Austrian Association for Research in Vision and Ophthalmology (AARVO) — affiliated 2009
Vienna, Austria

Brazilian Research Association of Vision and Ophthalmology (BRAVO) — affiliated 2006
São Paulo, Brazil

Chinese Congress of Research in Vision and Ophthalmology (CCRVO) — affiliated 2010
Beijing, P.R. China

Colegio Nacional de Investigación en Ciencias Visuales (MARVO) — affiliated 2010
Mexico City, D.F., Mexico
mexarvo.org

Sociedad de Cirugia Ocular (CARVO) — affiliated 2013
Bogota, Colombia

ARVO-Egypt — affiliated 2013
Cairo, Egypt

Hungarian Association for Research in Vision and Ophthalmology (HARVO) — affiliated 2007
Budapest, Hungary
harvo.org

India Eye Research Group – ARVO (IERG-ARVO) — affiliated 2011
Hyderabad, India

Israel Society for Vision and Eye Research (ISVER) — affiliated 2006
Jerusalem, Israel

ARVO Italy (IT-ARVO) — affiliated 2011
Catania, Italy

South-East European Association for Research in Vision and Ophthalmology (SEE-ARVO) — affiliated 2009
Sofia, Bulgaria ■

See **arvo.org/affiliates**

SEE-ARVO symposia highlight retinal research

By Petja Vassileva
President, SEE-ARVO
University Eye Hospital "Prof Pashev," Sofia, Bulgaria

Since the founding of the South-East European International Chapter Affiliate of ARVO (SEE-ARVO), we have been organizing sessions and symposia at regional and national forums. The main forum for SEE-ARVO is the annual meeting of the South-East European Ophthalmological Society (SEEOS). We also organize SEE-ARVO symposia during the annual congress of the Union of the Bulgarian Ophthalmologists (UBO).

This year, the UBO congress took place in May in Plovdiv, Bulgaria. The SEE-ARVO session was dedicated to retinal research and attracted over 400 attendees. The highlight of the session was the presentation by ARVO member Peter Wiedemann, PhD, FARVO, of the University of Leipzig, on the important role of Muller cells and the toxic effect of their activation by different pathogenic stimuli.

Wiedemann pointed out the need for better understanding this gliotic mechanism for development of new therapeutic strategies.

Robert Butner, MD, of the Robert Cizik Eye Clinic in Houston, Texas, spoke on the role of VEGF in macular conditions and recent data on the application of anti-VEGF preparations in the treatment of CNV, CME in retinal vascular diseases and DME.

"Informative and exciting"

Yordanka Kirilova, FEBO, who was an ARVO Chapter Travel Grant recipient in 2011, attended the session at UBO. "The SEE-ARVO sessions at UBO are the most informative and exciting part of the event," Kirilova said.

"This year I was amazed by Prof. Wiedemann's lecture on his research on Muller cells. The presentation included incredible illustrations, and the function of Muller cells was very well demonstrated with videos and animations. Prof. Wiedemann conveyed the information in a comprehensible manner that gave the audience better insight in retinal pathology and the direction for development of new therapeutic strategies."

Hristina Krasteva, a third-year resident, said "I was fascinated by Prof. Wiedemann's lecture on his recent research data — a very impressive and well documented talk! As a resident, I also appreciated the extremely didactic presentation of Prof. Butner on anti-VGEF treatment in retinal diseases. It was a great overview on well-established preparations and new clinical studies and development."

Focus on DR

In June, the SEE-ARVO session at the SEEOS meeting in picturesque Ohrid, Macedonia, featured diabetic retinopathy (DR). During the 60-minute symposium, experts from the region presented important aspects of epidemiology, screening and management of DR.

My role was to open the session with a brief overview of South-East European Chapter of ARVO and its past activities and achievements. I discussed the increasing burden of diabetic blindness, as well as the different programmatic approaches for dealing with challenges in DR management. These include increasing of public awareness ("I wish someone had told me") and the application of up-to-date diagnostic and treatment technology.

Magdalena Antova-Velevska of Macedonia summarized the difficulties of dry eye diagnosis and management in patients with diabetes. ARVO member Gabor Mark Somfai, MD, PhD, of Semmelweis University, Budapest, the secretary of SEE-ARVO, gave a talk about the first Hungarian experience with telemedical screening of DR, launched in 2012.

Ljubica Jovanovik-Pandova, MD, also from Macedonia and currently practicing in Switzerland, reviewed the current concepts of DR treatment, followed by a summary by Vladimir Popovski of Spain on recent technological developments in laser photocoagulation therapy for DR.

The debate at the end symposium, with an audience of about 80 people, was lively and emphasized regional partnerships as part of the solution to tackle these challenges. ■

Focus on the European Vision Institute

Thomas Wheeler-Schilling, European Vision Institute

Thomas Wheeler-Schilling is the CEO of European Vision Institute (EVI), a non-profit organization aimed at increasing the competitiveness and visibility of vision research and ophthalmology on a European level. It acts as an umbrella organization to represent all major stakeholders, private and public, in the field.

ARVO*News:* What has been the biggest challenge in advocating for vision research in Europe?

Wheeler-Schilling: Eye research is not yet a fully recognized discipline within EU research funding, and it is often embedded in the neurosciences. To combat this situation, we decided to restructure the European Vision Institute (EVI) into the European Alliance for Vision Research and Ophthalmology. The main goal is to better distribute information and advocate vision research in order to improve eye care in Europe.

We have invited all European societies in the field to join.

ARVO*News:* Tell us about some of EVI's successful efforts in educating various stakeholders, such as policymakers and patient organizations.

Wheeler-Schilling: Some of our success stories include our European web portal "Gateway to Vision Research" (www.vision-research.eu), where we gather and disseminate information on our activities, and have averaged more than 60,000 visitor clicks per year. Other priorities include regular briefings in the European Parliament, the European Commission and the European Council. We organize general outreach campaigns such as our annual "picture competition," the European vision award, visionary of the quarter, publication of the year and our annual calendar of vision research and ophthalmology events.

ARVO*News:* What have been some of the most effective strategies for sharing your success stories?

Wheeler-Schilling: Our goal is to clarify the importance of and illustrate the success stories of our research and clinical activities in all their rich facets, through an active communication process. We are working toward a reduction of the scientific, clinical and institutional fragmentation within the 28 European member states and beyond. A recent result was the publication of a white book, *A Vision for Horizon 2020*, where numerous colleagues described a "European Strategic Roadmap for Vision Research and Ophthalmology."

One of our big concerns is the support of young scientists and clinicians, who are the key to the future of our field. We are trying to open innovative paths, beyond established conference formats, for their specific needs, like the Young Researcher Vision Camp, where over a weekend doctoral students transform a medieval castle into an interdisciplinary hub of European Vision Research and Ophthalmology.

Over the last years, we have trained more than 200 early stage and experienced researchers from all over the world in European Marie Curie projects like Vision, Fighting Blindness, RetNet, EduGlia, MyEuropia and OpAL. We help convey the enthusiasm of our young colleagues to the political decision makers in Brussels and Strasbourg by organizing regular visits and exchange programs.

ARVO*News:* What is your vision for the near future in regard to increasing communication and support among major stakeholders?

Wheeler-Schilling: We are grateful for the strategic partnership with NAEVR/AEVR and the marvelous work they do for our colleagues and friends in the U.S. Of course, having no counterpart to the National Eye Institute is a challenge for us, but there is tremendous potential for innovative ideas. Presently, 16 European societies, at least 54 national societies and 80 societies in the field of vision research and ophthalmology add up to equal a strong commitment to our field.

My dream is that bringing together some of these organizations in a joint effort to form a common platform for the European Alliance for the Promotion of Vision Research and Ophthalmology will be a great leap forward. ■

Visit **arvo.org/EVI** *to read Wheeler-Schilling's full interview.*

For all the latest U.S. vision research policy and funding news, visit the website of the National Alliance for Eye and Vision Research at eyeresearch.org.

High schoolers said …

"I loved looking at all the posters and listening to all the different talks. The wide variety of topics was really cool."

"The tour was great because I learned that there are so many things about eyes that need to be researched."

"It was really fun! I liked walking around and listening to people explain their research."

Seattle high school students experience ARVO

ARVO's High School Vision Program, organized by the Diversity Issues Committee, gives advanced placement high school science students the opportunity to preview the world of eye and vision research and experience a first-hand introduction to the field's latest innovations.

The Diversity Issues Committee began organizing the program in Fort Lauderdale in 2004 as a way to introduce the scientific process to promising students with diverse backgrounds.

In ARVO's first year out of Fort Lauderdale, students at Royal High School and Seattle Preparatory took a tour of the poster hall and sessions, followed by a lecture by T. Rowan Candy, PhD (Indiana University), and a tour of the exhibit hall.

"I never actually knew that much about the eye," one student said. "But learning more about it has enticed me to possibly study it in the future."

This is exactly what the program was intended to do, according to Wendy Harrison, OD, PhD (Midwestern University Arizona College of Optometry), who administered the program in its first year in a new city.

"It's nice to go into a place and have an influence. The high school program leaves a mark by educating and including interested students," she said. "It's a means to spread what ARVO is to the next generation. Hopefully some of these students will be future ARVO members."

Candy's lecture aimed to convey the breadth of backgrounds that scientists conducting vision research might have. Specifically, she discussed the ocular accommodation system as a parallel to the auto-focus mechanism in a camera, photoreceptor sampling as a parallel to its pixel resolution, and then the signal compression required to transmit the information to the brain. She emphasized the clinical need for new breakthroughs, with gene therapy and the ability to see individual red blood cells in retinal vessels.

"My goal was to describe the visual system in the context of current technology that the students would appreciate and relate to," explained Candy. "I interspersed recent research successes throughout that basic flow in an effort to inspire them to learn more."

Students provided positive feedback on her range of topics and ability to keep the group interested with her "engaging manner and zest."

"I'm glad it covered a lot of topics," said a student. "I learned so much. It was very engaging."

"I enjoyed it a lot and learned a lot about not just eyes and vision, but about the brain," said another. Candy relates to the students' enthusiasm, saying it was a pleasure "to bounce ideas around with them."

Lyne Racette, PhD (Eugene & Marilyn Glick Eye Institute, Indiana University), served as a tour guide for the first time. She said the students were intuitive and impressed with the size of the meeting.

"Exposing students to scientific research at an early stage in their education is incredibly valuable and rewarding," she said. "The ARVO High School Vision program gives students a unique glimpse into our research community and its work."

It was also beneficial for students to meet the researchers and have the opportunity to ask questions about their work and career paths, according to Racette.

"They had a great time," Harrison added. "It's a field trip for them and most have never been to a scientific meeting. It is wonderful for them to see the scientific process at work." ■

Organized by the ARVO Diversity Issues Committee, AP high school students from Royal High School and Seattle Preparatory attended an informational lecture followed by a tour of the Poster and Exhibit Halls during ARVO 2013.

Persistence pays off with government

Hugh Taylor, AC, MD, FARVO
University of Melbourne

Trachoma in Aboriginal children aged five to nine has decreased from 14% in 2009 to 4% in 2012, reports Hugh Taylor, AC, MD, director of the Indigenous Eye Health Unit at the University of Melbourne, Australia. In August, Taylor joined Minister for Indigenous Health Warren Snowdon in presenting the results of the 2012 Australian Trachoma Surveillance Report.

Taylor, whose personal charge to end trachoma in indigenous communities started decades ago, has played a critical role in advocating for concerted action from the Commonwealth that resulted in the government investing $16 million between 2009 and 2013 to eliminate this leading cause of preventable blindness. In its 2013 – 2014 budget, the Rudd Labor Government allocated an additional $16.5 million for anti-trachoma activities over four years, as part of the Improving Eye and Ear Health Services for Indigenous Australians program. The funding will allow state and territory partners to continue their work in supporting health promotion and social marketing campaigns necessary to eliminate trachoma.

If asked about the key to his success in advocating for funding, it's likely Taylor may sum it up with one word: persistence. He says, "I know it sounds simple, but being persistent is perhaps one of the most effective, yet overlooked, strategies in working with the government and other stakeholders."

Australia, the only developed country in the world to still have a trachoma epidemic, mainly among its indigenous population, has joined with the World Health Organization in its commitment to the Global Elimination of Blinding Trachoma by 2020 (GET 2020). According to Taylor, the country is on track to eradicate trachoma within four years. ■

"[B]eing persistent is perhaps one of the most effective, yet overlooked, strategies in working with the government and other stakeholders."

ARVO 2014 fact:
Casual dress (shorts, jeans, etc.) is encouraged at the ARVO Annual Meeting.

Kaufman on volunteering: "A way to get more out of your professional life"

"Tremendously honored" and "deeply personal" are words Paul L. Kaufman, MD, FARVO, used to describe his reaction when he learned he would be receiving the 2013 Joanne G. Angle Service Award at the ARVO 2013 Annual Meeting.

The award is named in honor of ARVO's former executive director who served the organization in that capacity for 22 years prior to her retirement and subsequent passing in 2012. Kaufman is the first recipient of the award, other than its namesake, who was presented with the award posthumously at ARVO 2012.

"Joanne and I were very close friends. To be given an award named after her was the most meaningful part of receiving this honor," says Kaufman. "We came to ARVO leadership at the same time, and dealt with a lot together — the highs and the lows. We respected each other and had a great affection and regard for each other's opinions."

Above left: 2012 – 2013 ARVO President Peng T. Khaw, MD, PhD, FARVO (left), presents Paul L. Kaufman, MD, FARVO, with the Joanne G. Angle Service Award at the ARVO 2013 Annual Meeting. Above right: Kaufman proudly displays his collection of ARVO awards on his office wall.

Knowing the award was bestowed upon him by his colleagues also holds special meaning to Kaufman, whose service to ARVO dates back to the 1980s. His roles have included ARVO Glaucoma Section trustee, president, executive vice president, and member and chair of the Annual Meeting Program Committee, the Animals in Research Committee and the ARVO Foundation Board of Governors. Most recently, he served as the editor-in-chief of *Investigative Ophthalmology and Visual Sciences* journal.

"When you get involved in an ARVO committee or in leadership, you get much more out if it than you put in," says Kaufman. He views his service to the association as a "tremendous educational experience in which I learned about taking ownership of responsibility for making decisions and for the consequences of those decisions, and learned about the process for how decisions are reached and made when working with peers who are at least as smart, experienced and wise as you are. It was also a terrific opportunity to meet people I would not have gotten to know otherwise."

For the past 37 years, Kaufman has been on the faculty of the University of Wisconsin-Madison (UW), where he is currently the Peter A. Duehr Professor and Chair of the Department of Ophthalmology & Visual Sciences at the UW School of Medicine and Public Health. He jokes that the walls, desk and tables in his office hold more ARVO awards and memorabilia than those representing his time at the university.

"Volunteering your service to ARVO is a way to get out more – especially for those of us cocooning in a lab," he says. "You get more out of your professional life."

Through his many years of service to ARVO, Kaufman has witnessed the tremendous growth of the organization's membership and increase in its Annual Meeting attendees. What he marvels at most is how central ARVO has become for vision research around the world and how many different roles it plays — from advocacy to policy to collaboration.

"It's like a baby you helped grow up," he says of his years serving ARVO. "It's a parental feeling that leaves you with a great sense of pride." ■

Focused but flexible

Sarah E. Coupland, MBBS, PhD, FARVO, the newly elected ARVO Board trustee for the Anatomy/Pathology (AP) Section, is professor and academic lead of pathology at the University of Liverpool and a senior pathologist at the Royal Liverpool University Hospital. Coupland is the lead pathologist in ocular oncology, which receives patients and tumor specimens from all over the world. She also heads a team of students and scientists as chair of the Liverpool Ocular Melanoma Research Group, which she established.

Her major scientific achievements include devising the first TNM staging system for ocular adnexal lymphomas, developing a novel grading system for malignancy of *in situ* conjunctival melanomas, revitalizing the European Ophthalmic Oncology Group and successfully translating molecular typing of uveal melanoma from a research tool into routine clinical practice.

In addition to being elected a trustee, Coupland has been a member of the ARVO Annual Meeting Program Committee, chair of the ARVO Awards Committee and is an ARVO Silver Fellow.

She had a brief exchange with ARVO*News* about her career and advice for young women scientists.

ARVO*News:* What was your inspiration for becoming a researcher in the field of ophthalmology?

Coupland: My inspiration stemmed from working with Professor William R. Lee of Glasgow, Scotland. Prof. Lee was a mentor to many people, because of his patience with students and trainees in both pathology and ophthalmology, as well as his inquisitive nature into understanding the mechanisms of eye disease. This resulted in him publishing more than 600 papers and supervising numerous PhD students. I spent an elective research period with him in 1994, and it was during this time that I made my decision to specialize in histopathology, which I commenced in Berlin, Germany in 1995, and focused on ocular pathology.

ARVO*News:* What are some of the highlights of your work?

Coupland: One is my research in the understanding of ocular adnexal lymphomas and intraocular lymphomas – these tumors were the subject of my professor thesis in Germany and many of my papers in the late '90s and early 2000, and still remain one of my great interests. Another highlight is my study of molecular genetics of ocular melanoma, as evidenced by the relatively large number of papers I've written with Bertil Damato, PhD, FRCOphth, in the last seven years.

ARVO*News:* Tell us about the projects you are working on now.

Coupland: My research team, the Liverpool Ocular Oncology Research Group (www.loorg.org), has several interests. These include the molecular genetics of ocular cancers in tumor development and metastasis; the use of molecular techniques in diagnosis, prognostication and in the prediction of drug response; tumor proteomics; cell cultures and cancer stem cells in ocular cancers; ocular tumor models; and cell-signalling pathways, which could be potentially targeted therapeutically. We have one of the largest ocular oncology biobanks worldwide with detailed clinical annotation.

ARVO*News:* What words of encouragement do you have for young women scientists about moving ahead in the field?

Coupland: My advice would be to remain focused and determined but also be flexible with ideas, always thinking "outside the box," because usually in this way you can be one step ahead in the game. Try also to be strategic and efficient with effort.

ARVO*News:* Would you like to share any advice to young women scientists about the issue of balancing work/family?

Coupland: It is difficult to balance both, but there are ways of juggling both spheres. This requires great organizational skills, including incorporating help from others (e.g., child caretakers and after-school clubs); good time management; stamina and being prepared to sleep less, as you often have to work either very late or very early (!); building good relationships with colleagues and having a dedicated partner with whom to balance your own personal strengths and weaknesses. ■

Sarah E. Coupland, MBBS, PhD, FARVO
University of Liverpool/Royal Liverpool University Hospital

ARVO is proud to introduce this regular feature to offer advice and encouragement and promote women's eye and vision research careers.

Five members in five minutes

A first time for everything: Members share recent first-ever experiences

First paper published in ARVO's new journal, *Translational Vision Science and Technology (TVST)*

Gustavo V De Moraes, MD
New York University School of Medicine

"The Nature of Macular Damage in Glaucoma as Revealed by Averaging Optical Coherence Tomography Data"

"In this study, we measured the retinal ganglion cell plus inner plexiform (RGC+) layer thickness of the macula, the retinal nerve fiver (RNF) layer thickness around the optic disc, and investigated their relationship with different levels of visual field damage, ranging from normal to severe visual field loss. We believe our findings are original, unique and may have a significant impact on how clinicians monitor their patients with or suspected of having glaucoma.

"[We submitted to *TVST*] because it is a high-standard, new journal — in addition to being an ARVO publication — focused on vision research, the results of which can have immediate impact on clinical practice, often called translational research. It is time for scientific journals to heighten the actual practicality behind what has been done in laboratories worldwide. [*TVST, IOVS* and *JOV*] are journals that meet high standards for publication and require that the researchers provide a straightforward message to clinicians. This is important, particularly given the fact that good researchers are also the best of a journal's readership."

First time serving on a committee

Yureeda Qazi, MBBS
Massachusetts Eye and Ear Infirmary, Boston, Mass.

Members-in-Training Committee

"The experience of serving on a committee has been enlightening, rewarding and humbling. Having the privilege of receiving insight into the workflow dynamics of organizing key events that make up ARVO has provided an unprecedented platform for learning.

"The honor of contributing through implementation of one's ideas, drawing upon old friendships and building new partnerships has been as rewarding as it is humbling. The greatest joy comes from working with a spectrum of remarkable people along the way, ranging from staff to faculty, and I am humbled by all that they have taught me."

First-time recipient of a travel grant

Weizhong Lan, MD
Zhongshan Ophthalmic Center, Guangzhou, China

ARVO Foundation/Josh Wallman Travel Grant

"[2013] was my first time to ARVO. My impression for ARVO is very great, amazing! I have attended many domestic/international and general ophthalmic and vision science subspecialty of ophthalmology conferences. ARVO is the best among all of them. The conference is very well-organized and everything is in order, including the notification prior to the conference, onsite registration, guidance and signs, etc. The program of ARVO is also awesome, which covers basically every aspect in the field of ophthalmology and vision science, not only basic research but also clinical research, not only pure academic but also applied content."

First-time donating to the ARVO Foundation

Murray A. Johnstone, MD
University of Washington

Created the Murray and Jeanie Johnstone Travel Grant

"My motivation to contribute … results from a long ago experience in the Howe Laboratory at Harvard, while working under Dr. Morton Grant and Dr. David Cogan. Most of my career has been devoted to the clinical care of glaucoma patients — a fulfilling activity. However, through their example, Dr. Grant and Dr. Cogan imbued in me the idea that it is important to give back in a larger sense, in a way that would benefit not only my own patients, but future generations of glaucoma patients as well.

"To that end, I have made a career-long effort to pursue glaucoma research and continue to do so, but have always been haunted by the sense that I have not personally done enough. Over time, I have come to realize that providing a means to encourage others to move glaucoma research forward can represent another meaningful way of giving back to the profession, thus the motivation for my donation."

First time presenting a poster at the ARVO Annual Meeting

Georgios Kontos
Member-in-Training, United Kingdom

ARVO 2013 Annual Meeting, Seattle, Wash.

"The overall experience was astonishing. I enjoyed every moment of sunshine and every cup of coffee in Seattle! Aiming to break new ground, my research project was full of surprises and challenges that required hard work to overcome, thus the opportunity to showcase this work as a poster at the ARVO Annual Meeting was highly rewarding.

"My work was received with a lot of enthusiasm and positive feedback. The discussions held with other scientists stimulated my interest towards new directions. The conference was a memorable experience, and I will soon be gearing up for Orlando! As a clinician and a scientist, I was fuelled with ideas that I can utilize to make the bridging between basic and clinical research more pragmatic." ■

Looking to disrupt

Anne Elsner, PhD, FARVO
Indiana University

By developing effective, low-cost retinal digital imaging technologies, Anne Elsner and her collaborators join the ranks of social entrepreneurs with devices that may change the marketplace and improve healthcare and research outcomes.

In 1999, Anne Elsner, PhD, FARVO (director of Indiana University's Borish Center for Ophthalmic Research), began working on developing an infrared-based technology for imaging the retina. She founded Aeon Imaging in 2005 and built a team that today includes ARVO members Matthew Muller; Benno Petrig (Indiana University) and Tom Gast, MD, PhD.

Aeon received an NIH Small Business Innovation Research (SBIR) grant that helped fund research and development, lab space, staff support and patent protection, and ultimately paved the way for commercializing its technologies.

A primary clinical application of the technology — and Aeon's initial focus — is screening for diabetic retinopathy. Aeon's devices are very low-cost, easy-to-use and flexible — all attributes that Elsner believes can bring benefits to research as well.

"Aeon's goal is to reduce costs wherever possible while maintaining functionality," she explains. "The idea of low cost, as opposed to the highest possible resolution or the most features, is particularly important at this time of economic downturn and federal budget uncertainties. These ideas may not excite some reviewer panels, but the benefit to healthcare makes this direction worth pursuing."

Elsner describes the devices that Aeon has developed.

Laser Scanning Digital Camera (LSDC) — "The [SBIR] grant EY020017 used the Laser Scanning Digital Camera (LSDC), which has a laser source that scans a line across the target in synchrony with a 2D sensor chip, such as in a digital camera or cell phone. The scanning improves contrast. This technology is truly digital, in that there is no building up of an image with a computer, but rather reading out the 2D image directly from the sensor, as in a digital camera.

"We have used this technology for not only a retinal camera that is non-mydriatic with a very small pupil, but a microscope that uses the same principles. The readout of the sensor provides the functionality of a flexible electronic aperture that is confocal and under software control."

This is the first in a series of articles about ARVO member entrepreneurs whose companies have received Small Business Innovation Research or Small Business Technology Transfer grants from NIH.

LSDC-S — "The LSDC with stimuli (LSDC-S) uses the LSDC for imaging the retina with the comfortable and non-mydriatic technology, and simultaneously presents targets for visual function testing. Example tests include measuring fixation location and stability, visual field or reading. Stimuli can be generated by separate software, allowing flexibility in the choice of functions."

DLO — "The Digital Light Ophthalmoscope (DLO) is a portable imager that has a confocal aperture under software control and reduces cost, complexity, weight and the footprint of digital imagers by combining the light source and scanning function.

"The DLO uses DLP technology to generate a sequence of line patterns that are synchronized with the flexible electronic aperture on a 2D sensor chip. The DLO technology provides a mydriatic or non-mydriatic retinal camera, using LEDs for illumination. Stimuli are projected on the retina by programming the patterns in the DLP. The DLO technology has been used in a variety of modes, for instance reflectance, dark field (multiply scattered) or fluorescence modes."

DLM — "The Digital Light Microscope (DLM) uses DLP technology to reduce the cost, complexity, weight and footprint of a confocal microscope. As with the DLO, the small size and low cost are achieved by using DLP technology that has LED sources to project a sequence of line patterns onto a target that is synchronized with a 2D sensor. This technology has been used at several magnifications and in a variety of modes, for instance reflectance, dark field (multiply scattered) or fluorescence modes."

Research applications

"The two main advantages are the low cost and the flexibility of imaging modes," explains Elsner. "There are a large number of studies that need retinal images, but the high-end devices are not located where the study sample is or are too expensive to provide multiple units.

"In addition, many studies do not use such advanced techniques because of cost, yet subjects are lost to follow-up because of poor quality images that might have been acceptable had scanning and a smaller pupil size been used."

The Aeon team believes its products provide low-cost solutions to these challenges.

Wanted: Customers and research partners

The key to moving forward, according to Elsner, is market share. "Several products result from the technology that do not require FDA approval or widespread clinical testing, and yet cost so little as to be disruptive."

To demonstrate the broad applications of its technologies, Aeon is looking for research partners who are interested in pushing commercially viable applications, particularly for the DLM and the visual function aspects of the LSDC-S or DLO. ■

See **aeonimaging.com.**

ARVO 2014 fact:
Over 54 million people per year visit Orlando for vacation or business, making it one of the largest tourist destinations in the world.

Carper to retire after 37 years at NEI

Deborah Carper, PhD
NEI Deputy Director

After a career spanning almost four decades at the National Eye Institute (NEI) Deputy Director Deborah Carper, PhD, has announced her retirement.

"Few individuals have lived and breathed NEI like Debbie Carper," said NEI Director Paul A. Sieving, MD, PhD, FARVO. "I am deeply indebted to her for the breadth of institutional knowledge she has brought to the NEI Office of the Director. Her sharp intellect, cool demeanor, attention to detail, seemingly effortless poise, and her savvy ability to connect with nearly everyone has made Dr. Carper an invaluable resource to me during her time as deputy director. On behalf of NEI, I thank her for her stellar research accomplishments and for her contributions to the vision research community."

Carper's NEI career began in 1976 as a technician in the Laboratory of Vision Research, headed by the late Jin Kinoshita, PhD, who encouraged her to pursue graduate training. While continuing to work at NEI, she obtained a PhD in zoology at the University of Maryland. Thereafter, she began steadily working her way up the NEI ranks. In 1988, she became a principal investigator within the NEI Laboratory of Mechanisms of Ocular Diseases. From 1995 to 2006, she was chief of the Section on Molecular Therapeutics, as well as coordinator of the NEI Research and Training Section. In 2002, she began working as special assistant to the NEI director until 2010 when she became deputy director of the Institute.

Carper devoted a major portion of her research career to understanding how the lens of the eye develops. She studied how cataracts form and why cataracts are linked with diabetic retinopathy. As part of an NEI team, she helped characterize aldose reductase, an enzyme of the polyol pathway implicated in diabetic complications in the eye and other organs. In 1992, she was recognized for her scientific achievement with the Alcon Research Award from the Alcon Research Institute. Later, she investigated treatments for abnormal retinal blood vessel growth — a major complication in several eye conditions.

Carper is an ARVO Fellow. She served on ARVO program planning committees and helped organize special interest groups at ARVO annual meetings.

"Spending my career at NEI was the opportunity of a lifetime. I feel privileged to have made an impact on science and science leadership in support of the greater vision research enterprise," she said. "I am especially grateful for the mentorship I received at NEI and for the students and postdoctoral fellows in my laboratory who contributed to the excitement of scientific discovery." ■

ARVO Awards

2015
Call for Nominations

For young investigators

- **Cogan Award —** Contributions to research that are directly related to disorders of the human eye or visual system, by a promising individual 45 years of age or younger.
- **ARVO Foundation Pfizer Ophthalmics Carl Camras Translational Research Awards —** For exhibiting excellence in research, scientific discoveries, concepts and technologies that have led to, or have the promise of leading to, clinical applications, by an individual no more than 45 years old.

For career achievement

- **Proctor Medal —** Outstanding research in the basic or clinical sciences as applied to ophthalmology.
- **Friedenwald Award —** Outstanding research in the basic or clinical sciences as applied to ophthalmology.
- **Weisenfeld Award for Excellence in Ophthalmology —** Distinguished scholarly contributions to the clinical practice of ophthalmology.

For Service

- **Kupfer Award —** Distinguished public service on behalf of eye and vision research.
- **Special Recognition Award —** Outstanding service to ARVO or the vision research community.
- **Joanne G. Angle Service Award —** Recognizes outstanding leaders who have made significant and continuous contributions to ARVO and its mission.

Nominations deadline is March 3, 2014. Nominations must be completed online at **arvo.org/awards.**

Big challenges; big opportunities

Paul A. Sieving, MD, PhD, FARVO
Director, National Eye Institute
National Institutes of Health

In March, the "sequestration" provision in the Budget Control Act of 2011 mandated across-the-board federal budget cuts. A resulting 5.7% reduction to the NIH budget for FY2013 was distributed equally across all of the institutes. For NEI, the cut translated to a loss of about $40 million from this year's budget, reducing it to $662 million. As a consequence, this year NEI will fund about 10% fewer new and competing research grants than in 2012 and is able to fund previously awarded multi-year grants at about 95% of the amount originally committed.

All eyes are now on the FY2014 budget. NIH Director Francis Collins and others have discussed the potential effects of continued NIH budget cuts, such as delaying research on new treatments and discouraging young people from pursuing careers in science. President Obama's FY2014 budget request is $31.09 billion for the NIH, a 1.5% increase over FY2012. The Senate Appropriations spending bill for FY2014 suggests a slightly lower overall amount for NIH, $30.95 billion, but this proposed budget would increase NEI funding to $701.4 million. As of this writing, however, the final budget forecast remains hazy.

The question on everyone's mind is, "How will NEI react if the FY2013 sequestered budget becomes the new normal?" The simplest answer is that NEI will continue to fund the best research projects with the greatest relevance to our mission. NEI will work to keep award success rates similar for senior and new investigators in order to maintain a pipeline of new talent, but future funding strategies in part may be mandated NIH-wide. The difficult reality is that some projects that would have been funded in the past will, unfortunately, be passed over unless funding levels increase.

Update on the Audacious Goals Initiative

Budget challenges notwithstanding, remarkable new opportunities abound to advance vision research. In 2012, NEI launched the Audacious Goals (AG) Initiative and asked the research community to identify ideas with the potential to drive innovation in vision research over the next 10 to 15 years.

The prize competition, "The NEI Challenge to Identify Audacious Goals in Vision Research and Blindness Rehabilitation," attracted more than 500 submissions. In Feb. 2013, NEI convened the AG Development Meeting and asked a group of some 200 leading vision research scientists and clinicians, along with others interested in public health and research, to consider six major themes distilled from the NEI Challenge.

National Eye Institute
NATIONAL INSTITUTES OF HEALTH

The NEI AG Initiative generated a wellspring of innovative ideas that have coalesced into a single overarching audacious goal: "Regenerate Neurons and Neural Connections in the Eye." Additionally, the NEI used the six major themes to establish two broad areas for high-priority: "Molecular Therapies for Eye Disease" and "The Intersection of Aging and Biological Mechanisms of Eye Disease." With continuing assistance from the National Advisory Eye Council (NAEC), I am committed to building on the NEI AG Initiative to enhance areas that will spur advances in new approaches to treating eye diseases.

The newly established NEI AG Initiative Working Group has been tasked by the NAEC to frame a plan toward reaching the audacious goal. The group currently is refining research targets, identifying objective milestones, and anticipating potential needs and challenges. Already, NEI has issued two funding opportunity announcements in support of the two high priority areas. NEI expects to issue additional funding opportunities in the coming months.

I thank everyone who has contributed to and supported this ongoing initiative — something I believe will be a scientifically rewarding venture in the decade ahead.

Stem cell therapies

Finally, I would like to tell you about a recent NEI stem cell meeting that was held on the NIH campus and co-sponsored by the NIH Center for Regenerative Medicine (CRM). In June 2013, NEI and CRM convened an international group of scientists, clinicians and regulators to discuss the current state of work toward launching clinical trials of cell-based therapies for eye disease.

Groups in Japan, the United Kingdom and the United States are poised to begin clinical trials aimed at regenerating retinal pigment epithelium. Members of the FDA joined the meeting. Questions addressed included: What preclinical animal experiments should be done to achieve the highest assurance of safety? How should patients be consented? And, what role can NIH and NEI play to facilitate the development of stem cell therapies?

The meeting was enlightening and productive. A forthcoming synopsis of the meeting will be helpful to others pursuing therapeutic stem cell applications.

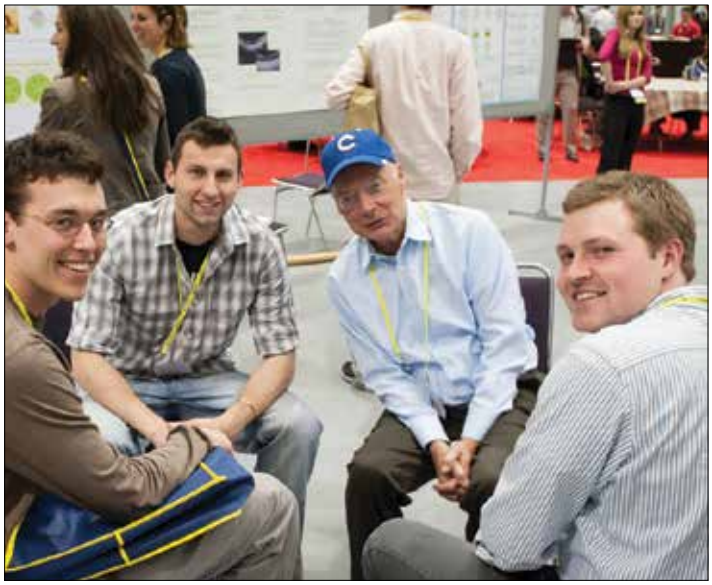
As I have described, vision research and the biomedical enterprise in general face big challenges. But I believe the opportunities to make major progress are even bigger and require our attention.

For updates on the institute's budget or to learn more about the AG high priority area funding opportunity announcements, please visit NEI Grants and Funding at **nei.nih.gov/funding/.** ■

A look back at ARVO 2013

ARVO 2012 – 2013 Board of Trustees. Back row, from left: Anton Kolomeyer, MD, PhD; Paul S. Bernstein, MD, PhD, FARVO; John I. Clark, PhD, FARVO; Dimitri Azar, MD, MBA, FARVO; Carol Toris, PhD, FARVO; David R. Williams, PhD, FARVO; Linda McLoon, PhD, FARVO; William F. Mieler, MD; Emily Y. Chew, MD, FARVO; Peter D. Lukasiewicz, PhD; John S. Penn, PhD, FARVO. Front row, from left: Jacob Pe'er, MD, FARVO; Executive Vice President Craig E. Crosson, PhD, FARVO; President-elect; Justine R. Smith, FRANZCO, PhD, FARVO; President Peng T. Khaw, MD, PhD, FARVO; Immediate Past President Jeffrey H. Boatright, PhD, FARVO; Executive Director Sally S. Atherton, PhD, FARVO.

Photos, clockwise from top left: "Wild and crazy" exhibitors at the Good-Lite booth in the exhibit hall; enjoying discussion at Pizza with an Expert; jammin' at ARVO Rocks; NIH Director Paul Sieving presents findings of the latest AREDS study; and Sunday Social attendees at Seattle's EMP.



Top photo: socializing at ARVO Rocks; middle photo: impromptu discussion in the poster hall; bottom photo: Attendees at the China-ARVO Networking Forum.

Recognizing American Academy of Optometry grantees

ARVO joins the American Academy of Optometry in congratulating its 2012 ARVO Student Fellowship grantees, as well as its 2012 Ezell Fellowship recipients. The Vision Care Institute sponsored the ARVO Student Fellowships. The student travel fellowships were given out at an event sponsored by the American Academy of Optometry and the American Optometric Association.

Ezell Fellows at ARVO 2013 are, back row, from left: Daniel Powell, Kevin Ivers, Caroline Kunnen, Alex Hui and William Tuten. Front row, from left: Andrew Pucker, Aaron Sullivan, Preethi Thiagarajan, Tatiana Ecoiffier, Mariana Garcia and American Optometric Foundation President Kathy Dumbleton.

ARVO Student Travel Fellowship grantees are, from left: Julie Mocko, Yvonne Wu, Wanyu Zhang, Tao Liu, Naveen Yadav and Academy Research Committee Chair Jason Nichols.

Veterans Vision and TBI Workshop

By John Clark, PhD, FARVO, University of Washington, Lens Trustee

Similar to age-related eye disease, neurodegenerative diseases are expanding dramatically with the increase in the aging population, a major emphasis of clinical research and healthcare concerns globally.

Ann McKee, MD, of the Boston University School of Medicine discusses using eye scans to determine whether a TBI treatment or therapy is leading to improvements. Other session speakers included (from right) Randy Kardon, MD, PhD, of the University of Iowa; Elaine Peskind, MD, of the University of Washington School of Medicine, and Lee Goldstein, MD, PhD, of Boston University School of Medicine.

At the veterans session during the ARVO 2013 Annual Meeting, multidisciplinary investigators reported on the remarkable relationships between traumatic brain injury (TBI) and visual function in military service members, veterans and civilians.

Recent findings are uncovering important similarities in TBI-related visual dysfunction and ocular pathology resulting from age-related neurodegenerative diseases, military blast exposure and even sports-related head injuries in athletes.

Colonel Donald A. Gagliano, MD, the former executive director of the joint Department of Defense/Department of Veterans Affairs Vision Center of Excellence (VCE) at the Walter Reed National Military Medical Center, was the session moderator and provided the basis for the possible interaction between age-related eye disease and neurodegenerative effects of TBI.

Eye and brain degenerative disease might be expected to have a similar molecular and cellular basis because of the fundamental similarities in cell differentiation and embryology of both tissues.

Modern optical instrumentation can offer highly sensitive visual tests of the earliest stages of neurodegeneration in both the eye and brain.

The session confirmed the importance of multidisciplinary neurodegenerative research efforts combining our efforts in vision and brain diseases of aging and trauma to improve individualized approaches to healthcare.

View the Veterans Vision and TBI session and other select sessions from ARVO 2013 at **arvo.org/2013videos.** ■

Want to see more ARVO 2013 Annual Meeting photos? Visit flickr.com/arvoinfo.

flickr®

Research Grant Administrators Program

The 2013 Research Grant Administrators Program, which has been running at the ARVO Annual Meeting since 2003, attracted 40 participants. This year's organizers included Cheryl Formes, BSN, University of Texas Southwestern Medical Center; Will Darby, NEI; Kimberly Anne Mankiewicz, PhD; Robert Cizik Eye Clinic; and Patricia Byrne-Moran, Research to Prevent Blindness.

"Due to the small size of the group, one is able to interact one-on-one with speakers. All of the speakers are very, very approachable. This is very much appreciated."

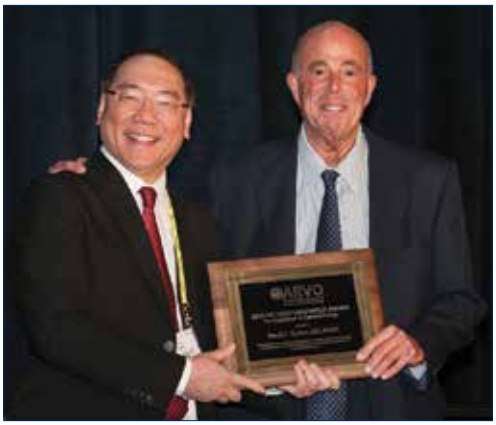
"The networking alone is well worth attending. Gaining insight and seeing how others deal with situations is very helpful."

Career Achievement Lectures

Proctor medalists Theodore Wensel, PhD, FARVO (left) of Baylor College and Vadim Arshavsky, PhD, of Duke University, joke with Trustee John S. Penn, PhD, FARVO, after their lectures. Wensel and Arshavsky spoke on *Timing Is Everything: GTPase Regulation in Phototransduction.*

David Huang, MD, PhD, of OHSU/Casey Eye Institute presented the 2013 Friedenwald lecture on *Functional and Structural Optical Coherence Tomography.*

Jonathan Demb, PhD, of Yale University delivered his Cogan Award lecture on *Neural Circuits and Synapses for Early Visual Processing.*



ARVO President Peng Tee Khaw, MD, PhD, FARVO, and Weisenfeld Award recipeint David Epstein, MD, MMM, of Duke Eye Center. Epstein discussed *Soaring Aspirations: Lessons from My Mentors and Colleagues.*

ARVO/Champalimaud Award Lecture

David Williams, PhD, FARVO

James Fujimoto, PhD

The ARVO/Champalimaud Award Lecture at ARVO 2013 focused on the development of two novel approaches to visualizing the human retina in health and disease.

Originally used by astronomers to see through atmospheric aberrations, adaptive optics (AO) technologies were applied to imaging of the cornea and lens by David Williams, PhD, FARVO, of the University of Rochester.

James Fujimoto, PhD, of MIT, and his colleagues developed optical coherence tomography (OCT) and its insights for clinical ocular application.

CME credit is free

Continuing Medical Education (CME) Certificates, as well as Certificates of Attendance, are now available at **arvo.org/cme.** There is no charge for this service. Certificates can be updated/printed for free at any time.

ARVO is accredited by the Accreditation Council for Continuing Medical Education to provide CME for physicians. ARVO designates the 2013 Annual Meeting for a maximum of 36.5 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity. The AMA has determined that physicians not licensed in the U.S. who participate in this CME activity are eligible for AMA PRA Category 1 Credits™. ■

ARVO 2014 fact:

If you ate breakfast, lunch and dinner at a different Orlando restaurant every day, it would take you five years to eat at all 5,300 plus eateries.

Dennis Levi, OD, PhD

Six months in!

In 2000, Andrew (Beau) Watson, PhD, FARVO, proposed to ARVO the creation of an entirely new kind of journal: open access, online and digital. The ARVO Board of Trustees approved the concept and made Watson editor-in-chief. He launched the *Journal of Vision (JOV)* accepting manuscript submissions in Jan. 2001, and publishing the first article in May 2001.

Twelve years on, *JOV* is a resounding success. The journal now receives, on average, roughly 43 submissions per month and publishes about 20 articles every month. And it lives up to the online aspiration, with approximately 64,000 article downloads and full text views each month — many of them now on mobile devices (like iPads) that didn't even exist in 2001.

Since Jan. 2013 it has been my honor and a privilege to serve as the second editor-in-chief of *JOV*. The journal now has a new editorial board structure, with four associate editors: David Burr, Marisa Carrasco, Eileen Kowler and Denis Pelli. In addition to myself, the associate editors receive manuscripts directly and either distribute them to editorial board members (EBMs) or handle them themselves.

We anticipate that this structure will help ensure that manuscripts are handled efficiently by EBMs with the appropriate expertise. The *JOV* Editorial Board is a "working" board in which members act as action editors, assigning reviewers and making the editorial decisions.

Another recent innovation has been the addition of a new section of the journal: Methods. The increasingly technical nature of vision science, the need for an open-access venue for describing substantial new technical developments and the unique capabilities of *JOV* for publication of code and demonstrations, has convinced us of the value of publishing methods reports.

We believe that the addition of Methods will increase the significance of *JOV* as a critical publication venue in vision science. Denis Pelli serves as associate editor for Methods.

Special Issue: Visual search and selective attention

The study of visual search is often closely tied to theories of the functional role and underlying mechanisms of vision and selective visual attention. This special issue contains papers describing contemporary research on visual search, emphasizing its links to vision and attention. This special issue consists in part of papers based on presentations delivered at a symposium on "Visual Search and Selective Attention," organized by Hermann J. Müller and Thomas Geyer, held near Munich, Germany in July 2012. Papers are being added to the issue as they are ready.

Guest editors are:

- Marisa Carrasco, New York University, U.S.
- Miguel Eckstein, University of California, Santa Barbara, U.S.
- Martin Eimer, University of London, U.K.
- Bill Geisler, University of Texas, U.S.
- Mary Hayhoe, University of Texas, U.S.
- Glyn Humphreys, Oxford University, U.K.
- Eileen Kowler, Rutgers University, U.S.
- Hermann Müller, Ludwig Maximilians University Munich, Germany
- Chris Olivers, VU University Amsterdam, Netherlands
- Jeremy Wolfe, Harvard University, U.S.

In closing, I am deeply honored to take on the role of editor-in-chief of *Journal of Vision*. The journal has been an integral part of my professional life for more than a decade! I want to add my personal thanks to the founding editor, Beau Watson, who made *Journal of Vision* not just a reality, but the preeminent journal in the field. ■

Dennis Levi
Editor-in-Chief

Levi is professor of optometry and vision science, and dean of the School of Optometry at the University of California, Berkeley. He is a founding member of the JOV *editorial board and former* IOVS *editorial board member.*

JOV journal of vision
an ARVO journal

ARVO 2014 fact:
If you book your hotel through the ARVO Housing Bureau, your room will have free wifi.

One Year On

David Beebe, PhD, FARVO

Although my term as editor-in-chief officially began on Jan. 1, 2013, *IOVS* became my day-to-day responsibility on July 1, 2012. So this is a brief summary of the highlights of the past year, with a few thoughts about what is to come at *IOVS*.

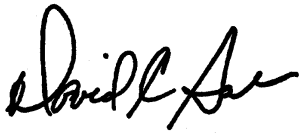
Relatively new to *IOVS* has been the addition of Research Highlights, brief summaries that draw attention to important articles and make clear their contributions to vision research. As testament to their interest among the readership, seven of the 10 most-read articles from the past year are Research Highlights (iovs.org/reports/most-read). Articles are nominated to be highlighted by the reviewers or the editorial board member (EBM) who managed their review. A highlight may be written by one of the reviewers, the EBM or by an expert they recommend. I suppose we should all be aiming to have our work make this list in the coming year.

Speaking of Research Highlights, a recent article in *IOVS* describes the sad history of the RGC-5 cell line. These rat cells, which were intended to serve as an *in vitro* model for retinal ganglion cells, were apparently "replaced" in the lab of origin by a mouse photoreceptor cell line. The article by Krishnamoorthy and colleagues from the North Texas Eye Research Institute, where these cells originated, describes a "forensic" analysis defining the nature of the cells currently in use around the world and in over 220 publications to date.

Together with an earlier warning from Jonathan Crowston's lab in Melbourne, this work indicates that RGC-5 cells are unlikely to exist. Investigators using RGC-5 cells as surrogates for ganglion cells should stop and find another path for their research; unless they find that their cells are of rat origin and express ganglion cell markers. An editorial summarizing this important manuscript and the hazards of using transformed or immortalized cell lines in vision research appears in the August issue of *IOVS*.

We expected the usual "summer slump" of papers arriving at *IOVS*. Instead, the journal continued to attract a large number of submissions throughout June and July. Our job will be to keep them flowing, in spite of the large number of reviewers and editors on holiday.

To those who have reviewed articles for *IOVS* this year, many thanks for your service to the journal and to vision research. If you were one of the few who received an email thanking you for an "Exceptionally Good Review" — ¡Bravo! ■



David Beebe
Editor-in-Chief

Beebe, a former ARVO president, is the Janet and Bernard Becker Professor of Ophthalmology and Visual Sciences at Washington University in St. Louis, Mo.

A must-have: 50 years of the best of *IOVS*

Celebrate 50 years of the top research published in ARVO's distinguished journal in this collector 900+ page volume, *The Best of Investigative Ophthalmology & Visual Science.*

And who better to select the groundbreaking, seminal and controversial papers from Volume 1 of *Investigative Ophthalmology* through Volume 52 of *Investigative Ophthalmology & Visual Science* than the most recent four editors-in-chief?

They are:

- David Beebe, PhD, FARVO
- Gerald Chader, PhD, FARVO
- Paul Kaufman, MD, FARVO
- Robert Frank, MD, FARVO

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TVST: Up and Publishing

Marco Zarbin, MD, PhD, FACS, FARVO

Translational Vision Science & Technology (TVST), ARVO's new journal, emphasizes multidisciplinary research that bridges the gap between basic research and clinical care.

Because of its translational emphasis, *TVST* publishes manuscripts by scientists and clinicians with very diverse backgrounds — from basic chemistry to physics to epidemiology to ophthalmic surgery — in order to bring together research that has a high probability of advancing the way we understand and/or treat vision-threatening diseases.

TVST features a broad spectrum of work, such as diagnostic technology, preclinical models of human disease, new therapeutic modalities and innovations in clinical trial design.

Selected articles published in *TVST* are featured in a column I write, "Translational Science with Clinical Promise" for *JAMA Ophthalmology* (formerly *Archives of Ophthalmology*), a high-impact publication that reaches physicians throughout the world.

In writing this column, I hope to give *JAMA Ophthalmology* readers a chance to "peek around the corner" and see what new technologies might be en route to the clinic or might be shaping the way we approach the treatment of vision-threatening diseases.

I suspect that investigators who publish their work in *TVST* will value the possibility that it may be highlighted before the many thousands of clinicians who constitute the *JAMA Ophthalmology* readership.

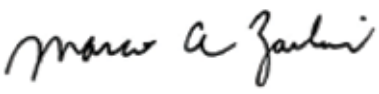
Some of the articles highlighted during the past year illustrate the range of work that appears in *TVST* and include:

1. Personalized Medicine: Bayesian Inference as Applied to the Measurement of Glaucomatous Visual Field Loss. Denniss et al[1] explore the performance of patient-specific prior information from structural imaging as a means to improve the precision of sensitivity estimates of perimetric procedures while maintaining test times similar to current procedures.
2. Olefactory Ensheathing Cell Transplants for Glaucoma. Dai et al[2] present evidence that transplantation of autologous olfactory ensheathing cells into the optic nerve head provides a degree of protection of the optic nerve against induced ocular hypertension in a rat model.
3. Recombinant T Cell Receptor Ligands in the Treatment of Experimental Autoimmune Uveitis. Kyger et al[3] evaluated the immunotherapeutic efficacy of recombinant T cell receptor ligands specific for arrestin immunity in the treatment of experimental autoimmune uveitis in humanized HLA-DR3 transgenic mice.
4. Tissue Engineered Corneal Stroma. Shang et al[4] report their experience using patterned transparent silk films with fast degradation rates to develop a tissue-engineered corneal stroma.
5. Apical scotomata, confusion, and Diplopia. Apfelbaum et al[5] analyze various configurations of sector and of peripheral prisms, in various directions of gaze, and their visual effects are illustrated using simulated perimetry.

tvst translational vision science & technology
an ARVO journal

I encourage authors to take advantage of the following features of *TVST*:

- Convenient online manuscript submission — widely praised by authors for ease of use
- International representation of highly accomplished associate editors and editorial board members
- Expert peer review
- No space constraints or color image charges
- Immediate publication on acceptance
- Inclusion in PubMed Central
- Research that is freely available for redistribution
- Compliance with open-access mandates
- Highlight selected articles in *JAMA Ophthalmology* "Translational Science with Clinical Promise" series. ■



Marco Zarbin
Editor-in-Chief

Zarbin is currently a professor of ophthalmology and neuroscience at the New Jersey Medical School and holds the Alfonse A. Cinotti, MD/Lions Eye Research Chair in the Department of Ophthalmology.

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