

ARVO News

The Association for Research in Vision and Ophthalmology

arvo.org

ARVO 2014: Science, networking and fun



Above: Welcome to ARVO 2014. Right: ARVO's first woman keynote speaker Jean Bennett, MD, PhD, FARVO, closes the meeting. Below: Meeting registration.



Above: President Justine Smith, FRANZCO, PhD, FARVO, poses with keynote speaker Nobel Laureate Barry J. Marshall. Below: Sunday Social goes don 3-D glasses for the Despicable Me ride at Universal Studios.



For a look back at the ARVO 2014 Annual Meeting, see page 22.

2015 Annual Meeting Highlights and Call for Abstracts enclosed



Seven members receive 2014 Champalimaud Vision Award

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Case studies: new models for funding resources

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Advocacy & Outreach section added to website

Resources to help ARVO members better communicate with audiences outside of the scientific community are now a click away. Thanks to the new Advocacy & Outreach (A&O) section on the ARVO website, members have easy access to a variety of tools to help share their research with the public, press and funders.

What will you find?

- Toolkits on how to organize events, such as a patient outreach day
- Volunteer opportunities listed on a calendar of events

- Advocacy- and outreach-related news — including policy and funding updates — grouped in one easy-to-follow location
- Q&A with an expert, a series of interviews with professionals in the fields of science communication, policy and public outreach

Join online discussions

Information published on the A&O web section is linked to corresponding posts in a new Outreach Community on ARVOConnect. Members can join the community and share their views or questions with colleagues. See <http://arvoconnect.arvo.org/outreach>. ■

2014 – 2015

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President's message

Being connected, staying connected



William F. Mieler, MD

It was only a few months ago when the ARVO 2014 Annual Meeting was held in Orlando, Fla. Now, here it is, at the official end of summer in the U.S. that we are preparing for ARVO 2015, which will be held in Denver, Colo.,

May 3 – 7. We are all looking forward to another very successful meeting, and I sincerely hope that you are planning to participate.

While ARVO will continue to highlight ongoing basic science and translational and clinical research through the array of scientific platform symposia, posters and special interest groups, the overall theme of the 2015 annual meeting will be “Powerful Connections: Vision Research and Online Networking.”

It is readily apparent that when world news breaks even from the remotest of countries, in a matter of minutes it is well documented around the world. Similarly, thanks to the increased use of social media, medicine and science are gaining significant exposure.

Take for example, the recent “ice bucket challenge,” which went globally viral and helped to not only raise awareness of ALS, but also generated several million dollars for research. Social media and networking made this possible, and it is important to note that this is not just for the “younger generation,” but for everyone. Networking and social media have become mainstream, and will continue to play an even more prominent role in our future social and professional communication.

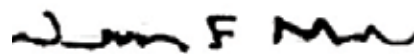
Our keynote speaker at ARVO 2015 will be Gary Shapiro, president and CEO of the Consumer Electronics Association. He will open the meeting with a discussion of the impact of the social network on our scientific endeavors. He will also show how innovation in communication technology will impact our ability to conduct research and forge collaborative studies to more rapidly create and advance the sciences.

Being connected and staying connected is vital in today's world, and tools such as ARVOConnect are a prime example of a platform where discussions take place on a variety of topics, allowing members to share their thoughts and expertise.

This tool is especially helpful for our younger members as they can gain valuable insight into the vast array of issues and challenges that face researchers today. Networking also allows rapid access to industry trends and even to governmental regulations facing all of us in our daily work. Being savvy with networking is becoming truly instrumental to a successful career.

It will soon be time to put together your scientific abstracts for consideration for ARVO 2015. As you do so, think about ways that online networking with your colleagues may have influenced or shaped the work you are describing in those 2,500 characters — and about how it may increase the impact of your work in the future.

I hope you'll take some of those ideas to Denver in 2015 as we explore the powerful connections online networking is making possible in vision research. Once again, we all anticipate another very successful Annual Meeting. I look forward to seeing you in Denver. ■



William F. Mieler, MD

ARVO 2015 fact:

Denver has a state-of-the-art convention center surrounded by 8,700 hotel rooms.



Conversations with the new ARVO Trustees



Raymond A. Applegate, OD, PhD, FARVO, serves as professor and Borish Chair of Optometry and Director of the Visual Optics Institute at the College of Optometry, University of Houston.

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

First, I need to gain experience to learn my new role and how to best serve. In particular, I feel passionate about a situation that has concerned me for years. Posters and papers on a particular topic of interest are often scattered and at times in competing sessions. This happens primarily because abstracts have been historically submitted to a particular ARVO section (e.g., anatomy and physiology, imaging, cornea, etc.) and not sorted by the actual content of the abstract. Recently, an effort was born to address this problem by electronically searching the content of each abstract and sorting the abstracts to form various clusters based on the actual content of the abstract. I wish to strongly support this effort so that, if it works, the Annual Meeting can be organized by clusters of scientific content with the most similar clusters closest together and the most dissimilar the furthest apart.

What do you want to tell us about yourself?

Professionally, I love what I do. I serve as professor and Borish Chair of Optometry and Director of the Visual Optics Institute at the College of Optometry, University of Houston. Before assuming this role at the University of Houston in 2002, I served as an associate professor and professor of Ophthalmology at the University of Texas Health Science Center San Antonio. I received my doctorate of Optometry from Indiana University in 1975 and my PhD in Physiological Optics from the University of California, Berkeley in 1983.

How have you been involved with ARVO since joining?

I have been a member of ARVO since 1975 and attended every ARVO Annual Meeting since joining except for one. I have had the privilege to serve on the ARVO Long Range Planning Committee and the Annual Meeting Program Committee and as liaison

between ARVO and the American Academy of Optometry, and I am honored to have been selected by the VI section to serve on the Board of Trustees.



Andrew D. Dick, MBBS, MD, FMedSci, is professor of ophthalmology at the University of Bristol-Bristol Eye Hospital

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

I look forward to having the privilege of the opportunity to continue to make ARVO flourish for the benefit of its community, as well as the benefit of scientific advance and patient eye health.

What do you want to tell us about yourself?

As a clinician-scientist, I wish passionately to drive advances of basic science understanding to benefit patients. From the early days it did not take me long to realize this is often a long but exciting path. As a uveitis and retinal specialist, I have focused my scientific work on inflammation biology and the understanding of basic cellular and tissue responses to damage. The highlights have been many — from fundamental understanding of macrophage behavior through opportunities to work as a postdoc with fantastic immunologists in the past and now in the larger community, including the one ARVO provides. The understanding of macrophage biology has led to exciting developments of biologics and working alongside industry toward regulating macrophage behavior and restoring tissue homeostasis, not just in uveitis but during degenerative or angiogenic processes.

How have you been involved with ARVO since joining?

For nearly 20 years, I have been a program committee member for IM section, enjoyed engagement with reviewing for journals — IOVS and more recently of the TVST board. I've always been pleased to take part in educational student information systems for clinician-scientists and career-mentoring systems when opportunities have become available.

ARVO 2015 fact:

Within a mile radius, downtown Denver has three major sports stadiums, an assortment of art and history museums, a mint producing 10 billion coins a year, a \$140 million amusement park, a \$100 million aquarium and 300 restaurants.



See **Conversations**, page 4

Conversations, continued from page 3



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.

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

I'm looking forward to contributing to the development of the future directions ARVO will take to best serve the needs of the membership, and bringing issues to the table that have particular relevance to my constituents in the RC Section.

How have you been involved with ARVO since joining?

Over the years, I've given at least one poster or platform presentation at ARVO nearly every year since I joined. I've moderated several poster and platform sessions and symposia, and served twice — 20 years apart — on the Annual Meeting

Program Committee representing the RC Section. Also, I've served on and now chair the ARVO Publications Committee, through which I've organized and co-moderated workshops on publishing, responsible conduct in research and ethical issues in publishing, cosponsored by the Publications Committee and the Members-in-Training Committee.

Tell us more about yourself.

I've been an ARVO member since I was a graduate student (nearly four decades!), and have been engaged in eye research that entire time. I consider myself to be a biochemist and cell biologist, with a primary area of interest in the roles of cholesterol and other lipids in the retina, particularly as applied to understanding how defects in the synthesis and metabolism of such lipids leads to retinal degeneration. I was born in upstate New York, and have lived in downstate New York, California, Texas, Florida and Missouri, where for 20 years I was on staff at Saint Louis University. Presently, I live in Buffalo. Moving back to the western edge of upstate New York makes me feel like a salmon, swimming back to its spawning ground. ■

Update on the ARVO Strategic Plan

In 2013, ARVO enthusiastically launched a new organizational strategy, led by Mark Petrash, PhD, FARVO (University of Colorado School of Medicine).

Designed by members, the plan focuses on four critical components to address the needs of ARVO's diverse membership: Science, Advocacy, Global Presence and Education & Meetings, and is known by the acronym SAGE.

Each of these four pillars is led by a Steering Committee, which is charged with developing recommendations (often through ad hoc working groups) for meeting SAGE's objectives. The ARVO Board of Trustees will review these recommendations, decide which ones to adopt and determine the best approach for carrying out the work (through standing committees, working groups, staff or a combination).

Each pillar Steering Committee is expected to provide a detailed report to the Board at its October 2014 meeting. The Board will update members soon after.

In the meantime, members may direct questions about the strategic plan, to ARVO Interim Executive Director Iris Rush, CAE, at irush@arvo.org.

Pillar Steering Committees:

- Science: David Calkins, PhD, FARVO (chair); Paul S. Bernstein, MD, PhD, FARVO; Joel S. Schuman, MD, FARVO; Miller J. Ogidigben, PhD; and staff liaison Joanne Olson
- Advocacy: Linda McLoon, PhD, FARVO (chair); John Clark, PhD, FARVO; Martine Jager, MD, PhD, FARVO; Paul Lee, JD, MD, FARVO; and staff liaison Katrina Norfleet
- Global: Justine R. Smith, FRANZCO, PhD, FARVO (chair); Sarah E. Coupland, MBBS, PhD, FARVO; Solange R. Salomao, PhD; Calvin Pang, DPhil; and staff liaison Iris Rush
- Education and Meetings: John S. Penn, PhD, FARVO (chair); Jeffrey H. Boatright, PhD, FARVO; Jacque L. Duncan, MD; Subhabrata Chakrabarti, PhD; and staff liaison Gayle Claman ■

ARVO 2015

fact:

Denver has 300 days of sunshine a year.



Meet the 2015 Trustee candidates

To ensure continuity on the ARVO Board, the five-year terms of Trustees are staggered. This means only two or three sections at a time elect new representatives. During the ARVO 2015 elections, PH and RE section members will have the chance to vote for one of the following candidates.

Physiology/Pharmacology (PH) Section

Leopold Schmetterer, PhD, FARVO,



is currently the chair of the Ophthalmic Pharmacology Division in the Department of Clinical Pharmacology and a principal investigator at the Center of Medical Physics and Biomedical Engineering at

the Medical University of Vienna. He was recently appointed director of Christian Doppler Laboratory for Ocular Effects of Thiomers. Schmetterer was recently responsible for the MANTA study, a multi-center study in Austria that compared the effects of ranibizumab and bevacizumab for the treatment of neovascular AMD.

He graduated from the Technical University of Vienna in 1989, held a postdoctoral position at the Institut de Recherche en Ophtalmologie in Sion working with Dr. Charles Riva (1996 – 1998) and was a guest professor at EPFL in Lausanne (1998 – 2002). He is a member of many editorial boards and has published more than 250 articles and over 50 book chapters. An ARVO Silver Fellow, Schmetterer served on the PH Section of the Annual Meeting Program Committee (2009 – 2011).



For the past 25 years, **W. Daniel Stamer, PhD, FARVO**, has been working to better understand the molecular and cellular mechanisms that regulate aqueous humor outflow such that novel targets

can be identified and used for the development of therapeutics to more effectively

lower intraocular pressure in people with glaucoma. Stamer was the first to describe the unique role for aquaporin-1 in the trabecular meshwork. He established techniques to specifically isolate, characterize and culture human cells from Schlemm's canal. Stamer has recently been instrumental in the development of techniques and technology to use the mouse eye as a model to better understand conventional outflow function/dysfunction.

In addition to running his research program and educating students, Stamer has taken on many service and leadership roles. He has also served as course organizer of 2012 ARVO/Pfizer Ophthalmics Research Institute and served on the PH Section of the ARVO Annual Meeting Program Committee.

Retina (RE) Section



Ophthalmologist-in-Chief **Julia A. Haller, MD, FARVO**, of the Wills Eye Hospital in Philadelphia, holds the William Tasman, MD, Endowed Chair, is professor and chair of the Department of Ophthalmology at

Jefferson Medical College of Thomas Jefferson University and co-director of the Wills Vision Research Center at Jefferson. She was educated at the Bryn Mawr School in Baltimore, Princeton University and Harvard Medical School. After a surgical internship at Hopkins and a fellowship in ocular pathology with Frederick A. Jakobiec, MD, at Manhattan Eye, Ear and Throat Hospital, she trained both in ophthalmology and as a Heed Fellow in retina (with Ronald G. Michels, MD) at the Wilmer Eye Institute at Johns Hopkins.

She has published over 300 scientific articles and book chapters. Currently serving as principal investigator on \$7.6 million in grant-funded projects, Haller's research interests include retinal pharmacology, macular surgery, retinal venous occlusive disease, diabetic retinopathy, age-related macular degeneration, the repair of complicated retinal detachments

and healthcare disparities. Currently president of the Retina Society and president-elect of the Board of Trustees of the Association of University Professors of Ophthalmology, Haller also sits on the ARVO Foundation for Eye Research Board of Governors.



Jennifer J. Kang-Mieler, PhD, is a biomedical engineer, focused on vision research with particular attention to the retina. She has been a member of the faculty at Illinois Institute

of Technology in the Department of Biomedical Engineering since 2001, and is currently associate professor and director of the Neural Engineering Track. Her current areas of emphasis include ocular drug delivery, the role of nitric oxide in retinal vascular disease and the development of a NO sensor, retina function in various vascular conditions, development of non-invasive methods to measure blood flow and the development of biomaterials for retinal regeneration. Kang-Mieler received her education from Northwestern University. As a graduate student, she worked in the Linsenmer lab, studying the effects of hypoxia and hypoglycemia on retinal function and metabolism. She completed a postdoctoral fellowship with David Pepperberg, PhD, FARVO, in the Department of Ophthalmology and Visual Sciences at University of Illinois at Chicago.

Kang-Mieler has published over 30 articles in peer-reviewed journals, and she is an associate editor for *BMESource*. She also served on the RE Section of ARVO's Annual Meeting Program Committee. ■

ARVO 2015

fact:

Denver has more than 40 museums.



2015 Education Courses

May 2, 2015 | Denver, Colo.
Separate registration is required.

arvo.org/educationcourses

Full-day courses (8:30am – 4:30pm)

Diabetic Retinopathy – Lessons from Benchside and Clinic

Course directors: Arup Das, MD, PhD, FARVO and Renu A. Kowluru, PhD, FARVO

Epigenetics of Retinal Development and Postmitotic Retinal Function

Course directors: Igor O. Nasonkin, PhD and Colin Barnstable, DPhil

Strategies for Effective Grant Writing

Course director: Ashwath Jayagopal, PhD

Half-day course (1 – 4:30pm)

Primary Cilia in Eye Development and Disease

Course directors: Yang Sun, MD, PhD and Hemant Khanna, PhD

What 2014 attendees said about ARVO Education Courses

“My research is specifically in diabetic retinopathy, and all the information learned will be of value to my day-to-day research. My understanding of diabetic retinopathy and the clinical aspects were very rudimentary, and this course has helped me extensively.”

— Attendee, *New Insights in Understanding Diabetic Retinopathy Education Course*

“As I’m an optometrist and I’m currently doing research on corneal biomechanics, the activity has strengthened my knowledge of the biomechanical engineering field.”

— Attendee, *Predicting, Measuring and Treating Changes in Corneal Biomechanics Education Course*

The value of meeting on Saturday

Every year, approximately 1,000 vision scientists and clinicians begin their ARVO Annual Meeting experience by attending the ARVO Imaging in the Eye Conference (formerly known as the ARVO/ISIE Imaging Conference) and the ARVO education courses. Held the Saturday before the official start of the Annual Meeting, these in-depth educational opportunities allow attendees to learn from the faculty and each other in a relaxed manner.

Zsolt Ablonczy, PhD, of the Medical University of South Carolina and Joseph Carroll, PhD, of the Medical College of Wisconsin, regular attendees of the ARVO Imaging in the Eye Conference, tell us why they participate and why others should, too.

Why is the conference valuable to you?

Ablonczy: This conference pulls together all the various imaging modalities with all

tissues and diseases. It provides not only an invaluable insight into new and state-of-the-art technology across the board, but it also introduces the participants into a bit of every exciting research opportunity in the eye. The Imaging Conference is like the entire ARVO conference in a day. It is not possible to attend all interesting sessions at ARVO, but most topics are covered at the Imaging Conference. Thus, I gained valuable insight into areas that I am otherwise not directly working on.

Carroll: The conference is valuable to me because it provides an opportunity to connect with my imaging peers in a more intimate environment. Also, with ARVO moving around to new cities, it gives me a “sneak peak” at the [Annual Meeting] venue so I am prepared come Sunday!

Who do you think would benefit most from attending this specific conference?

Ablonczy: The Imaging in the Eye Conference can be very beneficial to everyone willing to step out of their comfort zone to learn about new techniques, diseases and upcoming treatments.

Carroll: I think anyone wanting to get a snapshot of what’s hot in imaging would benefit from attending the ARVO Imaging Conference.

ARVO Education Courses (see box at left) and the ARVO Imaging in the Eye Conference have their own registration fees. Register early to ensure you get the best rate. See arvo.org/educationcourses or arvo.org/imaging. ■



Asia-ARVO 2015 plenary speakers introduce their lectures

The Asia-ARVO 2015 theme is *Evolutions in Ophthalmology: From the Study of Aging and Regenerative Medicine to Quality of Vision*. Asia-ARVO plenary speakers take this chance to talk about their upcoming lectures.



Recent progress in iPS cell research and application
Shinya Yamanaka, MD, PhD
Center for iPS Cell Research and Application, Kyoto University
Induced pluripotent stem cells (iPSCs) were originally generated from

mouse and human skin fibroblasts by introducing four identified transcription factor genes. iPSCs have the ability to proliferate almost indefinitely and differentiate into multiple lineages; there are great hopes for medical and pharmaceutical applications. Many improvements have been achieved in iPSC production in both safety and efficacy. iPSCs can be generated from various genetically identified individuals including patients. These iPSCs and subsequently differentiated target cells/ tissues would provide unprecedented opportunities in regenerative medicine, disease modelling, proof-of-concept studies in drug development, drug screening and future personalized medicine.



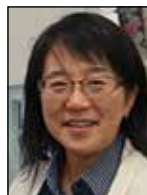
Sirtuins, NAD and healthspan
Leonard Guarente, PhD
Glenn Laboratory for the Science of Aging, Massachusetts Institute of Technology
SIRT2 and related genes (sirtuins) are NAD-dependent deacetylases

that link metabolism, protein acetylation and aging in a variety of species. Sirtuins are involved in the longevity conferred calorie restriction (CR). The mammalian sirtuins SIRT1-7 are involved in changes in stress resistance and metabolism that are triggered by CR, which not only extends life span, but also protects against many diseases of aging. In this talk, I will discuss new findings in the lab regarding SIRT1 and NAD⁺. I will also discuss the role of SIRT1 in adult stem cells. Our findings place sirtuins at the center of metabolism and health.



Gene polymorphism-based personalized patient care in AMD
Nagahisa Yoshimura, MD, PhD,
FARVO
Department of Ophthalmology and Visual Sciences, Kyoto University Graduate School of Medicine

Discovery of CFH and ARMS2 as susceptibility genes of age-related macular degeneration (AMD) established the importance of genetic polymorphisms in the development of AMD and now more than 10 genes are known to be associated with AMD. Only a few studies show a positive contribution of gene polymorphisms to clinical phenotypes of AMD. Most of the studies showing such negative contribution focus on disease-susceptibility genes and rather limited information on phenotypes used. However, our recent genome-wide association study revealed that ARMS2 is a strong predictor of AMD prognosis. And we found that MMP20 is associated with the lesion size but not with the onset of AMD, which suggests MMP20 would be a novel target for the treatment of AMD. So gene polymorphisms are important not only for the development of AMD but also play an important role in determining phenotypes of the disease. Further studies are needed to personalize treatment of AMD and change our patient care.



Application of iPS cells to retinal disease
Masayo Takahashi MD, PhD
Laboratory for Retinal Regeneration, RIKEN Center for Developmental Biology

We have started clinical research using iPS cells for AMD. Now we are preparing the first patient's iPSC-derived RPE (hiPSC-RPE) cell sheets optimized to meet clinical requirements including quality, quantity, consistency and safety. We also evaluate the photoreceptor transplantation using iPSC-derived 3D retinal induction methods. We observed survival of photoreceptor cells with outer segments for more than six months. Thus, iPSC cell-derived retinal cell transplantation is promising. However, the effect of the treatments will be limited for the first decade. We should know the possibility and the limitation of the therapy. ■

Got a big idea for a conference?

ARVO's Professional Development and Education Committee (PDEC) is calling for conference proposals, due by Oct. 6 for a 2015 conference or by March 2, 2015 for a 2016 conference. The purpose of these conferences is to provide eye and vision science content of broad appeal and/or great significance to the field outside the framework of the ARVO Annual Meeting. The conferences may be symposia-style meetings or technical training workshops.

Symposia: Conferences promote dedicated research discussions on topics of emerging importance to ARVO members. These meetings may emphasize:

- collaboration with cross-disciplinary experts from outside the ocular and vision research sphere and/or
- reaching audiences from geographic regions with an interest in eye and vision research that are underrepresented at the ARVO Annual Meeting.

While these two areas of focus are not required for submissions, the PDEC will consider the potential for the meeting to address one or both of these interest areas.

Technical training workshops: This format is aimed toward teaching concepts and/or hands-on training in research techniques to trainees, basic scientists and clinicians.

Conferences may be organized as standalone events or as complementary meetings to other organizations' events. Individuals submitting proposals must be ARVO members, and will be asked to justify why the topic cannot be sufficiently covered through the ARVO Annual Meeting, as well as relate the topic to ARVO's strategic goals. In addition, the meeting organizer(s) are expected to assist in fundraising efforts, to maintain reasonable attendee costs, while providing a high-quality meeting experience. See arvo.org/call_for_proposals ■

ARVO Awards



2016 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.
- **Mildred 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 4, 2015. Nominations must be completed online at arvo.org/awards.

Introducing ARVO Achievement Awards

The ARVO Achievement Awards honor individuals for their exceptional contributions to ophthalmology and visual science. All awards and lectures are presented during the ARVO Annual Meeting each May. Nominations for the prestigious awards are open to all members of the vision research community. There are no membership or geographical restrictions for nominees or nominators.

Proctor Medal



Patricia D'Amore, MBA, PhD, FARVO

Patricia D'Amore, MBA, PhD, FARVO Massachusetts Eye and Ear Infirmary

D'Amore's influence on ophthalmology has been far reaching, encompassing many fields. Her studies

have resulted in major contributions to angiogenesis, vascular biology, retinopathies, choroidopathies, corneal diseases and the role of several growth factors in the eye. The breadth of her contributions is apparent in her 141 peer-reviewed manuscripts, 66 reviews and the four books of which she is editor.



David Berson, PhD

Friedenwald Award

David Berson, PhD Brown University

An outstanding retinal neuroanatomist/neurophysiologist, Berson has devoted his career to studying parallel processing in vision at the level of the retinal ganglion cells. Using state-of-the-art techniques and a number of mammalian models, he has, for many years, systematically characterized a whole array of new morphological types of retinal ganglion cells, linking them to specific patterns of projection to the brain, unique types of intrinsic electrical behavior, distinctive patterns of synaptic input and characteristic patterns of response to visual stimuli.

Weisenfeld Award



Joan Miller, MD, FARVO

Joan Miller, MD, FARVO Massachusetts Eye and Ear Infirmary

One of the most important developments ever seen in ophthalmology is the identification of the role of vascular endothelial growth factor (VEGF) and subsequent treatment with VEGF inhibitors of vascular retinal diseases, such as AMD, diabetic retinopathy and branch and central venous occlusion. Miller is one of the leaders in this field, making key contributions to our knowledge of the role of VEGF in ocular diseases. She was the first to develop an effective treatment for AMD, i.e., photodynamic therapy.

Cogan Award



Anneke den Hollander, PhD

Anneke den Hollander, PhD Nijmegen University

Den Hollander's work has greatly contributed to our understanding of the molecular causes of a series of retinal diseases. She identified the majority of the genetic causes of Leber congenital amaurosis (LCA). She was the lead scientist in studies that identified the CEP290, CRBJ and LCA5 genes, which together underlie 35% of all LCA cases. In addition, her group identified numerous genes involved in retinitis pigmentosa, as well as cone and cone-and-rod dystrophy. Her group recently identified mutations in the RAB28 gene as a novel cause of cone-rod dystrophy, highlighting a new disease mechanism. This work was published in the *American Journal of Human Genetics*.

For more details about the awards lectures at ARVO 2015, see arvo.org/am. ■

Seven ARVO members honored with 2014 Champalimaud Vision Award

Seven ARVO members were named as recipients of the 2014 António Champalimaud Vision Award, among the world's highest distinctions in ophthalmology and visual science, for their pioneering work in developing anti-angiogenic therapy. The prize is worth €1 million (U.S. \$1.3 million; greater than the Nobel Prize award).

The awardees were honored in early September at a ceremony in Lisbon, Portugal, where the Champalimaud Foundation is based. His Excellency Aníbal António Cavaco Silva, president of Portugal, announced the recipients:

- **Napoleone Ferrara, MD**, of University of California, San Diego School of Medicine and Moores Cancer Center;
- **Joan Whitten Miller, MD, FARVO**, of Harvard Medical School and Massachusetts Eye and Ear Infirmary;
- **Evangelos S. Gragoudas, MD, FARVO**, of Harvard Medical School and Massachusetts Eye and Ear Infirmary;
- **Patricia A. D'Amore, PhD, MBA, FARVO**, of Harvard Medical School and Massachusetts Eye and Ear Infirmary;

- **Anthony P. Adamis, MD, FARVO**, of Genentech/Roche, who is also affiliated with Harvard Medical School
- **George L. King, MD, FARVO**, of Joslin Diabetes Center and Harvard Medical School; and
- **Lloyd Paul Aiello, MD, PhD, FARVO**, of the Beetham Eye Institute, Joslin Diabetes Center in Boston, Harvard Medical School and Massachusetts Eye and Ear Infirmary.

The laureates worked in parallel and in collaboration to identify vascular endothelial growth factor (VEGF) as the major trigger for angiogenesis in the eye. Angiogenesis underlies the pathology of various blinding retinal disorders, including AMD and diabetic retinopathy. The researchers demonstrated that blocking VEGF could suppress ocular angiogenesis. This biomedical breakthrough led to a new class of ophthalmic anti-VEGF drugs, which first became available in the U.S. in December 2004.

ARVO members can hear firsthand about the researchers' work at the ARVO/Champalimaud Award Lecture on May 5 at the ARVO 2015 Annual Meeting in Denver, Colo. ■

2015 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.



Justine R. Smith, FRANZCO, PhD, FARVO
Flinders University
President
(2013 – 2014)



John S. Penn, PhD, FARVO
Vanderbilt University
School of Medicine
Vice President
(2013 – 2014)



David R. Williams, PhD, FARVO
University of Rochester
Vice President
(2013 – 2014) ■



The 2014 António Champalimaud Vision Laureates were honored on Sept. 10 at a ceremony in Lisbon, Portugal. From left: Napoleone Ferrara, MD; Evangelos S. Gragoudas, MD, FARVO; Joan Whitten Miller, MD, FARVO; Anthony P. Adamis, MD, FARVO; George L. King, MD, FARVO; Patricia A. D'Amore, PhD, MBA, FARVO; and Lloyd Paul Aiello, MD, PhD, FARVO.

Photo credit: Rui Ochoa

ARVO 2015 fact:
Most of the official ARVO hotels are within walking distance of the convention center in Denver — no need for shuttle buses or car rental.



Spotlight on members

Five members in five minutes

Members talk about how they use ARVO's new online networking platform, ARVOConnect

Connects committees to the membership's needs



*M. E. Hartnett, MD,
FARVO
Moran Eye Center,
University of Utah
Salt Lake City, Utah
(Chair, Ethics Committee)*

"During the ARVO 2014 meeting, it became clear there were different opinions regarding the ARVO policy not to take images of posters or presentations at the annual meeting. The Ethics Committee used ARVOConnect as an educational opportunity to explain to the whole ARVO community — especially new members — our support of the ARVO policy and perspective on why not to take images of posters or presentations: that science presented can be preliminary and may need confirmation; that using data can hurt investigators' efforts at securing their own funding in some areas of science; and that it is also disrespectful to use another investigator's data without permission. The communication reached out to the Publications Committee, which also provided their perspective and support of the ARVO policy."

Connections create collaborations



*Maria de los Angeles Ramos
Asociación Para Evitar la
Ceguera en México,
Mexico City, Mexico*

"I think that the unique thing about ARVOConnect that makes it different from any other network is that before, during and after (the Annual Meeting) you can keep in touch with your favorite researchers, ophthalmologists and friends. There are people you admire in the field, that normally might seem distant, or hard to contact, but through ARVOConnect it is almost as easy as it during the Annual Meeting."

"During the past Annual Meeting, I had the chance to meet a very special person, Dr. Kagemann, and the idea of getting together came up through ARVOConnect. We are collaborating together on a book, so the meeting was very fruitful."

Connects through discussion forums



*Daniel Chao, MD, PhD
Bascom Palmer Eye
Institute, University of
Miami
Miami, Fla.*

ARVOConnect has been very helpful in connecting me with other like-minded individuals in a very approachable environment. As someone interested in entrepreneurship, the entrepreneurs discussion has allowed me to ask basic questions about how to get started in ophthalmic innovation and get responses from a community of experienced entrepreneurs. These online discussions have led to face-to-face meetings at ARVO and have helped me to expand my group of mentors. The forum serves as a great avenue to expand your network. I hope there is continued adoption and expansion of these forums in the future."

Connects through contacts and a complete profile



*Reza Moradi
Johns Hopkins Wilmer Eye
Institute
Baltimore, Md.*

"When I was going to join ARVO for the first time in 2012, one of our attending members told me: 'Shake as many hands as you can during the meeting.' I followed his instruction and networked extensively. I got back home with lots of business cards and was always thinking of a way to ensure that my name and contact information remains available long after the meeting is over. When

I was first introduced to ARVOConnect, I figured out that this is the social network that I was looking for. So I started inviting my friends and colleagues that I met in Fort Lauderdale and Seattle to ARVOConnect before the 2014 Annual Meeting. I received good feedback from my friends when I saw them.

In a busy and fast-paced setting such as the ARVO Annual Meeting where we network extensively, one good thing is to get connected to each other in ARVOConnect instead of collecting lots of business cards, and this goes for students and postdoctoral fellows as well who usually do not have business cards. So I invited the friends that I met this year in Orlando during the Annual Meeting. In a short span of time, I have made several meaningful connections, which would otherwise have been highly unlikely. If I was sure that everyone is using ARVOConnect, I wouldn't carry any business cards myself next year to Denver."

Connects for a sense of community



*Juliet Moncaster, PhD
Boston University
Boston, Mass.*

"ARVOConnect has allowed me to connect to my scientific community, which was difficult to do before. In particular it enables me to connect with researchers who are in my particular field of eye research as you can join specific sections such as the Retina or Lens Section or your group of interest such as the Members-in-Training (MIT) group. ARVOConnect allows me to contact people directly or post messages to the whole group. It makes it easy to keep in contact with people you may have just met at the ARVO Meeting as you can connect with people in ARVOConnect and keep them in your contacts list. It really gives you a sense of community, which is a great resource to have beyond being at the ARVO Annual Meeting." ■

From research lab to startup company

An interview with SBIR grantee Justin Hanes, PhD



Justin Hanes, PhD
Johns Hopkins
University

Justin Hanes, PhD, caught the entrepreneurial bug as a graduate student. Under the direction of Massachusetts Institute of Technology Professor Bob Langer, he had a front-row seat at the creation of a small biotech company

that grew from a promising project in the lab. Now, as the Lewis J. Ort Professor of Ophthalmology at Johns Hopkins University, Hanes has taken advantage of that experience to create a few startup companies. The most recent company, GrayBug, has received three NIH Small Business Innovation Research (SBIR) grants. Below, Hanes discusses with *ARVONews* the research and resources currently behind GrayBug.

ARVONews: What can you tell us about the initial research in the lab that got you thinking about forming a startup company?

Hanes: When you inject regular poly(lactic-co-glycolic acid) (PLGA) microspheres into the eyes, you can get inflammation. This was a major problem to solve because it's the most attractive polymer to use for controlled release in the eye. When we changed the types of PLGA we were using with our formulation methods and added some excipients, we were able to eliminate the inflammation. So we felt that we were onto something that could be really helpful to the industry and therefore to patients.

In parallel, I was approached by Peter Campochiaro, MD, who was working with Gregg Semenza, MD, PhD of Johns Hopkins. They had done a screen of more than 3,000 molecules that could be potent against angiogenesis. They found a few hits, but needed a way to make them last a lot longer. We found that we could make some very potent, very long-lasting drugs that down-regulated multiple pro-angiogenic signals.

With those two significant advances, we thought a good thing to do would be to start a company and try to develop this further. And that's what we've done at GrayBug.

ARVONews: What is GrayBug currently working on?

Hanes: We're working primarily in the ocular neovascularization space, and our lead drug is for wet AMD. The drug we're using is a very potent inhibitor of the vascular endothelial growth factor (VEGF) and platelet-derived growth factor (PDGF) pathways. The major players — Lucentis, Avastin, Eylea — block VEGF. Fovista, which is on the horizon, blocks PDGF. We know that blocking either of those pathways provides a significant benefit, but blocking both VEGF and PDGF is even more effective.

Our lead drug, if eventually approved, holds the promise of doing that in a single agent, which would have three main benefits: 1) you wouldn't need two injections, 2) it will likely be less expensive compared to paying for separate VEGF and PDGF therapies and 3) we expect it to last a lot longer than the current drugs or other biologics in the pipeline. If we're successful, patients won't have to come in every one to two months. We're hoping they come in two, maybe three times a year at most. And we do not expect there to be a big change in the way doctors treat their patients in the sense that our drug is also injectable. If successful, our drug is just going to last a lot longer and be more effective than any current monotherapy.

ARVONews: What is the timeline for testing your lead drug?

Hanes: We hope to start that clinical trial in late 2015, but the date depends on the timing of our current financing. One of the things with potentially breakthrough delivery technologies that can make drugs last as long as ours does is that the timelines are somewhat longer than they are for traditional drugs.

ARVONews: In building your NIH SBIR applications, what did you think you

needed to show the NIH in order to get the funding?

Hanes: I'm hesitant to say there's a magic formula, because there really isn't one. For us, we felt good because we had brought the molecules quite far along the preclinical path, through in vivo proof-of-concept in multiple animal models. We also have a tremendous team with unusual scientific depth and product development experience.

ARVONews: What are your other notable sources of funding?

Hanes: We've been funded by angel and venture funding, and we've won some awards, including the Invest Maryland Challenge where we were selected as the most promising out of a pool of 68 companies in the healthcare category. We've raised a little more than \$3 million so far, and we're looking to raise a significantly larger chunk of money to take us through Phase II human clinical trials of the lead product.

ARVONews: The skillset one develops to be successful in academia is not identical to the skillset needed to be successful in the business world. How have you gone about developing those business-specific skills?

Hanes: When you're the head of an academic lab, you wear a lot of the same hats that you wear in industry. You are the chief scientific officer, chief financial officer, you build the team and manage it, etc. So, you really do have a lot of experience that can be helpful to a startup. To supply those other skillsets, you can partner up with someone who has done it successfully before. Then you learn a lot about the other aspects required. ■

ARVO 2015 fact:

Denver has 100 chef-owned restaurants in one compact, walkable downtown.



Doing things differently: New models for support and collaboration

Most of the research of the majority of ARVO members — worldwide — is funded through government grants. But even in countries with well-established government funding mechanisms, eye researchers are feeling the pinch of greater competition for shrinking pots of grant money.

As a result, investigators are looking for new funding sources; in the U.S., this often means seeking funding from government granting bodies other than NEI.

But entrepreneurialism is alive and well in eye research, with some institutions establishing truly alternative sources of funding and ways of doing research. Read on to discover how two organizations are carving out their own paths.

Queensland Eye Institute Brisbane, Queensland, Australia

The typical eye research institute in Australia is closely aligned with a university and heavily dependent on university and state department of health funding.

But Queensland Eye Institute (QEI) is different, according to Mark Radford, MD, PhD, QEI's executive director and CEO. "QEI was established totally independently by the Prevent Blindness Foundation (now the Queensland Eye Institute Foundation). We're primarily funded by donations and bequests, and also by a major benefactor, the Sylvia and Charles Viertel Charitable Foundation."

The Viertel Foundation funding recently supported a \$10 million renovation of a building in Brisbane that opened in June and features state-of-the-art clinical facilities, a day hospital, research labs, a medical library and a teaching center.

"We designed QEI's operational model so that we wouldn't be overly dependent on donations or government grants," explains Radford. "Such funding is getting harder to obtain. Our challenge was

to ensure we have a sustainable revenue source when times are tough.

"So the income from the day hospital, the clinical facilities and clinical trials funds our education and training activities. Net revenue is put back into the QEI Foundation to fund our research."

The research — and the researchers — are diverse, and QEI carries out some of its work through a series of international collaborations with groups in Japan, Germany and elsewhere, which Radford describes as a hub-and-spoke model.

"We have four senior scientists on staff, as well as PhD and master's degree students from universities here in Brisbane. The advantage of a small group is that it encourages collaboration. For example, we can have a cell biologist working with a polymer chemist, or a neurophysiologist working with a tissue engineer. They talk to each other and this encourages thinking laterally to solve problems.

"In addition, clinicians with a challenge or an opportunity can go straight to the researchers for solutions, whether it's biological, chemical or involving biomaterials.

"Let's say a problem requires an immunologist," explains Radford. "We don't have one, so we would propose a collaboration with another institution. Each side covers its own costs or we apply for grants together, locally or overseas. We put in place memorandum of understanding agreements to articulate how intellectual property is shared."

Currently, QEI scientists in the biomaterials and regenerative medicine groups are developing a process for restoration of the ocular surface by using a protein isolated from the cocoons of domesticated silkworms.

"We were the first in the world to report such a use for silk proteins," says Radford. "In short, we isolate and purify a silk protein known as fibroin and prepare transparent membranes from it. The membranes are then used to support the growth

of certain eye cells, including stem cells, which were cultivated in a test tube. The layers of growing cells together with their fibroin substrate are transplanted by our surgeons onto the damaged portion of the ocular surface. The cells will continue to grow and, in time, will integrate with the host tissue leading to the regeneration of the damaged tissue. The fibroin substrate will degrade slowly at the transplantation site and will disappear in a few months without any consequences."

Another project aims to develop a replacement for the corneal endothelium. Based on the hypothesis that the transport of fluid and ions through the endothelium occurs primarily through electroosmotic flow, QEI researchers are developing porous membranes able to assure the electrokinetic conditions for such a transport.

"Our team of stem cell biologists is exploring the clinical potential of progenitor cells isolated from all three layers of the cornea," adds Radford, "and our neuroscientists are investigating novel mechanisms to improve the survival of retinal cells in diseases including glaucoma."

QEI also continues to explore new methods of delivering clinical care in Queensland, as well as develop new international collaborations. "Ultimately, our aim is sustainability and effectiveness in all that we do," says Radford.

Center for Translational Medicine John A. Moran Eye Center University of Utah

Salt Lake City, Utah

Moran Eye Center's Center for Translational Medicine (CTM) has just one research focus — and one overriding ambition. The development of effective diagnostics and treatments for age-related macular degeneration (AMD) — through a partnership with an early stage life sciences company, Voyant Biotherapeutics LLC, that has established a research collaboration with Allergan — is "the goal," according to Gregory Hageman, PhD, CTM's executive director. "The dream" is nothing less than improving the lives of millions and endowing research at the Moran Eye Center for posterity.



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Hageman, who got his start in science as a marine biologist, turned his attention to eye research when he watched how AMD affected the last years of his wife's grandmother. His efforts to find the underlying biological cause of the disease — and the subsequent discovery of a role for aberrant complement activation — gave him early exposure to industry.

"My colleagues and I initially raised a couple million dollars from Johnson & Johnson Development to support our research," Hageman explains. "This introduced me early to industry collaborations, and we have had productive relationships with numerous commercial partners — including Alcon, Allergan, American Cyanamid, American Home Products, Bausch and Lomb, Pfizer and Novartis — since that time."

Such partnerships, built on strong agreements, are natural, believes Hageman. "Pharma understands the drug development process, but often lacks many of the resources that exist in academia, such as patients, tissues like human donor eyes and the knowledge of disease that derives from these resources."

In 2007, Hageman began talking with Randall Olson, MD, Moran's CEO and chair of the University of Utah's Ophthalmology Department, about creating an environment within the Moran Eye Center that would blend industry and academic collaboration to shorten the time between discovery and drug development.

Hageman relocated to Salt Lake City and with Olson and the Moran leadership spent a year developing a rigorous plan. In 2010, the Center for Translational Medicine (CTM) was launched with Hageman at the helm. He and his colleagues then set to work assembling a team, establishing collaborations, enhancing resources and developing platforms for intellectual property.

"In that first four-year phase, our aim was to build a team of scientists and clinicians focused on one mission: to expedite the pace at which pathways and targets for early stage AMD are identified and verified," says Hageman. "We now have a

team comprised of 50 incredibly talented individuals."

The development of a strong partnership with the Utah Lions Eye Bank led to eye donations at a rate of about one donor per day. Over 20% of these donors were patients at the Moran prior to death. The repository now has 6,500 pairs of eyes, complete with clinical ophthalmic records dating back 25 years. Moreover, CTM has recruited over 3,000 AMD study patients.

"Initially, the bulk of our funding came from NIH and philanthropic sources," explains Hageman. The plan called for a working partnership with the ophthalmic pharmaceutical industry by the fourth year. That goal was realized in a partnership with Voyant Biotherapeutics, LLC, which established a research collaboration with Allergan.

Voyant was created, among other reasons, as a mechanism to build a dialogue and contractual relationship with pharma

it's impossible to do what we are trying to do alone. Collaborations have allowed us to supplement NIH funding with monies from corporate partners, which in turn has helped many of our colleagues to obtain additional sources of local funding.

"A real hope is that, through the identification of druggable AMD-associated pathways and therapeutic products, money will flow back to the Moran, essentially leveraging and multiplying the funds provided by so many wonderful individuals who have believed and invested in our program.

"We envision this as a way to secure the future of scientific activities at the Moran. We're not naive. It's tough out there funding-wise, especially if one relies solely on government funding. I hate seeing so many talented, young minds out there capable of getting the job done — but without the resources to do it. Hopefully our efforts will help these younger scientists realize that there are other sources of alternative funding out there."

Hageman describes Olson as uniquely entrepreneurial. "Academia needs to modify its overall approach to supporting research," he says. "Administrators are beginning to realize that the system needs to change. But it's one thing to realize that a change is in order, and quite another

to actually implement the change. Dr. Olson is a true visionary. Quite simply, there are not many leaders with this kind of vision and drive. I believe that numerous institutions will eventually mimic the path that Dr. Olson has paved."

Hageman says that Olson, the CTM and the Voyant-Allergan relationship are "allowing my team to conduct science that I could only have dreamed of five years ago. Ultimately, we aim to prevent or slow the progression of AMD within 10 years. Almost every day I talk to someone who is visually impaired because of AMD, to family members of afflicted individuals who are afraid of developing the disease or to caregivers whose lives are affected. It's a devastating disease. Our goal at Moran is to get this job done and ease the suffering." ■



and to sequester IP through licensing agreements with other universities.

"I've known the Allergan team for a long time," says Hageman, "And the more we talked to them, the more we became confident that this was a team we wanted to work with — a group of scientists who had been together for 15 – 20 years; it's unheard of."

Hageman explains that familiarity with Allergan staff, in light of the fact that academic and corporate environments are so different, made negotiations pleasant. "In addition to funding, Allergan's in-kind contributions are very important to our collaboration.

"I cherish our collaborations with colleagues and institutions around the world, many of whom are affiliated with the CTM," he says. "Teamwork is important, because science is so complicated;



Brazilian Research Association of Vision and Ophthalmology (BRAVO) — affiliated 2006

São Paulo, Brazil
bravo.org.br

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

Jerusalem, Israel
isver.org.il

Asociación de Investigación en Visión y Oftalmología (AIVO) —

affiliated 2007
Buenos Aires, Argentina
aivo.com.ar

Hungarian Association for Research in Vision and Ophthalmology (HARVO) —

affiliated 2007
Budapest, Hungary
harvo.org

ARVO-NED — affiliated 2008

Nijmegen, the Netherlands

Austrian Association for Research in Vision and Ophthalmology (AARVO) —

affiliated 2009
Vienna, Austria

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

Sofia, Bulgaria

Chinese Congress of Research in Vision and Ophthalmology (CCRVO) —

affiliated 2010
Beijing, China

Colegio Nacional de Investigación en Ciencias Visuales (MARVO) —

affiliated 2010
Mexico City, D.F., Mexico

ARVO Italy (IT-ARVO) — affiliated 2011

Catania, Italy

India Eye Research Group – ARVO-India) — affiliated 2011

Hyderabad, India

ARVO-Egypt — affiliated 2013

Cairo, Egypt
arvoegypt.org

Sociedad de Cirugía Ocular (CARVO) — affiliated 2013

Bogota, Colombia ■



See arvo.org/affiliates

International chapter affiliates engage members, support young scientists



AIVO
Asociación de Investigación en Visión y Oftalmología

AIVO, the Argentine ARVO chapter, has been busy during the past year, and it plans to do even more in the next several months. Last August, AIVO held the Ocular Translational Research: From the Lab to the Patient in Rio de Janeiro—the first joint meeting with BRAVO, the Brazilian chapter. The meeting covered several aspects of clinical and basic research and included the participation of Sally A. Atherton, PhD, FARVO on behalf of ARVO.

AIVO young fellows attended the ARVO Annual Meeting, with the generous help of ARVO and the AIVO travel grants. In November, AIVO held its Regional Meeting in Cordoba, for young fellows to present and discuss their latest data. Members of AIVO also shared their latest research findings in two important national venues for clinical ophthalmology: the Consejo Argentino

de Oftalmología Convention (Jornadas CAO) and the meeting of the Argentine Ophthalmological Society (SAO). The CAO and SAO meetings included mini-symposia dedicated to research, organized by CAO's Juan E. Gallo, MD, PhD, of the CAO and SAO's Cecilia Sánchez, MD.

Members of AIVO are now preparing for the 2014 AIVO Meeting, which will be held in Buenos Aires in November. The association is expecting a large number of abstracts at the meeting, which will include lectures by Robert E. Anderson, MD, of Dean McGee Eye Institute, Okla., and BRAVO President Dania E. Hamasaki, PhD. See aivo.com.ar.



HARVO
Hungarian Association for Research in Vision and Ophthalmology

As one of the first to be founded as an ARVO Chapter Affiliate, HARVO has been active since 2007. Its activities have dual functions: supporting young Hungarian researchers with travel grants



ARVO-EGYPT
Egypt Association for Research in Vision and Ophthalmology

ARVO-Egypt started on Jan. 14, 2013, with 10 founding members, representing an ophthalmic research interest group. Since then, despite the massive challenges represented in the political and financial instabilities in Egypt, the team was able to expand the member structure to over 120 new members in one year, as well as expand representation in numerous academic, research and clinical ophthalmology bodies in Egypt. The first ARVO-Egypt meeting was held in January 2014, with the goal and setting of peer education and training — seen as an essential part of the research experience exchange by its members.

One of the great challenges facing the group is registering ARVO-Egypt

as a national research body with the Egyptian Ministry of Insurance and Social Affairs. With this registration, ARVO-Egypt will have a more prominent role in decision-making of the ophthalmic research agenda in Egypt in creating options for funding, training and development.

A new headquarters is scheduled to be fully functional by the beginning of the fourth quarter of 2014. Electronic channels of communication for ARVO-Egypt have extensively grown in the past year, with a professionally designed website at arvoegypt.org. In addition, the group started a Facebook page for better communication with young potential members and researchers.

and updating Hungarian ophthalmologists by organizing a symposium every year.

Since 2007, 28 young scientists have applied successfully for financial support to participate in the ARVO Annual Meeting. This year, five Hungarian researchers attended ARVO 2014 in Orlando, Fla. with HARVO travel grant funding. For all of the young scientists, the Meeting was a milestone in their scientific careers. This year, the seventh HARVO Symposium was held, which took place during the annual meeting of the Hungarian Ophthalmological Society in Pécs on June 27, 2014. During the 90-minute meeting, invited speaker Jost B. Jonas, MD, FARVO, of Mannheim-Heidelberg University, gave a lecture on the epidemiology of diabetes mellitus. In addition, three of the four 2013 HARVO travel grantees reported on their research presented at previous ARVO Annual Meetings. The symposium was popular among Hungarian ophthalmologists with almost 100 participants.

At the symposium, members were elected to the Steering Committee. The president, János Németh MD, DSc, and the secretary, Miklós Resch MD, PhD, were re-elected to serve three more years in their posts. HARVO is updating its website regularly.



In 2014, IT-ARVO organized two events: the IT-ARVO Annual Meeting; and the European Frontiers in Ocular Pharmacology (EFOP) course. The IT-ARVO Annual Meeting was held in Catania, Feb. 3 – 4, and the plenary lecture, “Neuroprotection in glaucoma,” was delivered by Francesca Cordeiro, MD, PhD, of University College London, U.K. Meeting topics included retina, glaucoma, ocular pain, regulatory issues and basic research.

EFOP was held at the School of Medicine of Catania University. EFOP is a CME course with a lecture delivered monthly by outstanding European scientists. This year IT-ARVO hosted, among others, Carlo Nucci, PhD, of the University of Rome Tor Vergata; Sandro De Falco, PhD, of Institute of Genetics and Biophysics; and Erich Knop, PhD, of the University School of Medicine, Berlin, Germany.

Both the IT-ARVO Annual Meeting and EFOP were well received by PhD students, postdocs, residents in pharmacology and ophthalmology and ophthalmologists. These events were promoted by IT-ARVO President Filippo Drago, MD, PhD, and Vice-President Teresio Avitabile, MD, professors at the University of Catania. The scientific organization was led by IT-ARVO Treasurer/Secretary Claudio Bucolo, PhD, and Caterina Gagliano, MD, PhD, of the University of Catania.

See **chapter affiliates**, page 16

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Chapter affiliates, continued from page 15



After the joint translational research symposium during the Pan-American Council of Ophthalmology Congress last year in Rio de Janeiro, the BRAVO and AIVO organized their first social activity during ARVO 2014 (BRAVO-AIVO Social: Deli & Networking). It offered a great

opportunity to increase networking and talk informally about research in a relaxed atmosphere.

In August and September, BRAVO sponsored two events. The first is the 11th BRAVO Annual Meeting, as part of the 29th Annual Meeting of the Federation of Brazilian Societies of Experimental Biology in Caxambu, Minas Gerais, Brazil, Aug. 27 – 30. The BRAVO Annual Meeting included sessions, symposia and conferences about topics related to acquired visual loss, gene therapy, cell biology and color vision. Additionally, the

selection of the 2014 BRAVO-Allergan Award presented to Brazilian young scientists took place during this meeting. The first authors of the two best papers will receive a travel grant for the ARVO 2015 Annual Meeting.

The second event was part of the XXI Brazilian Congress of Blindness Prevention and Visual Rehabilitation in Recife, held Sept. 4. The symposium included lectures about research in vision and ophthalmology developed in Brazilian research laboratories and different ophthalmology departments.



The 21st Annual Meeting of the ARVO-India was held at the L.V. Prasad Eye Institute, Hyderabad, India, July 26 – 27. More than 200 delegates representing 12 different institutions in the country explored eye research, which provided a common platform for interaction between young researchers, scientists and clinicians. The meeting included scientific deliberations through seven

keynotes, 41 free papers and 63 poster sessions. The major focus areas were on basic sciences (omics, cellular and molecular biology), clinical sciences and optometry, community eye health and vision rehabilitation. Additionally, there were two lectures: the Bireswar Chakrabarti Oration delivered by Jayanti Pande, PhD, of the University at Albany, SUNY on “Appreciation of the Three C’s: Chakrabarti,

Crystallins, and Cataract” and the D. Balasubramanian Oration by Calvin C.P. Pang, DPhil, of the Chinese University of Hong Kong on the “Molecular Genomics of Eye Diseases.” During the meeting, ARVO-India announced the launch of the Asian Eye Genetic Consortium under the auspices of the National Eye Institute of the National Institutes of Health.

Travel awards were presented to eight young researchers to attend this meeting. Additionally, eight participants were awarded with Certificates of Merit in the category of basic and clinical sciences.





CARVO

Colombian Association for Research
in Vision and Ophthalmology

CARVO participated in the first open meeting for the Colombian ophthalmic community, held at the National Congress of Ophthalmology in Medellín, Colombia. Special guest José Domingo Moon spoke about AIVO's launch and its growth over the past seven years — with the support of ARVO. Members of CARVO shared their philosophy of research in ophthalmology and the importance of basic research groups combining with clinical researchers over the course of investigations.

The meeting attracted a large number of participants, and representatives from various ophthalmology research centers throughout the country gave presentations about their centers. They talked about their experience, current research capabilities and the future vision of research in ophthalmology in Colombia.

Representatives included:

- Claudia Acosta of INIO, Medellín
- Santiago Arango of Clinica Oftalmologica San Diego, Medellín
- Ximena Nunez of Vision Sana, Cali
- Virgilio Galvis of Foscal, Bucaramanga
- Roberto Baquero of Sociedad de Cirugia Ocular, Bogotá

Attendees from CARVO and the Colombian Society of Ophthalmology exchanged views during the open meeting, including the importance of stimulating residents to develop research, the role of the pharmaceutical industry and the importance of an organization like CARVO to help define a reliable research process and share the country's research with the world.

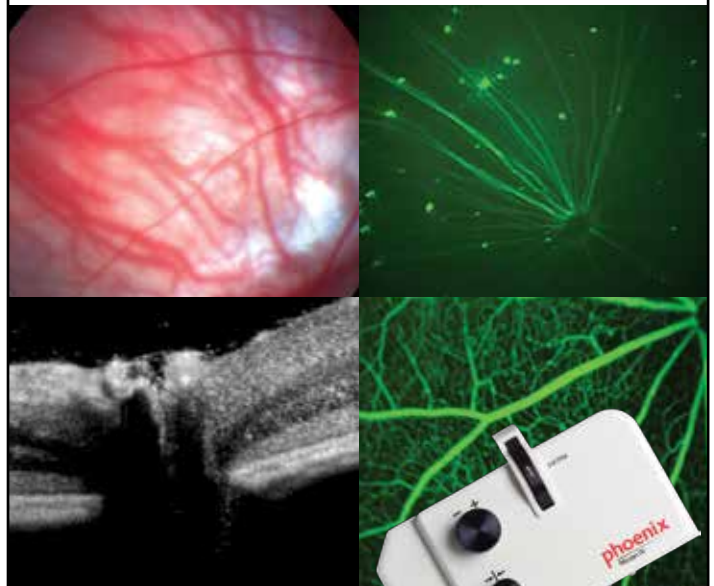
As a partner with the Colombian Society of Ophthalmology, one of CARVO's functions will be to lead a board, with members chosen by the general assembly of CARVO. Those board members will be responsible for complying with the goals set by ARVO for international chapter affiliates.

CARVO's leadership outlines its purpose as helping to build and be part of a global community of voluntary associations of doctors and researchers who are dedicated to advancing the field of ophthalmic and vision research in Colombia. ■



Attendees at the first open meeting for the Colombia ophthalmic community.

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Vemuganti counsels young researchers to “Give your best” professionally and personally



Geeta K. Vemuganti, DNB, FAMS, MD

Geeta K. Vemuganti, DNB, FAMS, MD, serves as dean and professor at the School of Medical Sciences at the University of Hyderabad (UoH). A clinician-scientist, Vemuganti's ophthalmic research has largely focused on cancer biology, including current projects she is undertaking to evaluate

cancer stem cells in retinoblastoma.

Her connection with ARVO dates back to her first abstract submission in 1999 on fungal keratitis. Since that time, she has been an author on more than 30 abstracts — presenting posters and papers — and organized a Sunday Symposium and several sessions. Vemuganti has served as a member of the ARVO Annual Meeting Program Committee (AP Section). She is currently serving as chair of the Global Members Committee (formerly the International Members Committee). In 2013, the ARVO Foundation awarded Vemuganti the MERCK Collaborative Research Fellowship with David Sullivan, MS, PhD, FARVO, of Schepens Eye Research Institute, Harvard Medical School.

Through the years, Vemuganti has continued to participate, make friends and network at ARVO, resulting in connections with the Indian Association of Ophthalmic Pathologists and other international societies.

What was your inspiration for becoming a researcher in the field of ophthalmology?

My stint with ophthalmic research started during my residency in pathology at Nizam's Institute of Medical Sciences (NIMS) with one of my professors Dr. K.S. Ratnakar. He was the first ophthalmic pathologist from India who entrusted me to help an ophthalmology resident with her thesis work on identifying mast cells in conjunctival biopsies. Under his guidance I had an opportunity to look at the variety of ophthalmic pathology samples referred to him from all other institutions, including the entire load of

diagnostic samples received from L.V. Prasad Eye Institute. While there, I met the LVPEI director, Dr. Gullapalli N. Rao, who encouraged me to interact with the ophthalmology residents and fellows and to specialize in the subject. As a result, my MD dissertation was a study on the pathology of 1,000 corneal buttons, which was the first of its kind.

What have been some of the highlights of your work?

In 2000, I teamed up with Dr. Virender Sangwan to initiate the first stem cell research project on limbal cell cultures for clinical transplantation. We got our first grant on limbal stem cell work from the Department of Biotechnology and that led to the first phase of limbal transplantation in 2001, which continued for a decade and resulted in the treatment of nearly 800 patients suffering from severe chemical ocular burns and limbal stem cell deficiency.

The quest to see the effect of bone marrow-derived cells on limbal stem cells led me to undertake work on bone marrow mesenchymal cells. This was at the time when our clinical work on ocular oncology was growing by leaps and bounds, and epithelial stem cell biology rekindled my interest in cancer biology.

My other work related to evaluating the role of HPV in ocular squamous carcinoma. Based on our contribution there was a request for applications from the International Atomic Energy Agency (IAEA) which posed a question: Could we combat radiation-induced damage through stem cell therapy? My proposal on culturing lacrimal gland cells for potential cell therapy for radiation-induced dry eye disease was very well received and funded by IAEA.

What can you tell us about the research projects or academic projects you are working on now?

With the aim of contributing to building up the human resource and talent of clinician-scientists and expanding the horizons of regenerative medicine, I accepted the

responsibility as dean of the School of Medical Sciences at the UoH in 2010. Thanks to the visionary leadership of Dr. Rao who invited me to be associated with LVPEI as a visiting faculty, I continue to have the honor of serving this premier eye care institute in India, which is one of the best in the world.

The administrative responsibilities have limited my research work to some extent; however, it is still going fairly well. The current projects include evaluation of cancer stem cells in retinoblastoma, evaluating the potential of 2D and 3D cell cultures of the lacrimal gland with future cell therapy and initiating work on skin cultures with the collaboration of a team of dermatologists.

Based on your years of professional experience, what advice would you offer young women scientists about moving ahead in the field?

Invariably, the professional growth and personal/family growth for women parallel each other. It is understandable that the priorities would move like a pendulum between both goals, causing conflict at times. The most important thing is, irrespective of what decisions you make in either direction, don't have any regrets if you have to take a break or slow down in any one of these areas — personal or professional. We can always catch up and continue to contribute. Enjoy both worlds, give your best and make both ends meet.

Before my residency at NIMS, I was selected for a residency in pediatrics, which I could not continue due to personal and family reasons. I felt I hit rock bottom in my career when I had to give up my lifetime dream of a residency in pediatrics, move my base to another city where I didn't get into any programs due to my status as a non-resident and take a break to raise my family. It so happened that my second choice of pathology was what made my career as a clinician-scientist. So I truly believe that changing directions and dreams is not the end of the world. The best comes out of different challenges that cross your path. ■

Americans fear blindness more than loss of other senses

According to a new poll, Americans across all racial and ethnic groups describe losing eyesight as potentially having the greatest impact on their day-to-day life — more so than other conditions including loss of memory, hearing and speech. A higher percentage of African-Americans (57%) cite this concern compared to non-Hispanic whites (49%), Asians (43%) and Hispanics (38%).

National support of research that focuses on improving the prevention and treatment of eye and vision disorders is considered a priority among a strong majority of respondents (83% of African-Americans and non-Hispanic whites, 80% of Asians and 79% of Hispanics).

These and other findings are from a national public opinion poll commissioned by Research!America and the Alliance for Eye and Vision Research (AEVR). The poll, which was carried out by Zogby Analytics, was funded by a grant from Research to Prevent Blindness and released at a National Press Club event in Washington, D.C. on Sept. 18.

ARVO leaders played a role in both the development of the poll and the release event, which featured a panel discussion with Neil Bressler, MD (Wilmer Eye Institute), Paul Sieving, MD, PhD (National Eye Institute), James Tsai, MD (New York Eye and Ear

Infirmatory) and Karla Zadnik, OD, PhD (Ohio State University College of Optometry). The panel discussion was moderated by Michelle Miller of CBS News.

Among the findings:

- When told that the federal government spends on average \$2.10 per person each year on such research, half of African-Americans (51%) and Hispanics (50%) say this is not enough, followed by non-Hispanic whites (47%) and Asian-Americans (35%).
- Majorities in all groups believe that non-governmental sectors — industry, patient groups and philanthropies — should also increase funding for eye and vision research (57% of Hispanics, 51% of African-Americans, 49% of Asians and 47% of non-Hispanic whites).
- On a scale from 1 to 10, when asked how significant the loss of sight would be to their everyday life, almost 50% of respondents rated it as a 10 (having the greatest impact). The second greatest impact on day-to-day life was loss of memory (rated at a 10 by 35% of respondents), followed by loss of limb (18%), loss of speech (17%) and loss of hearing (15%). These data and other takeaways, along with a video of the poll release event, are available at eyersearch.org. ■

ARVO booth + science festival = huge success

This spring, ARVO hosted its first-ever public outreach activity with an optical illusion-themed booth at the USA Science and Engineering Festival in Washington, D.C. With the help of local ARVO-member volunteers, several thousand students and adults learned that they shouldn't always believe what they see.

The Festival is a massive celebration of science, technology, engineering and math education and careers held every other year, with an estimated 300,000 attendees and over 3,000 exhibits.

ARVO volunteers chose five optical illusions that demonstrated effects such as cone fatigue, blind spots and negative images. These illusions were printed as large, high-resolution images that visitors could walk up to, and they were printed as handouts with an explanation of the science involved in the illusion.

The images and handouts used for the booth, in addition to information

on how to run a similar exhibit, can be found under the Tools heading of the new Advocacy & Outreach section of the ARVO website. See arvo.org/toolkits/. ■



Students check out optical illusions at the ARVO booth during the USA Science and Engineering Festival. The Washington, D.C.-based festival has an estimated 300,000 attendees and 3,000 exhibits.

Prevent Blindness highlights cost of vision disorders

Prevent Blindness released a new report estimating the cost of vision disorders in the U.S. at \$145 billion per year. Released in conjunction with the third annual Focus on Eye Health National Summit in June, the report projects the cost will grow to \$373 billion per year by 2050.

As the U.S. population ages and becomes more ethnically diverse, the types and prevalence of vision disorders will shift to those more common at older ages and for different racial and ethnic populations. For example, the incidence of cataract — which is correlated with age — is expected to increase, while diabetic retinopathy and glaucoma will become more abundant as the Hispanic and African-American communities grow.

With the cost of vision disorders increasing, so will the financial burden carried by government-funded healthcare programs. Because of the significant impact increased costs will have on government policy, Prevent Blindness hosted a Congressional Briefing on Capitol Hill to inform politicians and their staffs of the necessity of funding vision research now to save on vision healthcare costs later. ■

Seto joins NEI as deputy director

Belinda Seto, PhD, became deputy director at NEI in April. Seto holds a PhD in biochemistry from Purdue University. She first joined NIH as a post-doc, studying enzyme function and regulation with two legendary biochemists, Drs. Earl and Thressa Stadtman. Later, she joined the NIH Office of Extramural Research, where she oversaw analysis and reporting of NIH grants data.



Belinda Seto, PhD

Before coming to NEI, she served as deputy director at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) for 11 years. There, she helped steer the development of new tools and practices for managing big data, and she continues to serve on the executive committee of the NIH Big Data to Knowledge (BD2K) initiative.

She was attracted to NEI, she said, because the vision research community has been a pioneer in areas such as stem cell therapy and gene therapy, and is entering exciting new territory with the Audacious Goals Initiative. ■

ARVO 2015 fact:

It's easy being "green" in Denver. From the zoo's biomass gasification system — which can turn trash into energy — to the Denver International Airport's solar power system and the metropolitan tree-planting program, Denver is emerging as a model of a sustainable city.



NEI's McNicol retires



Loré Anne McNicol, PhD

Loré Anne McNicol, PhD, served in a variety of roles at NEI since 1989, including acting deputy director. She had a major influence on the course of the institute. For the past 15 years, she led the NEI Division of Extramural Research (DER), which administers investigator-initiated grants, clinical trials and scientific training programs at research centers across the country. She was instrumental in steering several research programs, including the R24 Translational Research Program and the K12 Institutional Clinical Scientist Career Development Award.

"Dr. McNicol assured that we attracted the brightest scientists and clinicians to

NEI. Under her leadership, the DER fostered some of the most extraordinary work in vision science," said NEI Director Paul A. Sieving, MD, PhD, FARVO.

An active member of the NIH extramural community, she helped generate an electronic grants administration tool called the Electronic Council Book. She served as part of a variety of trans-NIH management initiatives, including the NIH Ethics Advisory Committee, the Executive Review Board and the Office of Research Services Advisory Board.

McNicol's extraordinary contributions to science administration were recognized in 2007 by a Presidential Meritorious Executive Rank Award — a special designation for exceptionally strong leaders in public service. For her contributions to NEI, in 2011 she received their Carl Kupfer Visionary Award. ■

Finding grants made easy

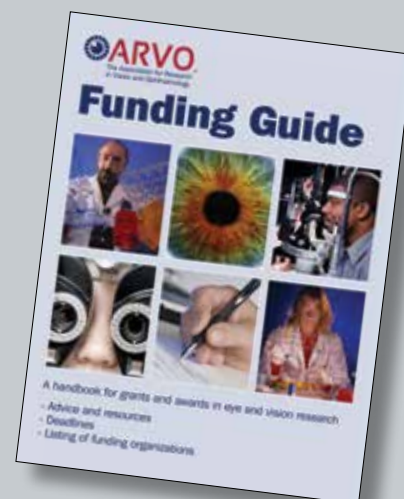
The ARVO Funding Guide is now a searchable database on arvo.org, with over 200 funding opportunities available to vision researchers. Each funding notice includes the submission deadline, funding organization and a link to additional information.

The searchable feature makes it easy for users to find opportunities that match their eligibility requirements — by entering keywords or by using the various filters:

- Citizenship status
- Career stage
- Degree track
- Opportunity type

The results can be sorted alphabetically or by deadline. In addition, users can click on the "want to find more opportunities?" button below the Funding Guide to search for grants and awards beyond the database.

The Guide can be found under the "Journals & Publications" tab on arvo.org. ARVO members are encouraged to share additional opportunities that are not listed in the Guide by emailing outreach@arvo.org. ■



Two bold initiatives shaping the future of vision



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

Two major endeavors that are shaping the future of vision science are the NEI Audacious Goals Initiative (AGI) and the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative. Like other major scientific collaborations, such as the

Human Genome Project, each focuses efforts toward an achievable goal. Both are substantial, long-term investments that herald a new age of biology.

AGI

The audacious goal is to regenerate neurons and neural connections in the eye and visual system. This goal emerged from a unique planning process that began when we challenged scientists and the public to submit their best ideas for the future of vision research. The Audacious Goals Challenge — a prize competition — received more than 450 such ideas, which were pared down to a handful of themes that we explored at the February 2013 Audacious Goals Development Meeting. The audacious goal captures many of these themes, addresses challenges and opportunities in vision science, and holds promise for advancing new therapies to restore vision.

In January 2014, NEI convened the AGI Target Working Group, which worked with the National Advisory Eye Council to refine the audacious goal to focus particular attention on photoreceptors and retinal ganglion cells lost to injury or disease. In April 2014, NEI announced the first funding opportunity coming from the AGI: to develop new imaging technologies to support progress toward the audacious goal. Other funding opportunities will follow.

Implementation is key to the success of the AGI. We now have a charter in place, which articulates the roles and responsibilities of various AGI-related groups. The external AGI Steering Committee will consist of three to five leading researchers

on a rotating basis, who will plot the scientific trajectory of the initiative. Present members include John Dowling, Harvard University; Mark Blumenkranz, Stanford University; and Pamela Raymond, University of Michigan. We are establishing an NEI office of the AGI to coordinate AGI activities. We also have a core group of NEI program staff — Donald Everett, Thomas Greenwell, Michael Steinmetz and Cheri Wiggs — who will make recom-



mendations for program funding mechanisms, based on input from the steering committee. This group is currently assessing the NEI research portfolio for projects with AGI relevance to identify crucial topic areas that may need additional funding in support of AGI. We have issued a formal request for community input and are planning a workshop in November. Together, these will shape new funding opportunities, which we expect to release in early 2015.

The AGI application review process will be handled separately from the traditional NEI review process. All applications to AGI mechanisms will receive scientific review and assessment for programmatic relevance. Applications will be reviewed as a group so that we can examine proposals for their potential to complement other projects. Indeed, we expect the AGI to open new avenues of discovery and create enabling technologies for investigators across the vision community.

As an aside, although the AGI will be a major focus for the next 10 to 15 years, NEI remains committed to investigator-initiated research. Independent research has been the bedrock of NEI since its inception and shall remain so for the foreseeable future.

BRAIN

The BRAIN Initiative is an important, major scientific focus of the Obama Administration. As President Obama

put it in April 2013 when he unveiled the initiative, “We can identify galaxies light years away, we can study particles smaller than an atom, but we still haven’t unlocked the mystery of the three pounds of matter between our ears.” The goal of the BRAIN Initiative is to produce a dynamic map of the neuronal circuitry of the human brain. This bold effort will greatly expand our understanding of how we experience the world around us and how the brain functions in health and disease.

The BRAIN working group, assembled by NIH Director Francis Collins, included members of the visual neuroscience community, including co-chair William Newsome of Stanford University, who is a vision-based neuroscientist. In June 2014, the BRAIN working group issued the plan for the BRAIN Initiative, which called for an investment of \$4.5 billion over the next 10 years.

A combined \$100 million has been committed to BRAIN for 2014: \$40 million coming from NIH, and the remainder coming from the National Science Foundation and the Defense Advanced Research Projects Agency. NIH issued its first BRAIN Initiative awards in September 2014, and NEI is among 10 NIH institutes and centers playing an active role. Some of the initial priorities identified by the BRAIN working group include characterizing the brain’s diverse cell types, charting connections within the brain and linking neural activity to behavior. These questions should sound familiar to vision scientists. The retina is an accessible, compact piece of the brain that has its own elegant circuitry and a set of meaningful behavioral outputs — the ability to see shapes, motion, colors, faces and more. As the BRAIN Initiative moves forward, lessons learned from the retina and continued studies will help lead the way.

Goal-driven, high-profile projects such as BRAIN and AGI engender high expectations. Both will require a concerted effort and long-term investment, and both offer the potential to transform the research landscape and create new lines of inquiry. ■

A look back at ARVO 2014



ARVO 2013 – 2014 Board of Trustees. Back row, from left: Claude F. Burgoyne, MD, FARVO; John I. Clark, PhD, FARVO; President-elect William F. Mieler, MD; Executive Vice President Craig E. Crosson, PhD, FARVO; David R. Williams, PhD, FARVO; Immediate Past President Sir Peng T. Khaw, MD, PhD, FARVO. Middle row, from left: Carol Toris, PhD, FARVO; Emily Y. Chew, MD, FARVO; Linda McLoon, PhD, FARVO; Sarah E. Coupland, MBBS, PhD, FARVO; Megan Elise Capozzi. Front row, from left: Peter D. Lukasiewicz, PhD; Paul S. Bernstein, MD, PhD, FARVO; President Justine R. Smith, FRANZCO, PhD, FARVO; Dimitri Azar, MD, MBA, FARVO.



Photos, clockwise from top left: Members check out a slitcope in the Exhibit Hall; ARVO Classical Concert musicians; an attendee enjoys coffee and discussion at Pizza with an Expert; trainees have fun at the Student Social; Denver's Blue Bear promotes ARVO 2015 at the General Business Meeting.

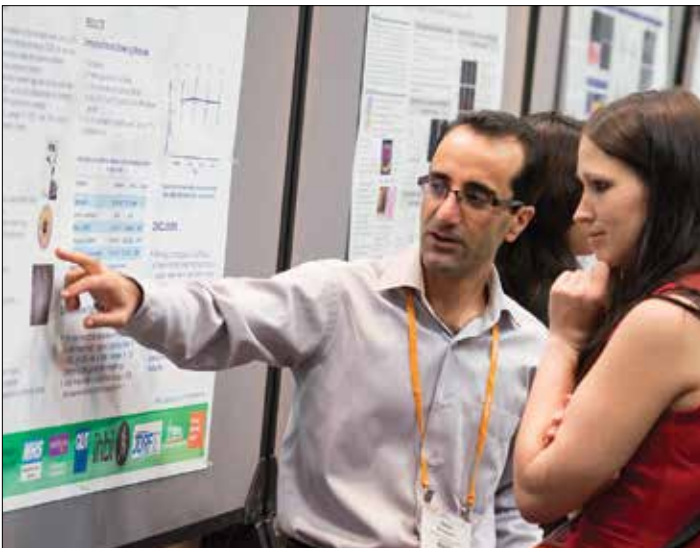


Recognizing American Academy of Optometry grantees

ARVO joins the American Academy of Optometry in congratulating its 2013 ARVO Student Fellowship grantees, as well as its 2013 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 Foundation (AOF).



Ezell Fellows at ARVO 2014 from left: AOF Development Director Greg Fulginiti; Daniel R. Coates, MS; Wing "Eric" Li, OD, FAAO; William Scott Tuten, OD, MS; Tan Ngoc Truong, OD, MPH; Kevin M. Ivers, BS; Naveen K. Nadav, BSc, (H)Optom, MS; Rose Reins, BA; Academy President Bernard J. Dolan, OD, MS, FAAO; Edward Lum, BOptom, BlindDes, FAAO; and AOF President Kathy Dumbleton, PhD, MCOptom, FAAO.



From left: AOF Development Director Greg Fulginiti; Ezell Fellow Debarun Dutta, BOptom; and Academy Immediate Past President Karla Zadnik, OD, PhD, FAAO.



From left: Academy Research Committee Chair Jason Nichols, OD, PhD, FAAO; Student Travel Fellowship grantee Tawna L. Roberts, OD, MS, FAAO; Katie M. Litts, BS; Aubrey Hargrave, BA; Arunkumar Krishnan, BS; and Academy President Bernard J. Dolan, OD, MS, FAAO.

Top photo: Members enjoy karaoke at IceBar Orlando; middle photo: member-in-training poster presentations; bottom photo: table discussion at Breakfast with an Expert.

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 Ophthalmology

Oct. 18 – 21
Chicago, Ill.
ARVO Booth #1244
aao.org

AAO/ARVO combined symposium

Sunday, Oct. 19
3:45 – 5:15pm

Ocular Drug and Gene Delivery to the Posterior Segment

■ American Academy of Optometry

Nov. 12 – 15
Denver, Colo.
ARVO Booth #745
aaoptom.org

ARVO/AAO joint symposium

Thursday, Nov. 13
1:30 – 3:30pm

Why Do We Need Another Photoreceptor? Clinical Implications of Melanopsin Containing Retinal Ganglion Cells

■ Society for Neuroscience

Nov. 15 – 19
Washington, D.C.
ARVO Booth #3205
sfn.org

Want to see more ARVO 2014 Annual Meeting photos? Visit flickr.com/arvoinfo.



Research Grant Administrators Program

Insights pay off for attendees

Each year at the ARVO Annual Meeting, grant administrators come together for a day to discuss current issues and successful strategies in all aspects of grant management in the eye and vision sciences. Attendees work in settings such as universities, governmental and non-governmental research institutes and foundations in both the U.S. and abroad. The head of research at the University of Texas Southwestern Medical Center's Department of Ophthalmology, Jerry Niederkorn, PhD, FARVO, and the program's research administrator, Bonnie Miller, PhD, both recognize the value-added benefits of participating in the day-long session.

"I attended my first ARVO meeting this past May and it was a terrific experience. There was a lot of helpful interaction on common problems we face as administrators in working to comply with policies and procedures from NIH, foundations and our own institutions, while at the same time striving to facilitate the research being done by our PIs.

It also was a chance to get important tips on applying for some award types that weren't familiar to me. In addition to research administrators from other grantee institutions, representatives from several foundations that fund eye-related research were on hand, as well as William Darby, grants management officer at NEI and several of his grants management team members, to answer questions and provide information on upcoming changes to their programs.

I came away from the meeting with a number of ideas for improving our office practices and also a great list of go-to contacts."

— Bonnie Miller, PhD,
Research Grants and Contracts Administration Manager

"The ARVO meeting for grant administrators is an outstanding venue for networking and providing our administrators the opportunity to share experiences and to learn new solutions for navigating the grant application processes. The insights from this meeting have already paid dividends in enhancing the administration and effectiveness of our department's research programs."

— Jerry Niederkorn, PhD, FARVO,
Professor and Vice Chair of Research

In addition to a full-day program, attendees are encouraged and welcome to stay and participate in other aspects of the ARVO Annual Meeting. Grant administrators benefit from the opportunity to visit posters of investigators from their institutions and see the results of the funding they help to obtain and manage.

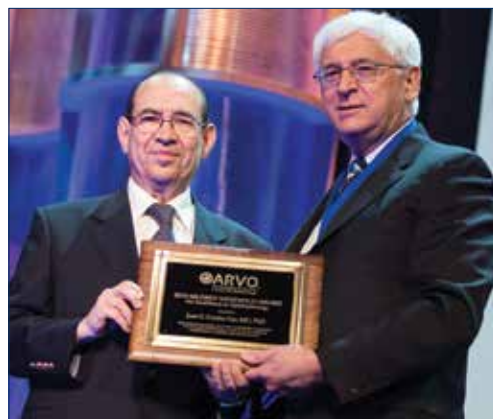
For more information, visit arvo.org/RGA. ■



ARVO achievement award lectures



Left: Proctor medalist Wolfgang Baehr, PhD, FARVO, of the University of Utah School of Medicine, discussed his career research, *Membrane Protein Transport in Photoreceptors*. Right: Krzysztof Palczewski, PhD, of Case Western Reserve University, is presented with the Friedenwald Award by Paul Bernstein, MD, PhD, FARVO. Palczewski lectured on *Structural biology of the fundamental steps in vision*.



Left: José Cunha-Vaz, MD, PhD, of AIBILI, University of Coimbra, Portugal, is presented with the Weisenfeld Award from William F. Mieler, MD. He presented *Phenotypes and biomarkers of diabetic retinopathy*. Right: Cogan Award recipient Kirill Martemyanov, PhD, of the Scripps Research Institute, presented *G protein signaling in the retina and beyond*.

ARVO | IMAGING IN THE EYE CONFERENCE

Where imaging is going

May 2, 2015
Colorado Convention Center
Denver, Colo.
arvo.org/imaging

ARVO
The Association for Research
in Vision and Ophthalmology

ARVO 2015 fact:

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



Onward and upward



Dennis Levi, OD, PhD

JOV experienced a year of growth and improvement in 2013, and 2014 is shaping up to be even better. We received almost 500 submissions in 2013, and are on pace to increase that by 16% in

2014. Further, the time it takes to make the first editorial decision has dropped 30% from our previous best rate in 2008, and the latest Impact Factor is now 2.727, up from last year.

Other highlights include the institution of a number of initiatives and operational enhancements to improve the journal's editorial process and provide additional resources for the editorial board:

JOV is now a member of the NPRC (Neuroscience Peer Review Consortium), which enables free exchange of reviews between journals in the consortium.

Along with IOVS and TVST, the journal has joined the Committee on Publication Ethics, which grants us access to an archive of resources regarding publication ethics and a forum to address new issues as they arise.

JOV now recognizes "exceptional reviewers" with ratings on their reviews by an editorial board member or editor-in-chief.

We have also introduced a new type of article, Emerging Trends in Vision Science, which are focused reviews of a key development in visual science. Authors interested in submitting an Emerging Trends article should review complete guidelines for submission at journalofvision.org/site/misc/peer_review.xhtml.

Meeting abstracts

JOV is increasing exposure in the vision science community by publishing abstracts from more annual meetings of prominent societies in the field.

In December 2013, we published the abstracts from the Fall Vision Meeting of

the Optical Society, and this year we are again hosting the abstracts from the 2014 Vision Sciences Society Annual Meeting. Last year, we were pleased to publish the inaugural Davida Teller Award Lecture. Davida was an exceptional scientist, mentor and colleague, who for many years led the field of visual development. The award is given in her memory to an outstanding female vision scientist with a strong history of mentoring. In 2013, the award recipient was Eileen Kowler, PhD, of Rutgers University. Her lecture was titled "The importance of prediction and anticipation in the control of smooth pursuit eye movements."



Special issues

The journal accepted submissions for a special issue on crowding in 2013, and is currently accepting submissions for a special issue on ensemble encoding that will publish next year:

Crowding: New Vistas — In crowding, perception of a target is degraded by nearby elements. Crowding affects object recognition rather than object detection. Hence, crowding is a perfect tool to study the formation of objects. In the past, crowding research has focused mainly on low-level, spatial aspects such as contour interactions of the target and the neighboring flankers. A special issue in *Journal of Vision* in 2007 represented these studies very well. Many publications followed, which have led to new insights, and which will be the topic of the current special issue. Given the tremendous growth of this topic, this special issue aims to bring together all the recent advances in this field and similar phenomena from other fields. Guest editors are Michael Herzog, Denis Pelli, Bosco Tjan and Steven Dakin and myself.

Ensemble Encoding in Vision — A number of studies have demonstrated that humans are remarkably efficient in visually encoding the average properties of sets or ensembles of similar objects, such as the mean size of a set of coins. Summary, or ensemble statistics, have become a hot topic in visual perception, and they were even the focus of a 2010 VSS symposium. Since then, we've learned a great deal about the content of summary representations and how they are computed under different circumstances. However, despite all we now know about the content of these representations and how they are encoded in different situations, there has been little work done to address the functional significance of ensemble encoding. To this end, the special issue will give a brief review of the topic, a snapshot of current research, and a collection of indications about the purpose of ensemble statistics in vision. Guest editors are David Burr, Jennifer Corbett and David Melcher. ■

Dennis Levi
Editor-in-Chief

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

New grant helps researchers publish

The ARVO Publications Grant is available to authors who need funding assistance to publish in one of its three journals: *Investigative Ophthalmology & Visual Science*, *Journal of Vision* or *Translational Vision Science & Technology*. The grant is supported by the ARVO Foundation. To apply, see arvo.org/pubsggrant.

A successful year at IOVS

The world of scientific publishing has become quite chaotic in the past few years. Many “high profile” papers have been retracted from similarly “high profile” journals and there has been an explosion of new journals of questionable quality and ethics. In the midst of this chaos, IOVS continues to attract an increasing number of high-quality submissions. At the halfway point in the year, IOVS is on track to have over 2,300 manuscripts submitted, the most ever. This is possible because IOVS is supported by an excellent staff, exceptional associate editors and a very talented and hard-working Editorial Board. Our current acceptance rate is 40% and the average time to first decision is down to 36 days (good, but we can do better). The latest Impact Factor is now 3.661, up from last year. ARVO staff have done a superb job of tracking down late reviewers or, when that does not work, asking Editorial Board Members to assign a new reviewer or make a decision based on the reviews available. Our primary focus is on quality, but we also want to serve authors with rapid and clear decisions.



ARVO is committed to the success of all three of its journals, IOVS, JOV and TVST. In many cases, a paper is submitted to one that would be more appropriate for another of our journals. With the authors’ permission, we can now quickly transfer a paper among the three journals, ensuring that the manuscript will be reviewed appropriately and will reach the most interested audience. We are considering having a single website for submissions to all three journals that will provide authors with a synopsis of each journal to increase the chance that a manuscript will end up going to the most appropriate one.

Thank you! The success of any journal depends on the quality of its reviewers. If you have reviewed one or more papers for IOVS during the past year, thank you very much for your service to the journal and to the vision research community. You may not realize that all reviewers for IOVS are “graded” on the quality of their review. This information is used by the IOVS Editorial Board to select the best reviewers to evaluate the papers that they manage. If this information induces you to think more deeply or write more clearly the next time you provide a review for IOVS, we all will win.

Open Access: After careful consideration over the past two years, IOVS appears to be moving toward full open access. While the overall impact on pricing is not yet determined, it is foreseen to be minimal. This change will ensure that the content of the journal will be immediately available to scientists around the world. A final decision is likely to be made by the ARVO Board of Trustees this fall, with full implementation anticipated in January 2016.

“Predatory” Open Access: While the open access movement has brought benefits to scientific publishing, many are not aware of one of its significant negative consequences. Because one only needs a website to “publish” an open access journal, hundreds of “publishers” have created fictitious journals with their only goal being to collect fees from the authors. Papers submitted to these fake “journals” are usually not peer reviewed and

the publisher often lists a bogus “impact factor” purchased from another bogus supplier. To better understand this toxic trend, I recommend you read Jeffrey Beall’s

blog on “Scholarly Open Access” (<http://scholarlyoa.com/>) or check out his list of “predatory” open access publishers (<http://scholarlyoa.com/publishers/>). Beall is a librarian at the University of Colorado who has made it his goal to expose the corruption made possible by the open access movement.

Publishing in one of these journals could have negative consequences to your career if it is learned that the journal is a fake. When in doubt, check out one of these lists. ■



David Beebe, PhD, FARVO

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.

TVST: Growing steadily



Marco Zarbin, MD, PhD, FACS, FARVO

Translational Vision Science and Technology (TVST) 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.

Symposium synopsis

TVST also publishes synopses of scientific symposia and in-depth reviews of topics relevant to translational research. In an upcoming issue of TVST, for example, we will publish a synopsis of the 2014 symposium hosted by the Lasker/International Retina Research Foundation Initiative for Innovation in Vision Science chaired by John Dowling, PhD, FARVO. The primary focus of this meeting was to focus on eight technologies that might be applied to re-establish light sensitivity and visual perception to the blind (i.e., implanted visual prostheses; optogenetics; stem cells and transplantation; neuroprotection; devices for low vision and the blind; gene therapy; endogenous regeneration; evaluating visual function, endpoints).

JAMA Ophthalmology

Selected articles published in TVST are featured in the “Translational Science with Clinical Promise” section of JAMA Ophthalmology, a high-impact publication that reaches physicians throughout the world.

Article submissions

Submissions to TVST have increased exponentially during the past year (submission rate has tripled), and the acceptance rate currently is about 60%. Some of the articles published during the past year illustrate the range of work that appears in TVST and include:

- **One-Year Feasibility Study of Replenish MicroPump for Intravitreal Drug Delivery: A Pilot Study**

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Juan-Carlos Gutiérrez-Hernández, Sean Caffey, Walid Abdallah, Phillip Calvillo, Roberto González, Jason Shih, Jeff Brennan, Jenna Zimmerman, Juan-Carlos Martínez-Camarillo, Anthony R. Rodriguez, Rohit Varma, Arturo Santos, Gisela Sánchez and Mark Humayun (*Trans Vis Sci Technol* 2014;3(4):1).

- **Methods of Retinal Ganglion Cell Differentiation From Pluripotent Stem Cells** Katherine P. Gill, Alex W. Hewitt, Kathryn C. Davidson, Alice Pébay and Raymond C. B. Wong (*Trans Vis Sci Technol* 2014;3(4):2).
- **Comparison of a MEMS-Based Handheld OCT Scanner With a Commercial Desktop OCT System for Retinal Evaluation** Samir I. Sayegh, Ryan M. Nolan, Woonggyu Jung, Jeehyun Kim, Daniel T. McCormick, Eric J. Chaney, Charles N. Stewart and Stephen A. Boppart (*Trans Vis Sci Technol* 2014;3(4):3).
- **Enhancing RPE Cell-Based Therapy Outcomes for AMD: The Role of Bruch’s Membrane** Janosch P. Heller and Keith R. Martin (*Trans Vis Sci Technol* 2014;3(4):4).
- **Refined Data Analysis Provides Clinical Evidence for Central Nervous System Control of Chronic Glaucomatous Neurodegeneration** William E. Sponsel, Sylvia L. Groth, Nancy Satsangi, Ted Maddess and Matthew A. Reilly (*Transl Vis Sci Technol* 2014;3(3):1).

- **Cathelicidin LL-37 and HSV-1 Corneal Infection: Peptide Versus Gene Therapy** Chyan-Jang Lee, Oleksiy Buznyk, Lucia Kuffova, Vijayalakshmi Rajendran, John V. Forrester, Jaywant Phopase, Mohammad M. Islam, Mårten Skog, Jenny Ahlqvist and May Griffith (*Transl Vis Sci Technol* 2014;3(3):4).
- **A Test of a Model of Glaucomatous Damage of the Macula With High-Density Perimetry: Implications for the Locations of Visual Field Test Points** Donald C. Hood, Matthew Nguyen, Alyssa C. Ehrlich, Ali S. Raza, Ieva Sliesoraityte, Carlos G. De Moraes, Robert Ritch and Ulrich Schiefer (*Transl Vis Sci Technol* 2014;3(3):5).
- **Rodent Hyperglycemia-Induced Inner Retinal Deficits are Mirrored in Human Diabetes** Mabelle T. Pardue, Claire S. Barnes, Moon K. Kim, Moe H. Aung, Raj Amarnath, Darin E. Olson and Peter M. Thulé (*Transl Vis Sci Technol* 2014;3(3):6).

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Editor-in-Chief

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