

# ARVO News

Spring 2015

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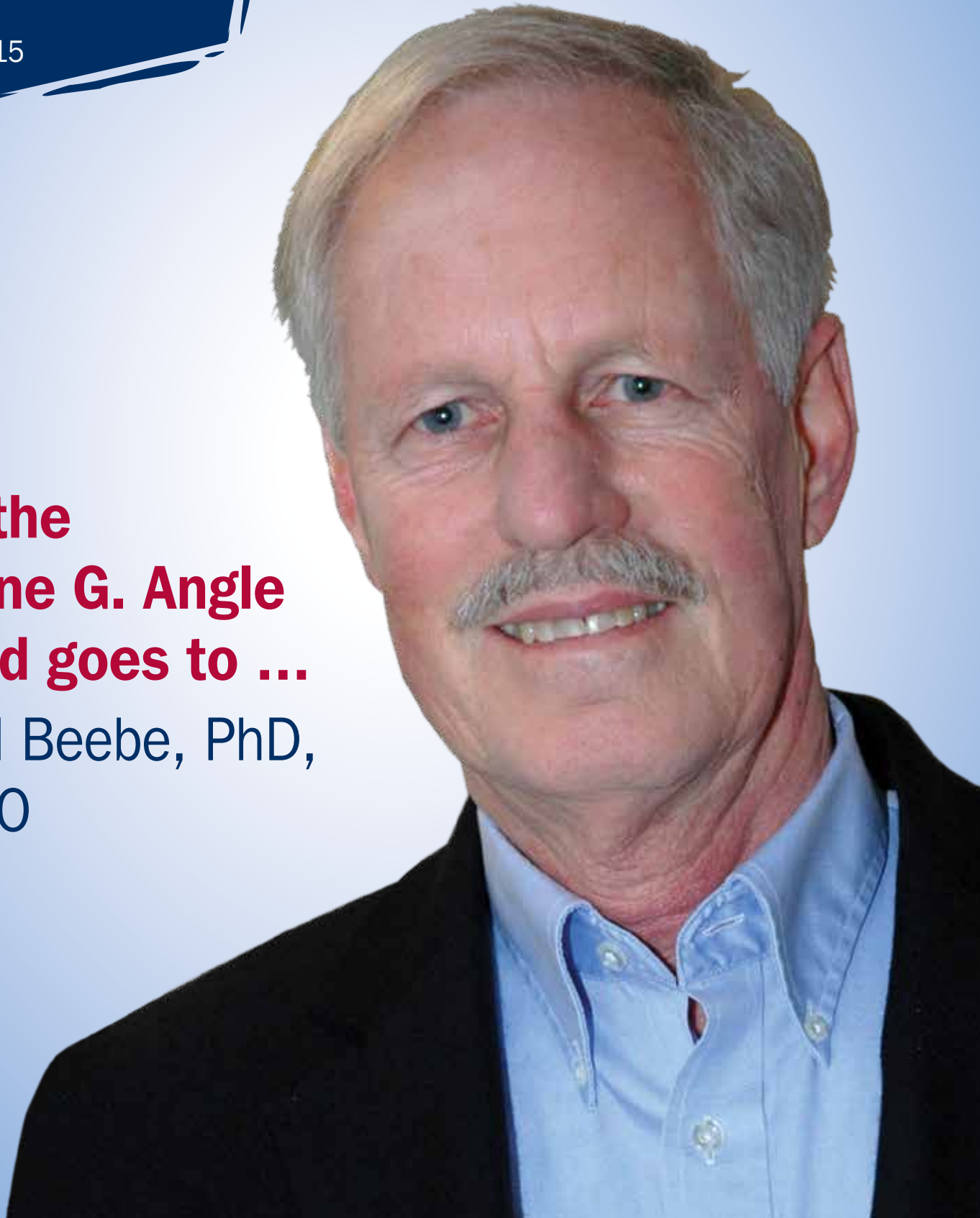
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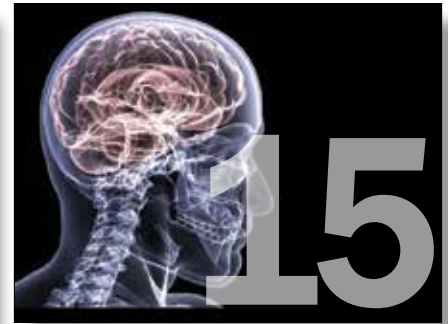
Katherine Madison  
National Trade Productions  
kmadison@ntpshow.com

ARVO office

Iris M. Rush, CAE  
Executive Director

1801 Rockville Pike, Suite 400  
Rockville, MD 20852-5622  
Phone: +1.240.221.2900  
Fax: +1.240.221.0370  
arvo.org

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## Challenge the status quo: A talk with Gary Shapiro

by William F. Mieler, MD, FARVO

I had a conversation recently with Gary Shapiro, who will be delivering the opening ARVO/Alcon Keynote lecture at the ARVO 2015 Annual Meeting on May 3 in Denver. Shapiro is president and CEO of the Consumer Electronics Association® (CEA), the U.S. trade association representing more than 2,000 consumer electronics companies and owning and producing the International Consumer Electronics Show® (CES), which recently took place in Las Vegas.

He has led the industry in its successful transition to HDTV, co-founded and chaired the HDTV Model Station and served as a leader of the Advanced Television Test Center (ATTC), the world's gathering place for all who thrive on the business of consumer technologies.

He sits on the Board of Directors of the Northern Virginia Technology Council and the Economic Club of Washington. He serves on the State Department's Committee on International Communications and Information Policy.

Shapiro leads a staff of 150 employees and thousands of industry volunteers, and has testified before Congress on technology and business issues more than 20 times. In 2012, and in prior years, *Washington Life* magazine named him one of the 100 most influential people in Washington. He received degrees from Georgetown University Law Center and Binghamton University.

Shapiro has authored two books: *Ninja Innovation: The Ten Killer Strategies of the World's Most Successful Businesses* and *The Comeback: How Innovation will Restore the American Dream*.

As a result, Shapiro is well known as an expert on innovation. In our conversation, he shared his insights on how innovation can be applied to the scientific research enterprise.

*Gary, you're known as an advocate for innovation in business, particularly the tech business. Can you outline your key ideas?*

**Gary Shapiro:** Having spent more than 30 years in the dynamic consumer electronics industry, I've seen my fair share of ventures achieve unimaginable success, and an equal number fade into obsolescence. Along the way, I've learned there are several core strategies that successful entities use. Among them: questioning

assumptions, creative and agile risk-taking, strategic team building and discipline. Every strategy can be fine-tuned — or even toppled — by something more innovative. And when you are successful, your biggest risk is a false sense of security.

In *Ninja Innovation: The Ten Killer Strategies of the World's Most Successful Businesses*, I coined the term “ninja innovators” to describe those so committed to victory that they are likely to succeed. Like their namesake — the ancient Japanese ninjas — ninja innovators are disciplined, determined and passionate warriors who succeed because they develop highly-effective, living strategies for success.

Our economic and physical health thrive on innovation. Time and again, we see disruptive innovators act as a positive force on incumbent solution providers. They create greater efficiency, replace outdated models and invent novel solutions using new and recently created



William F. Mieler, MD, FARVO



Gary Shapiro, president and CEO of the Consumer Electronics Association

technologies. Today, smartphone apps can be used instead of ATMs for many transactions. Commercial drones are being readied to displace delivery trucks. And Uber and other sharing economy innovators are upending entrenched, ineffective interests in a wide range of industries. This is the path of progress. While these transitions can be painful, ultimately, they are an

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Status quo, continued from page 3

opportunity for progress to evolve to meet new global realities.

*How might some of these ideas translate to the people and groups that do biomedical research — whether they are academic or commercial? What characteristics of innovators apply across the board?*

**Shapiro:** I see no reason why biomedical researchers can't be ninjas. In fact, one could argue that our health care system is badly in need of ninjas.

Perhaps the most important ninja innovation lesson for the biomedical sector is the importance of questioning assumptions and creating new approaches. Everything should be rethought, from the government approval process created for an analog world, to the patient dosing regimen, which is often based on drug testing paid for by pharmaceutical companies incentivized for maximum and frequent drug dosages. We are facing a world where there will be fewer doctors seeing more and more patients with increasingly less money available for health care.

We need to reconsider how and who even goes into the health care profession. Every ninja innovator is part of a strong, enterprising team of professionals. In bio and in tech, we need smart, driven and talented workers to fill highly technical positions, which is why we must rethink our training and education systems to meet the demands of today's economy. Before they enter the workforce, more people need to be trained to work in STEM (science, technology, engineering and math) fields. More, we need an immigration system that encourages the best and brightest to stay in this country after graduation to build businesses, prosper and innovate.

Already, we see the influence of tech on the biomedical economy. The number of health and wellness companies exhibiting at the International CES is growing exponentially. We now have a whole area of the show floor — more than 21,000 square feet — dedicated to innovation in health care and wellness.

Sensors and wireless connectivity are transforming the doctor-patient relationship, giving consumers greater access to their personal data and more control over their own care. One story to come out of the 2015 CES focuses on the ability to implant devices in people or even in the fabric of what they wear. Last year it was all about devices that you wear on your wrist. Soon it will be about devices you wear anywhere on your clothing or on your body, providing you or your healthcare provider with tremendous amounts of information about your health as measured by multiple factors.

*Some say that doing research is all about risk and innovation. Is this true in your experience? Do you feel that some research environments play it too safe?*

**Shapiro:** Taking risks is what ninja innovation is all about. Taking risks does not mean being reckless. It means exploring options, assessing

likelihoods, considering alternative approaches and making rational decisions. And it means carefully weighing the consequences of any decision before pulling the trigger.

One of the biggest mistakes large entities or systems make is discouraging risk. Large entities with multiple layers of approval may be protecting their cash cow or their major notable approach. Thus new, radical ideas are often best accomplished by smaller entities and innovators.

One challenge the medical community faces is the peer review process. Even if it's done so-called anonymously, the process favors movement toward the status quo and accepted methodologies rather than creating new approaches or radical ideas. Think of how much research you have seen that is simply variations on an old theme.

Of course, the risks are high in the biomedical sector, where human health and lives are literally at stake. But within those constraints, the best biomedical innovators still take risks, challenge the status quo, seek to be disruptive and never rest on their laurels.

“One challenge the medical community faces is the peer review process. Even if it's done so-called anonymously, the process favors movement toward the status quo and accepted methodologies rather than creating new approaches or radical ideas. Think of how much research you have seen that is simply variations on an old theme.”

Join us at the  
**ARVO/Alcon**  
**Keynote Lecture**  
**with Gary**  
**Shapiro**  
Sunday, May 3  
12 – 1:15pm  
Denver Colo.

Continued innovation in health care drives down costs and expands access to life-saving drugs and treatments.

*Research, like business, can be incredibly competitive. When is competition healthy, and is it possible for fierce competition to actually hobble innovation?*

**Shapiro:** Innovative products and services are constantly upending the status quo. This fierce competition pushes us forward, makes us better, drives our economy and is the backbone of the American dream. But it's also true that dynamic industries like tech and biomed need the support of a regulatory environment that nurtures growth — that's why we support reforms to the patent system, increased STEM education funding and sensible, high-skilled immigration reform. That's why we have to rethink how we test and approve new drugs and devices. These and other challenges — not more competition — are the current impediments to innovation. In our global economy, every sector faces intense competition; thus continued innovation is the surest way to remain competitive.

*CEA defines medical devices as part of the consumer electronics industry. Do you see any game-changing technologies coming in that sector?*

**Shapiro:** Sensor technology and big data will be game changers in health care. Today, sensors embedded in consumer technology can detect the slightest change in body temperature, which can be an indicator of certain diseases, cancers — even fertility. As sensors become more sophisticated, ubiquitous and affordable, new solutions for diagnosing, monitoring and treating illnesses will come to market.

At the 2015 CES, Blue Maestro debuted a Bluetooth-equipped pacifier that monitors body temperature and sends that information to a smartphone app. The pacifier can help parents gauge the effectiveness of medicine. And NeuroMetrix's Quell wearable pain relief device is designed to alleviate chronic pain using non-invasive, neurostimulation technology.

Personal Sound Amplification Products (PSAPs) are another area of huge growth potential in consumer technology. Consumers

with hearing loss are interested in over-the-counter improvement options similar to the low-cost reading glasses that are now available to those with mild sight impairments. Sound World Solutions, for example, uses Bluetooth technology to link a PSAP device to a smartphone, enabling the wearer to adjust the sound level of the device through an app to compensate for mild hearing loss.

It's not just tech startups forging a path in the health tech sector. Industry giants like Google, Qualcomm and Philips are investing heavily in healthcare technology. Google Ventures recently lead an \$8 million Series A round of venture capital funding for Flatiron Health — a platform for clinical organizations to share and leverage data related to oncology.

The incorporation of technology into health and wellness sector will be revolutionary. And as this sector evolves, I look forward to seeing the latest innovations every year at CES.

“The risks are high in the biomedical sector, where human health and lives are literally at stake.”

the  
**Ophthalmologist**

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## Get to know John Clark, ARVO president-elect

John Clark, PhD, FARVO, will serve as ARVO's 2015 – 2016 president. He is the Lens Section Trustee and is professor and chair of the University of Washington's Department of Biological Structure. Read on as he shares some recollections of his early days in research and the role of ARVO and its members — particularly students — in the process of discovery.



John Clark, PhD, FARVO

### My research, then and now

As a student, my earliest research experiences were in physical chemistry and optics. The laboratory was isolating the mitotic spindle, which turned out to be composed largely of cytoplasmic microtubules. Before the isolation of tubulin from the brain, lens cells were among the richest source of cytoplasmic microtubules, and so it was natural to develop a research interest in the eye.

Today, the fundamental linkage between aging in the eye and brain is well established. Because the cells in lens do not turn over, their sophisticated natural protective mechanisms against molecular aging is where I spend a lot of my scientific energy. Like most cells in the eye, the cross disciplinary opportunities for studies of lens cell differentiation are numerous and exciting.

### Students and innovation

ARVO laboratories are providing the fundamental research necessary to address the biomedical problems of low vision and blindness locally, nationally and internationally. It is often students who generate the innovative experiments that become breakthroughs.

Many of us can remember the days (and nights) when, as students, we were free to dream of hypotheses that defied our textbooks and resulted in the creation of fundamental new knowledge. Some of us think of Sarasota or Woods Hole as sites that stimulated our scientific excitement like a burst of bioluminescence from *Gonyaulax polyedra* and *Aequorea victoria*.

### Educating people outside the lab

My hope for ARVO is to demonstrate to patients and their families that the advances being made and the new knowledge being created through research in vision and ophthalmology is bringing us closer to eliminating low vision and blindness as biomedical problems.

We all know the impact that our experimental studies have across interdisciplinary science. Still, some of our best moments are when we take some time to describe what we are privileged to do in the research lab, to non-scientists and young students.

I want to encourage and support all your efforts to educate and advocate to our friends, our neighbors and our students the values and the success of ARVO laboratories.

“My hope for ARVO is ... that the advances being made and the new knowledge being created through research in vision and ophthalmology are bringing us closer to eliminating low vision and blindness as biomedical problems.”

### Today's challenges

The challenges of vision research today are not much different than in past centuries when fundamental observations were made in the Galapagos Islands, the gardens of St. Thomas Abbey or the shale beds of British Columbia.

Long ago, nature solved the problem of blindness by connecting photoreceptors and optics with a cellular image processor. While the details of that natural achievement remain elusive, knowledge is power.

Today there is an urgency to target our research in an unprecedented attack on global blindness. It is a good time to share our knowledge with individuals across the world whose intellectual curiosity and intensity can lead to novel experiments we may think cannot work and to challenge the historical hypotheses about the biomedical basis for vision.

I look forward to an ARVO where our experimental findings inspire a collective response from a global community of students who can focus on the mechanisms of visual function and provide bold solutions for hundreds of millions of people.

## Meet ARVO's new executive director

At the start of the new year, ARVO and the ARVO Foundation welcomed Iris Rush, CAE, as their new executive director. Rush is a familiar face and name to many ARVO members as she has served as the association's chief operating officer since early 2011 and as interim executive director for the past year.

"The Board of Trustees was pleased to make this well-deserved appointment," said ARVO Executive Vice President Craig E. Crosson, PhD, FARVO. "During her time with ARVO, Rush has introduced a number of operational upgrades, and at the same time, has worked closely with the leadership on the development and execution of many strategic initiatives, including ARVO's collaboration with other organizations, developing additional educational offerings, exploring how to better meet the needs of our global membership and more."

Previously, Rush was vice president, Business Operations at the Regulatory Affairs Professionals Society (RAPS) from 1991 to 2011. During her 20-year tenure, she played a key role in growing the international membership of RAPS from 4,000 to 12,000. In addition to steering business operations, Rush oversaw board and committee relations, including strategic planning, and was responsible for the development and implementation of RAPS's Regulatory Affairs Certification (RAC) professional designation.

Prior to association management, Rush worked for the U.S. Food and Drug Administration's Office of Regulatory Resource Management, providing business management to various FDA divisions and serving on a special investigations unit for seized products.

Her business administration and human resource studies have been enhanced by her Certified Association Executive credential, obtained by examination through the American Society for Association Executives (ASAE). She has served in various elected leadership roles for ASAE, including the chair of the finance and business operations section.

"I'm excited to apply my 25 years of association management experience to an organization as worthwhile and innovative as ARVO," said Rush. "After four years with the association, I'm looking forward to continuing to work with our excellent staff, dedicated leadership and the brightest people in the eye and vision research community."

As executive director, Rush will serve on the boards of both ARVO and the ARVO Foundation, in an ex officio capacity. As ARVO executive director, she will also serve on the National Alliance for Eye and Vision Research/Alliance for Eye and Vision Research Board of Directors.



Iris M. Rush, CAE

## Call for nominations

Get ready! This summer, you will receive a call for nominations for five different positions:

- executive vice president
- *Journal of Vision* editor-in-chief
- *Investigative Ophthalmology & Visual Science* editor-in-chief
- *Translational Vision Science & Technology* editor-in-chief
- ARVO Board of Trustees member-in-training at-large ex officio position

### What happens next?

In the fall, a nominating committee appointed by the Board of Trustees will select two nominees per position from the

executive vice president (EVP) and editors-in-chief (EICs) nomination submissions. ARVO members will vote from this selection in the 2016 Elections. The elected EVP and EICs will spend one year shadowing their incumbents and serve a five-year term beginning in 2017.

For the Member-in-Training (MIT) Board of Trustee position, a separate nominating committee will review the nominations and submit its recommendation for the ARVO Board's approval. The selected MIT Trustee will begin a two-year term, starting with the 2015 fall Board meeting.

Look for more information in late May on the ARVO elections, [arvo.org/elections/](http://arvo.org/elections/).

## Tips for successful grant writing

Members share their best advice

### Justine Smith, FRANZCO, PhD, FARVO

Immediate Past President, ARVO  
Flinders University, Australia



“I suggest three things: 1) Start early, i.e., be thinking about this even six months ahead. 2) Always read the instructions to applicants from the granting body, even

if you have submitted to them before. 3) Invest time in the presentation. Reviewing the grant should be a pleasure not a chore.

Grants may be very different and still winners. Success will depend on how well the project fits the priorities of the granting body, but clear writing with a good hypothesis supported by interesting preliminary data and planned experiments that are feasible in the laboratory of the applicant make for a strong application.”

### Michael H. Elliott, PhD

Assistant Professor of Ophthalmology  
University of Oklahoma Health Sciences Center  
and Dean McGee Eye Institute

“The most important step in preparing a successful grant application is formulating a compelling question that can be feasibly answered. The overall question should be ambitious and important, but

the individual questions/experiments should be feasible, logical and focused. Once the overall question is formulated, then be certain that you have sufficient justification based on literature and your own preliminary and published data. This may require significant experimental support, so be sure to start the process early enough to generate sufficient empirical justification (preliminary data).



Once you’ve formulated the question(s) and have designed experiments, be sure to describe clearly your expected outcomes based on each hypothesis tested. Provide a clear interpretation of anticipated outcomes and where they would lead you.

Finally, be sure to describe what you will do if your hypothesis is not supported (i.e., pitfalls). A mistake that I have made and that I see frequently repeated by junior investigators is to base the ‘pitfalls and alternative approaches’ on incremental experimental issues (If we are unable to detect protein X, we will use a different antibody ...). This type of incremental pitfall does not address the big picture: what you will do if the experiment is performed in a technically sound manner but the outcome is not what you predicted. I try hard to use the pitfalls section of my experimental design to outline what it would mean and how I would proceed if my hypothesis is not supported.”

### Leonard A. Levin, MD, PhD

Professor and Chair of Ophthalmology, McGill University  
Physician-in-Chief of Ophthalmology, McGill University Health Centre  
Royal Victoria Hospital, Canada

“A competitive grant has at least one of the following characteristics; a great grant has all of them: 1) A brilliant idea, so novel that the reviewer will wish that she had thought of it. 2) The writing is clear, the preliminary data easy to understand, and the plans unfold like a novel. Why? Because it was critiqued by trusted colleagues several weeks before submission. 3) The PI and co-investigators are exactly the right team to do the job, based on unique qualifications or experience.”



Want to learn more?

Attend the ARVO Education Course:

**Strategies for effective grant writing**

Saturday, May 2  
Denver, Colo.

[arvo.org/am](http://arvo.org/am)



## Moving imaging technologies to the market

SBIR grantees Simon Barriga, PhD and Peter Soliz, PhD get a “second education”

Shortly after submitting multiple National Eye Institute (NEI) Small Business Innovation Research (SBIR) applications and ARVO Annual Meeting abstracts, Simon Barriga, PhD, and Peter Soliz, PhD, sat down with *ARVONews* to talk about their company, VisionQuest Biomedical. Barriga, chief research scientist, and Soliz, president and CEO, discuss the past, present and future of their startup.

**ARVONews:** How did VisionQuest Biomedical get started?

**Barriga:** Pete and I had been working together in the private sector for many years before VisionQuest. He had an idea for creating a system for diabetic retinopathy screening, so he left the company we were working for, submitted an SBIR application and that’s what got the company started.

**Soliz:** I met Simon 12 years ago, when he was a brand new grad student at the University of New Mexico. There was a certain amount of serendipity, running into Simon and his professor at the time. Both were specialists in computer-aided image analysis, and it was a matter of applying what they were already doing to a specific problem I was interested in — diabetic retinopathy. This collaboration resulted in technologies that were patented with the university and that were the foundation of VisionQuest Biomedical.

**ARVONews:** What products does VisionQuest have coming down the pipeline?

**Barriga:** The furthest along is our software to detect diabetic retinopathy from images taken with a retinal camera, called the Diabetic Retinopathy Referral Analysis Computer System (DR-RACS). The software works with cameras on the market right now. The process is that a photographer takes an image of a patient’s retina at a primary care physician’s office; our software then processes that image. We can triage that patient by determining if they’re OK or if they need to visit an optometrist or an ophthalmologist for further care.

Another project is to develop our own low-cost, portable retinal camera. Our goal is to create a small camera that would be easy to use by a medical assistant and would cost under \$3,000.

Eventually, we’d like to take the camera and combine it with all the software we’re developing and integrate it into one solution.

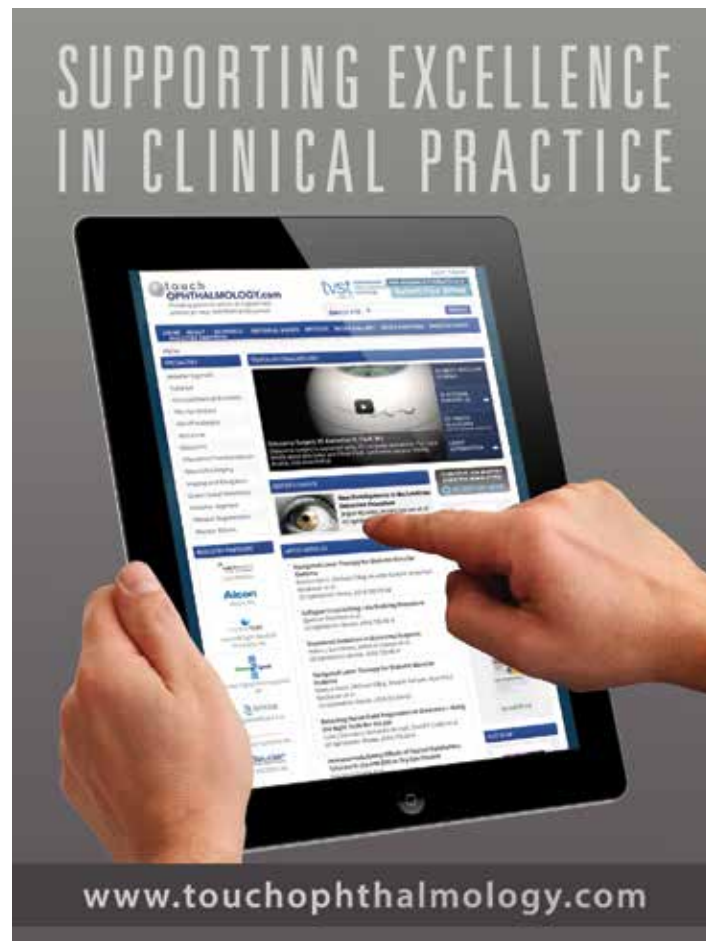
Finally, we have some other projects at different stages of development. We are developing software to detect retinopathy of prematurity. We are also testing software to detect vascular abnormalities in the retina that can be a sign of cardiovascular disease, as well as software to detect signs of malaria in the retina.

**ARVONews:** Do you have a timeline for getting DR-RACS on the market?

**Soliz:** We currently have a working prototype, and we have a clinical study that is ongoing. We are collecting data from several hundred subjects with several different cameras and retina specialists reading the images. We are going to use

“You have to be prepared to answer questions of a different nature, things an academic would not ask.”

See **Imaging technologies**, continued on page 10



**Imaging technologies**, continued from page 9

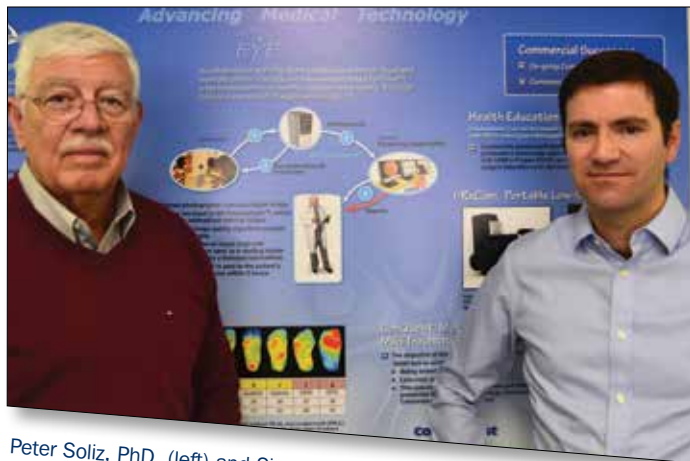
that data to validate our performance and form the basis of our submission to the Federal Drug Administration (FDA). The goal is to have the submission for the FDA early next year.

**ARVONews:** SBIR grants are extremely competitive. What do you think makes VisionQuest stand out to the reviewers?

**Barriga:** When we started, we were approaching the medical problems purely from an engineering point of view. We did not know all the barriers — clinical, regulatory, reimbursement — that stand between technology and commercialization. And that was reflected in some of the early, unsuccessful grants we wrote. Now, we have a much more holistic view of what needs to be done to move a technology to the marketplace, and provide all that information — economics, medical need, commercial potential — in our SBIR proposals. The reviewers are becoming more and more knowledgeable about these commercialization issues, and they need to see we are prepared to overcome them.

**ARVONews:** Besides the SBIR grants, where else does VisionQuest receive its funding?

**Soliz:** So far, we have run almost exclusively on SBIR grants. But, we cannot expect the SBIR program to take us to the next step, which is getting through the regulatory process with the FDA. In some cases, the money required to do that can be on the order of \$3 million – \$5 million. That really



Peter Soliz, PhD, (left) and Simon Barriga, PhD, of VisionQuest Biomedical. Soliz is the president and CEO; Barriga is the chief research scientist.

requires finding outside investors. Fortunately, we are currently talking to a number of potential investors that are interested in helping us get to that next step.

I have found that developing an elevator pitch, maybe two minutes long, to convince an investor to make a 30-minute appointment with us has been very important. Once we have that appointment, Simon and his crew comes in to convince investors that we have a technology that will sell.

**ARVONews:** That must require a very different type of talk than what you would give at an ARVO Annual Meeting.

**Barriga:** Yes, and it was difficult to learn how to give those talks. You have to be prepared to answer questions of a different nature, things an academic would not ask. I had to learn how to describe the value of our technology through the medical problem it would solve and how much money people could pay to get our solution. It took several years of hanging around where people were giving these types of talks and listening. It has been a second education, really — after the PhD.



What does it take to organize more than 6,000 abstracts into paper and poster sessions for the ARVO Annual Meeting? Dedicated Annual Meeting Program Committee (AMPC) members spend many hours working in our online review system — supplemented by lots of index cards. Craig Crosson, PhD, FARVO, ARVO's executive vice president, serves as chair of the AMPC, which met in Rockville, Md., in February to put the final touches on the ARVO 2015 program, online now at [arvo.org/am](http://arvo.org/am).

## Marks to speak at WEAVR Luncheon

Lilly Marks, vice president for Health Affairs for the University of Colorado, will be the featured speaker at the annual Women in Eye and Vision Research (WEAVR) Luncheon on Tuesday, May 5. Marks will address the theme — The Art of Negotiation — with a particular emphasis on the challenges women in academic medicine face in negotiating for resources, positions and programs.

Unlike many of her counterparts, Marks has a background in finance. It was a career choice she enjoyed and in which she was doing well until she and her husband relocated to an area where finance job opportunities were limited. She ended up working at a medical school, in grants management and admission administration.

“It was real hard for me. I found it to be a big step backward,” she says. “But by the time we left the area three years later, it was right at the time when the business of medicine was just emerging. I realized I had a really unique skill set that didn’t exist in medical school.”

By that time, Marks became “so passionate about the mission” that she decided to use her skills to further the public and social missions of medicine rather than “making people wealthy.”

Her new career path landed her a job in the Department of Medicine at the University of Colorado, which led to her assuming concurrent positions: senior associate dean for finance and administration of the School of Medicine, and executive director of University Physicians, Inc., a nonprofit organization that operates as the centralized faculty practice plan.

Two decades later, just as she was thinking of retiring, the president of the university asked Marks to take on

her current role, which includes serving as the executive vice chancellor in charge of the Anschutz Medical Campus. The campus comprises the university’s Schools of Medicine, Dentistry, Pharmacy, Public Health, Nursing and Graduate School and the University of Colorado Hospital and Children’s Hospital Colorado.

“My career progression was not an intended one but a fabulous one,” says Marks, who after 40 years in the field is preparing to scale back.

“I love what I do; I just want to do a little less of it,” she says. “It’s going to require negotiating and refocusing on what I care most about and where I can make the biggest impact.”

There are three areas where she plans to focus her time: affecting healthcare and where it’s going on a local and national level; maintaining national positions and activities in the world of academic health and medicine, as well as ones in a different fields; and helping to advance professional careers of women in medicine.

“There are a lot of challenges for women in medicine. While the glass ceiling has been pushed higher, it’s still there,” says Marks, who is in a position that is held by only a handful of women in the U.S.



Lilly Marks, University of Colorado

**WEAVR Luncheon**  
May 5 | 1 – 2:30pm  
Colorado Convention  
Center

Purchase tickets in advance at [arvofoundation.org/weavrluncheon](http://arvofoundation.org/weavrluncheon). Tickets will not be sold onsite.

### What I’ve learned about leadership

- **Don’t only “manage up.”** The dean of the School of Medicine used to say support that only comes from the top is called “hanging.” It means you’ll have no support underneath you. Some people only care about what their boss thinks. They never build relationships, respect or credibility with those who work for them or beside them — their colleagues.
- **Visibility is important.** In order to move up in your career, you have to become known. There are a lot of great people running around but no one outside their own circle, office or department knows that. Take advantage of an opportunity to be visible when it’s offered, such as participating in a national society, volunteering to give talks or run a committee.
- **You may not be the smartest, but you can be the wisest.** One piece of advice that I think is great, I got from my daughter, who said, “I realize I’m not always going to be the smartest person in the room, but when the meeting breaks up, I want to be the one everybody wants to come talk to because they respect my perspective or opinion.”
- **There is power in writing the first draft.** When on a committee or a task force, most people don’t say, “Let me take a crack at it.” But when you do, even if 100 percent of what you did is not accepted, you’ve actually set the direction of what people will discuss and have an impact on the outcome.

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## Thank you

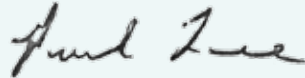
Dear Colleagues:

The Foundation supports the mission of ARVO to advance research worldwide into understanding the visual system and preventing, treating and curing its disorders. Recent breakthroughs in eye and vision research are changing people's lives.

On behalf of the Board of Governors of the ARVO Foundation, I would like to thank you — our donors and supporters — for your continuing and growing endorsement of our initiatives. Your generosity enabled the ARVO Foundation to present over \$300,000 in awards, grants and fellowships last year.

We encourage you to continue to support the Foundation. Our website, **arvofoundation.org**, provides the latest information. Together, we can make an even greater impact on vision research in the future.

Best regards,



Paul P. Lee, MD, JD, FARVO  
Chair, Board of Governors



Paul P. Lee, MD, JD, FARVO

## Foundation awards first Publications Grant



Khabir Ahmad, MBBS, MSc

Corresponding author Khabir Ahmad got the good news in January. His paper was accepted for publication in ARVO's *Investigative Ophthalmology & Visual Sciences (IOVS)* journal, and he would be the first author to receive a \$1,000 Publications Grant from the ARVO Foundation to help publish the research.

"The grant has been very valuable as it has enabled publication of our study, which provides significant insights into barriers to eye care in a marginalized community where policy, service delivery and healthcare research is often neglected," said Ahmad, director, Office

of Surgical Research, Department of Surgery, Aga Khan University in Pakistan. "Thank you ARVO."

The paper, entitled "Self-perceived barriers to eye care in a hard-to-reach population: The Karachi Marine Fishing Communities Eye and General Health Survey," was published in late February. Contributing authors are Anthony B. Zwi of the University of New South Wales, Sydney, Australia; Tanveer A. Chaudhry of Aga Khan University and independent consultant Daniel Tarantola.

ARVO launched its Publications Grant in 2014 to help authors who need funding assistance to publish in one of its three journals. The grants are supported by contributions to the ARVO Foundation and provide funding to several authors per year.

For more information on supporting the Publications Grant visit **arvofoundation.org/pubsgrant**.



## Collegiality drives giving



Janey Wiggs, MD, PhD, FARVO

It's hard for Janey Wiggs, MD, PhD, FARVO, to remember a time when she wasn't supporting the ARVO Foundation. Wiggs, along with her husband, Robert D'Amato, MD, PhD, has been donating to the Women in Eye and Vision Research (WEAVR) initiative since its inception.

"My husband and I were particularly interested in supporting the WEAVR Luncheon," said Wiggs. "We feel it's important to promote women physician scientists and provide additional

opportunities to develop collegiality among women involved in ARVO."

Many Boston Red Sox fans have successfully bid on tickets to one of the team's games at the WEAVR Silent Auction held during the ARVO Annual Meeting each year. Those winning attendees can thank donors Wiggs and D'Amato. The two have been faithfully giving tickets to the auction for years, offering a chance for someone to see the couple's hometown baseball team while raising funds that support travel grants for women to the Annual Meeting.

Wiggs, associate chief of ophthalmology clinical research and associate director of Howe Laboratory at Massachusetts Eye and Ear, and D'Amato, an ophthalmologist at Boston Children's Hospital, have been ARVO members for nearly 25 years. Their support of the ARVO Foundation extends beyond WEAVR, including the annual ARVO Foundation and Dowling Society Gala Awards Ceremony and Dinner.

"I think it's important for those of us who benefit from the organization to support it," says Wiggs. "I feel we have benefitted a lot from the collegiality — both in terms of our vision science careers and in giving us opportunities to maintain connections with people who trained with us — which continues to drive our interests in donating."

## Petrash named Chair-elect

J. Mark Petrash, PhD, FARVO, is slated to be the chair of the ARVO Foundation, effective May 2015. Petrash is professor and vice chair of research in the Department of Ophthalmology at the University of Colorado. He is charged with building a state-of-the-art vision research center involving faculty scientists drawn from campuses throughout the university system.



J. Mark Petrash, PhD, FARVO

Petrash has served on the ARVO Foundation Board of Governors since 2013. In addition to being an ARVO past president (2010 – 2011), he also sat on the ARVO Board as the Lens Section Trustee and was chair of the ARVO Advocacy Committee. Most recently he was selected to lead the association's strategic planning process (2013 and beyond).

At his lab, Petrash is spearheading studies to develop novel medicines to prevent blindness caused by cataracts and diabetic retinopathy, with research funding from the National Eye Institute.

## ARVO Foundation and Dowling Society Gala Awards Ceremony and Dinner

Saturday, May 2, 2015 | 7pm  
Grand Hyatt Denver

### Honorees



Stanley Chang,  
MD, FARVO



Martine J.  
Jager, MD,  
PhD, FARVO

### ARVO Awardees

Patricia D'Amore, MBA, PhD, FARVO  
David Berson, PhD  
Joan Miller, MD, FARVO  
Anneke den Hollander, PhD

### New Dowling Society Members

Emily Y. Chew, MD, FARVO, and  
Robert P. Murphy, MD  
Steven J. Fliesler, PhD, FARVO  
Linda D. Hazlett, PhD, FARVO  
William F. Mieler, MD, FARVO, and  
Jennifer J. Kang-Mieler, PhD  
Robert Ritch, MD, FARVO  
Paul Sternberg, Jr., MD, FARVO

Also recognizing Judith Dowling and Jennifer Lee as new Dowling Society members.

Visit [arvofoundation.org/gala](http://arvofoundation.org/gala).  
Event is sold out.

## Meet the fellowship and grant awardees

### 2015 Pfizer Ophthalmics Carl Camras Translational Research Award



Andras M. Komaromy,  
DVM, PhD  
Michigan State University,  
College of Veterinary Medicine  
East Lansing, Mich.



Akiko Maeda, MD, PhD  
Case Western Reserve  
University  
Cleveland, Ohio



Trevor J. McGill, PhD  
Oregon Health and Science  
University, Casey Eye Institute  
Portland, Ore.

### 2014 Collaborative Research Fellowship



Lana D. L. Datuashvili, MD  
Clinic LJ  
Kutaisi, Georgia

Collaborating Researcher:  
Graham E. Quinn, MSCE, MD,  
FARVO  
University of Pennsylvania  
Philadelphia, Penn.



Tapas R. Padhi, MS  
LV Prasad Eye Institute  
Bhubaneswar, Odisha, India

Collaborating Researcher:  
Cagri G. Besirli, MD, PhD  
University of Michigan  
Ann Arbor, Mich.

### 2014 Genentech and Vistakon Research Fellowships

Genentech  
AMD Basic Research



Scott Adrian Smemo, PhD  
Columbia University  
New York, N.Y.

Genentech  
AMD Translational  
Research



Felicity Jane De Cogan,  
MChem, PhD  
University of Birmingham  
Birmingham, U.K.

Vistakon Contact  
Lens Research



Christine Selhuber-Unkel,  
MSc, PhD  
University of Kiel  
Kiel, Germany

Helping  
researchers  
save sight

We couldn't do it  
without you

Thank you to all who  
contributed to ARVO  
Foundation in 2014.  
It is because of your  
generosity that the  
Foundation is able to  
continue funding new  
programs and build a  
stable source for eye and  
vision research.

For a list of the donors,  
or to make a donation  
to the ARVO Foundation  
for Eye Research, visit  
[arvofoundation.org](http://arvofoundation.org).

## Join us ... WEAVR Silent Auction

(open to all attendees)

Tuesday, May 5

9:30am – 3:45pm

Colorado Convention Center

Proceeds will support the Women  
in Eye and Vision Research  
initiative that fund travel grants  
and fellowships to attend the  
Annual Meeting. Interested in  
donating an auction item? Please  
contact Maureen Dimont at  
[mdimont@arvofoundation.org](mailto:mdimont@arvofoundation.org).

## Expanding connections and influence

David Beebe's service to ARVO is recognized with 2015 Joanne G. Angle Award

David C. Beebe, PhD, FARVO, the current editor-in-chief of *Investigative Ophthalmology and Visual Sciences (IOVS)*, has been selected for the 2015 Joanne G. Angle Award. The Angle award, ARVO's highest service honor, acknowledges outstanding volunteers and leaders who have made significant, continuous contributions to ARVO in support of its mission.

Beebe, a Gold Fellow, has served ARVO for nearly 20 years. "My entrée into the organization as a volunteer began when I was elected to the Annual Meeting Program Committee. It occurred because of the science, which is where it should always start, because that's what ARVO is about. Once I entered on that level, it seemed natural to expand my participation in an administrative sense."

From 1996 through 2002, Beebe served on the Board of Trustees (LE Section), and was elected ARVO president in 2000. He has also been a member of the Publications and Advocacy Committees and a member and chair of the Finance Committee.

He has held his current position as *IOVS* editor-in-chief since 2012, and views this role as one of the highlights of his contributions to the organization.

"It engages my creativity," says Beebe. "Things were already going well. But as editor-in-chief, I had to ask, 'What can we do to make the journal work even better and maintain the high quality of science?'"

We were able to institute a number of changes and additions, especially in service to the authors who send papers to *IOVS* to try and make it a better experience. Now they get reviews more quickly. And we started a new policy of acknowledging the reviewers who do an exceptional job — those who go above and beyond in coming up with new insights that serve the author."

"It's a pleasure to acknowledge and thank Dr. Beebe for his years of outstanding service to ARVO, and in particular his editorship of

*IOVS*," says ARVO President William Mieler, MD, FARVO. "He has shown dedication beyond the already significant tasks associated with managing the review of 2,000-plus submissions per year, and ensuring that *IOVS* is a shining example of scholarly journal standards."



Beebe presenting an award to Carl Kupfer, MD, on behalf of the National Alliance for Eye and Vision Research in March 2001.



Beebe and his wife Betsy in 2012.



Beebe, co-chaired the inaugural 2006 Joint Working Group of the US-Indo Collaboration. ARVO representatives in New Delhi, India: Leon Ellwein, PhD; Janey Wiggs, MD, PhD, FARVO; and Suraj Bhat, PhD.



The Joanne G. Angle Award recognizing Beebe for his dedicated service to ARVO.

Beebe is the Janet and Bernard Becker Professor of Ophthalmology and Visual Sciences at Washington University School of Medicine in St. Louis, Mo., where he was recently honored by with an endowed lectureship.

"The Dr. David C. Beebe Lecture celebrates the scientific curiosity, translational research, mentoring and passion that Dr. Beebe has brought to our field and the 20 years of service

See **Beebe**, continued on page 12

**Beebe**, continued from page 11

“Dr. Beebe has shown dedication beyond the already significant tasks associated with managing the review of 2,000-plus submissions per year, and ensuring that *IOVS* is a shining example of scholarly journal standards.”

—ARVO President  
William Mieler

he has brought to Washington University School of Medicine Department of Ophthalmology and Visual Sciences,” says Todd Margolis, MD, PhD, FARVO, chair of that department and a former ARVO president.

Beebe’s research focuses on the early development of the eye and the cause and potential prevention of nuclear cataracts and glaucoma. In addition to the lectureship, Beebe also was recently named an outstanding postdoctoral mentor. According to his trainees, “the keys to his success are his energy, contagious enthusiasm and flexibility.”

Beebe’s interest in young scientists includes encouraging them to become involved in serving ARVO based on his own personal experience. “When you get involved, it’s not just about you and your narrow interests. You meet a lot of people outside your area of expertise.

Volunteering is practical in that you expand your connections and influences in the world

by meeting people who are also interested in participating and are committed to the organization. It adds up. You end up with a group of people you can go back to for assistance and you have the satisfaction of being a good friend. That’s been very satisfying to me. I have met people from around the world after working with them at ARVO who have remained my friends for many years.”

Among the many friendships Beebe developed was the one with ARVO’s longtime executive director, the late Joanne G. Angle, for whom the award is named. “Joanne was such a dynamic person and so committed. She represented ARVO in every way, so it is a great honor to be included with her legacy of service.”

Beebe is ever mindful of the association’s impact. “You get a great deal of satisfaction by participating in an organization like ARVO that does so much for vision research around the world. It’s satisfying to participate in an organization that really works.”



## Just released

ARVO’s new online education portal, featuring self-paced courses and Annual Meeting session recordings. Engage and explore today.

<http://arvoconnect.arvo.org/arvoeducation>

The cover of a Special Issue of the journal tvst (translational vision science & technology). The cover features a colorful, abstract image of a retina or eye structure. The text on the cover includes "Special Issue", "tvst translational vision science & technology", "an ARVO journal", "December 2014 Vol. 3, No. 7", "tvstjournal.org", "Restoring Vision to the Blind", "A Report by the Lasker/IRRF Initiative for Innovation in Vision Science", and "Visit http://www.tvstjournal.org/toc/tvst/3/7".

Special Issue

tvst translational vision science & technology  
an ARVO journal  
December 2014 Vol. 3, No. 7 tvstjournal.org

**Restoring Vision to the Blind**  
A Report by the Lasker/IRRF  
Initiative for Innovation in Vision Science

Visit <http://www.tvstjournal.org/toc/tvst/3/7>



## Follow your passion

Maureen A. McCall, PhD, is a professor in the Department of Ophthalmology and Visual Sciences in the University of Louisville School of Medicine. She holds joint appointments in the departments of anatomical sciences and neurobiology and in psychological and brain sciences. She also serves as chair of the Neurotransmitters, Receptors and Calcium Signaling Study Section of the NIH's Center for Scientific Review, and holds the Kentucky Lions Eye Research Endowed Chair. Her research has focused on using electrophysiological techniques to evaluate normal retinal function, dysfunction caused by blinding retinal diseases and the restoration of function using a variety of therapeutic strategies.

A member of ARVO since she was a graduate student, McCall has served the organization in many capacities, including the Annual Meeting Program Committee (VN Section) and chair of the Publications Committee. Currently, she is a member of the ARVO journal *TVST* Editorial Board.

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

As an undergraduate student in psychology at the University of Maryland, College Park, I took two courses in the same semester: visual perception and neurophysiology. Their subject matter was so exciting, and they opened up a completely new awareness of how we see and the potential ways that neurons in the brain worked. This was the spark for the rest of my career in vision research.

### What have been some of the highlights of your work?

Some of my personal highlights include the first time I recorded visual responses in neurons in the visual cortex and later from retinal ganglion cells; when I made my first knockout mouse, where I targeted the GABAC p1 receptor and then saw the changes that occurred in retinal processing; and when I went on a sabbatical and learned to record from bipolar cells using a whole cell patch clamp.

Also, because my lab frequently records the spiking activity of neurons, it is always a highlight for me when I get to help the students and postdocs in the lab to characterize the visually evoked responses of retinal ganglion cells. I never get tired of listening to their spiking activity while watching the visual stimulus presented to that

cell. And most recently, I received an endowed chair, the Kentucky Lions Eye Research Chair. This certainly was a highlight.

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

We have worked on rodent models of retinitis pigmentosa, using retina transplants and prosthetic implants to try to rescue retinal function. It was very exciting when we first demonstrated that we could evoke responses in the retinas of these animals long after they had lost normal visual function. We are currently working on a transgenic pig model of retinitis pigmentosa and collaborating on gene therapy strategies. We are still in the early stages, but the idea that we might be able to find a way to save cone function is exciting and I hope will be a future highlight.

The translational arm of the research in the lab is related to our work with the transgenic pigs to develop several different strategies to rescue/restore cone function. The more basic work in the lab is targeted at understanding how the retinal circuit uses different excitatory and inhibitory receptors to create about 20 different representations of the visual world. In particular, we are working on the roles of the metabotropic glutamate receptor G-protein coupled cascade in setting up inputs through the one parallel pathway and of the four different subunits of the glycine receptor and how each is used to create diversity of visual signaling.

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

My best advice is to follow the work that you are most passionate about. It's the work that helps you to get out of bed in the morning and be eager to get to work. Your training and your mentors should help you to determine what that is. Be open to lots of possibilities and don't be afraid that doing something that is not traditional is a sign of failure. If you love it and you can excel in your chosen profession, then that's what you should do. As for strategies for moving ahead in your field, make sure you set aside enough time to be able to perform your best work and don't settle for less. Speak up, ask questions. Ask for opportunities.



Maureen A. McCall, PhD

“The idea that we might be able to save cone function is exciting.”

## ARVO International Chapter Affiliates

Asociación de Investigación en Visión y Oftalmología (AIVO)  
[Argentina, Paraguay, Uruguay]

Austrian Association for Research in Vision and Ophthalmology (AARVO)

Brazilian Research Association of Vision and Ophthalmology (BRAVO)

Chinese Congress of Research in Vision and Ophthalmology (CCRVO)

Colombian Association for Research in Vision and Ophthalmology (CARVO)

Egypt Association for Research in Vision and Ophthalmology (ARVO-Egypt)

Hungarian Association for Research in Vision and Ophthalmology (HARVO)

Indian Eye Research Group (ARVO-India)

Israel Society for Vision and Eye Research (ISVER)

Italy Association for Research in Vision and Ophthalmology (IT-ARVO)

México Colegio Nacional de Investigación en Ciencias Visuales (MARVO)

The Netherlands Association for Research in Vision and Ophthalmology (ARVO-NED)

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

[Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Kosovo, Macedonia, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, Turkey]

See [arvo.org/affiliates](http://arvo.org/affiliates)

## CCRVO welcomes new president, sets priorities for 2015



Ningli Wang, MD

ARVO International Chapter Affiliate, the Chinese Congress of Research in Vision and Ophthalmology (CCRVO), has been re-focused under its new president, Ningli Wang, MD. CCRVO is part of the Chinese Ophthalmological Society (COS), and Wang serves as president of COS. Since 2004, Wang has served as director and chief ophthalmologist of the Beijing Tongren Eye Center, one of the two largest Eye Centers in China. He is also director of the Beijing Institute of Ophthalmology.

ARVO Immediate Past President Justine Smith, FRANZCO, PhD, FARVO expressed delight in Wang's new direction. "CCRVO is incredibly fortunate to have Dr. Wang leading the charge in Sino-American and global collaborations in vision and ophthalmology. Not only does he have stellar credentials, he is a remarkably dedicated volunteer willing to share his time, expertise and leadership."

CCRVO's 2015 goals will focus on promoting basic ophthalmology research and broadening interdisciplinary, translational and clinical collaborations. The international affiliate is preparing to host two education symposia in 2015: the first on optic nerve damage and regeneration, during the ARVO Annual Meeting in Denver in May, and the second on stem cell therapies in Shenyang in September.



Above: New Chinese Congress of Research in Vision and Ophthalmology President Ningli Wang, MD, appoints five senior members to the congress during its recent board of directors meeting in Guangzhou, China.

Right: Wang leads a discussion about CCRVO's priorities and goals at its recent board meeting.



## Research fellow climbs Capitol Hill for funding

Communicating science to experts on policy requires a different vocabulary than we use with each other. ARVO Member-in-training Adiv Johnson, PhD, discovered this firsthand as he prepared for his first visit to representatives on Capitol Hill in Washington, D.C. A research fellow at the Mayo Clinic, Johnson was there to talk about his work and the role government funding plays in his current and future career.

At Mayo, Johnson is studying inherited retinal degeneration caused by mutations in the gene BEST1. He had to prepare a new description of his research — one without technical jargon that policymakers could understand.

“I am able to more effectively communicate my research and the value of biomedical research to non-scientists,” he said after his preparation.

Johnson’s visit to Capitol Hill was in conjunction with the Rally for Medical Research. The event brought together more than 300 advocates from national organizations, including ARVO and the National Alliance for Eye and Vision Research (NAEVR), as well as hundreds of medical researchers to call upon U.S. policymakers to make funding for research a national priority.

Representing ARVO and NAEVR, Johnson met with a Minnesota delegation, including Sen. Amy Klobuchar

(D-MN), Sen. Al Franken (D-MN) and Rep. Tim Walz (D-MN) to reinforce the value of National Eye Institute-funded research. “Interaction with various policymakers left me with a sense that Capitol Hill is eager for scientists to share their expertise and that this sharing of knowledge plays an important role in the shaping of science policy,” he said.

Johnson also had the opportunity to meet and talk to National Institutes of Health Director Francis Collins, MD, PhD. The experience of influencing policymakers is one Johnson hopes other researchers will join in the future.

“It was rewarding to use my scientific background to participate and gain insight into the realm of science and politics.”



Adiv Johnson, PhD, has the opportunity to meet NIH Director Francis Collins, MD, PhD, at the Rally for Medical Research.

## Session to address TBI and visual function

### Researchers and patients unite for discussion

Research conducted by eye and vision scientists is uncovering important similarities between military blast traumatic brain injury (TBI)-related visual dysfunction and ocular pathology resulting from sports-related head injuries. On Saturday, May 2, the field’s most prominent researchers will address the interface between TBI and visual function at a 2015 Annual Meeting session. Attendees will also hear from a panel of three Blinded Veterans of America (BVA) and an NFL player affected by TBI and visual disorders.

The Saturday session, Vision and Traumatic Brain Injury in Veterans and Athletes, is open to the public.

#### Research panelists

- Ann C. Mckee, MD — Boston University Traumatic Injury to the Brain and Eye
- Randy H. Kardon, MD, PhD — University of Iowa Visual Sensory Impairments and Progression Following Mild Traumatic Brain Injury
- Glenn C. Cockerham, MD — VA Palo Alto Afferent and efferent Visual Function in Traumatic Brain Injury

- Lee E. Goldstein, MD, PhD — University of Boston Acute and Chronic Effects of Blast and Impact Neurotrauma: Mechanistic Implications for the Visual System

#### BVA panelists

- SSgt. Sean Johnson (Ret.) was injured in a mortar blast in March 2006 while serving in Operation Iraqi Freedom, and suffered TBI that left him legally blind.
- CPO Glenn Minney (Ret.), director of Government Relations, Blinded Veterans Association, suffered TBI following a mortar blast in 2005, resulting in progressively worse visual issues. A series of surgeries has only partially restored sight to one eye.
- Sgt. Shianti Lee (Ret.), a counterintelligence agent, she was deployed to Iraq in 2003. She received multiple injuries when her vehicle was hit, including TBI.

For more information, visit [arvo.org/TBI](http://arvo.org/TBI).

Arrive in Denver a day early for the TBI Saturday session

## Looking ahead: Progress in AGI and some changes at NIH



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

As we move into the new year, ARVO members can expect to see developments in the NEI Audacious Goals Initiative (AGI), including workshops to engage the vision community and new funding opportunities to drive the research forward. ARVO members should also be aware of a few important policy changes across NIH.

### AGI update

AGI is the signature research initiative of NEI. It began with an open prize competition for the best ideas in vision research, and coalesced into one goal: To regenerate neurons and neural connections in the eye and visual system. With input from the National Advisory Eye Council (NAEC) and an AGI working group, the goal was refined to focus on photoreceptors and retinal ganglion cells. Success would mean new therapies to repair the retina in patients with age-related macular degeneration and to repair the optic nerve in glaucoma patients.

The first AGI funding opportunity was announced in April 2014: to develop imaging technologies that will enable research toward the audacious goal. Twenty-five responsive applications were submitted, and by the time this article is published, these will have been reviewed by the NAEC.

In August, we issued a Request for Information (RFI) seeking input to identify major gaps in knowledge and obstacles to achieving the audacious goal. We received detailed, thoughtful responses from many academic and medical research institutions.

The RFI and subsequent workshops are being used to guide funding opportunity announcements. In November, NEI held the first such workshop, which focused on regenerating the optic nerve. This was held in conjunction with the 2014 Society for Neuroscience meeting in Washington, D.C. Co-chairs Jeffrey Goldberg of the University of California San Diego and William Guido of the University of Louisville led a lively discussion among approximately 40 participants, focused on identifying opportunities and overcoming challenges to optic nerve regeneration. A white paper summarizing the workshop is posted on the NEI website, [nei.nih.gov](http://nei.nih.gov).

The NEI Office of the AGI is planning a second workshop on photoreceptor regeneration in May 2015 in conjunction with the ARVO Annual Meeting in Denver. Of note, two symposia at the ARVO meeting will address topics with special relevance to the AGI. On May 3, Wei Li of NEI, Scott Navy of the Albert Einstein College of Medicine and Rowland Taylor of Oregon Health Sciences University will co-chair “Regenerate and Reconnect: The Road Ahead for an Audacious Goal.” On May 7, William J. Brunken of SUNY Upstate Medical University, Mary Elizabeth Hartnett of University of Utah and Robert Mullins of University of Iowa will explore “Fundamentals of Ocular Development: Building an Eye through Powerful Connections and Interactions.”

Current members of the AGI Steering Committee include Mark Blumenkranz (Stanford), John Dowling (Harvard), Pamela Raymond (University of Michigan) and Joshua Sanes (Harvard).

### Notable policy changes at NIH

I want to highlight a few changes that may affect grant applications and their review.

#### Genomic data sharing

NIH requires grantees to share data from human genome-wide association studies, and encourages use of the NIH dbGaP data repository. According to a recent analysis published in *Nature*, “dbGaP has provided 2,221 investigators access to 304 studies, resulting in 924 publications and significant scientific advances.” (See <https://go.usa.gov>.)

NIH will now require data sharing for all large-scale genomic studies in human and non-human subjects, regardless of the funding level. Applicants to such grants need to submit a data sharing plan, which will be subject to review but is not factored into the overall impact score unless otherwise specified in the funding announcement. The new rule takes effect for applications submitted on or after Jan. 25, 2015. NIH has issued implementation guidelines for investigators at <https://go.usa.gov/tXGA>.

**Population tracking**

There are some important changes related to the NIH policy on inclusion of women and minorities in clinical research (<https://go.usa.gov/tXMV>). This policy helps ensure that clinical research on a disease will be relevant to the people at risk for the disease. One requirement is that investigators must report and track the enrollment of women and minorities in clinical studies.

October 2014 brought changes that will strengthen the policy and ease its implementation. First, NIH has created a new online system for inclusion data, called the Inclusion Management System (IMS) available at <https://go.usa.gov/tXuW>. Under the old system, investigators submitted inclusion data in their grant applications and progress reports, and NIH staff often had to enter the data manually. The IMS is automatically populated from investigators' applications and reports, and investigators can make direct updates via eRA Commons. Another change is the elimination of tracking exceptions. Although in the past investigators were not required to submit data on sex or race in clinical

studies involving 10 or fewer participants, these exceptions are gone. However, there are still certain exemptions to what constitutes a clinical study, listed in the Code of Federal Regulations §46.101(b) (see <https://go.usa.gov/tXJi>).

**Application rates**

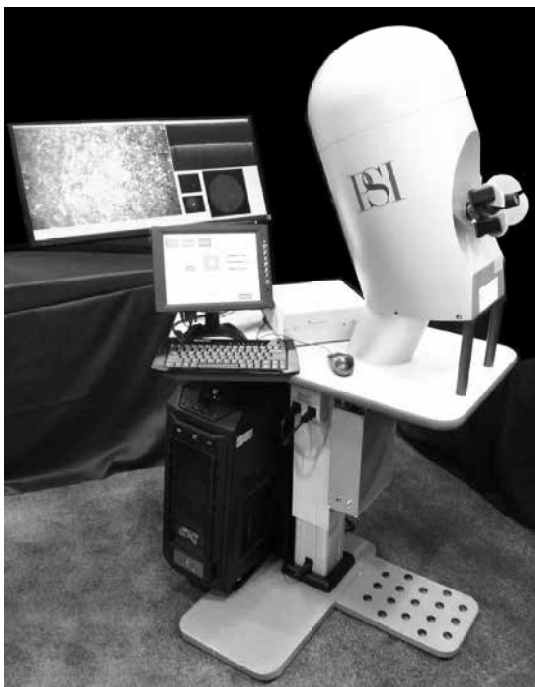
Applicants will recall that investigators are allowed to submit only one resubmission (A1) to an original grant application (A0). Under an old rule, all applications subsequent to the A1 had to be substantially different in content and scope to be eligible for funding.

As of April 2014, the research aims proposed in an A1 may be presented again as a new A0 submission, without a substantial change in content or scope (<https://go.usa.gov/tXJ5>). This has produced an increase in new applications, with a 13% increase in applications overall and a 25% increase in R01 applications.

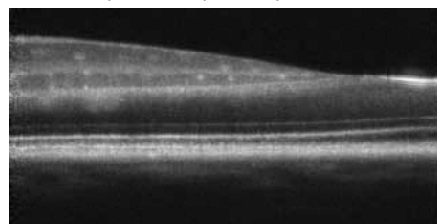
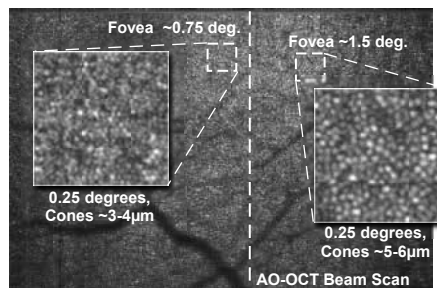
If you have any questions about these or other changes at NIH affecting the extramural community, please contact your program director at [nei.nih.gov/funding/extram](http://nei.nih.gov/funding/extram).



**Compact Adaptive Optics Retinal Imager (CAORI)**



PSI introduces the second generation compact, multi-modal, high-resolution, adaptive-optics, retinal imager. This powerful imaging platform is designed for fast, cone-photoreceptor density mapping and precise imaging of other retinal structures (e.g., Retinal Nerve Fiber Layer, retinal vessels and capillaries, etc.). The instrument combines the resolving power of Adaptive Optics



OCT image near fovea

(AO) with PSI's line-scanning ophthalmoscope (LSO) technology in a foot-print suitable for clinical operation [US Patent 8,201,943]. The imager has a nominal field of ~3 x 5 degrees with montaging capability to provide an imaging range of ~30 degrees. HD-equivalent resolution at >60 fps enables retinal layers to be explored and efficiently mapped while maintaining 1µm/pixel sampling. CAORI is equipped with an Optical Coherence Tomography (OCT) channel, which provides complementary cross-sectional retinal images for AOLSO guidance.

Physical Sciences Inc., 20 New England Business Center, Andover, MA • [www.psicorp.com](http://www.psicorp.com)  
 Contact: Dr. Nick Iftimia, [iftimia@psicorp.com](mailto:iftimia@psicorp.com), 978-738-8192

**Visit us at booth 3108**

## Poised for change in 2015

This year promises to be an exciting time for the ARVO family of journals — *IOVS*, *JOV* and *TVST*. To start, ARVO is currently working closely with our new online hosting vendor to build new journal sites that will include features like semantic tagging, better search functionality, sharing capabilities and a list of suggested articles. These new sites will take shape over the next few months and will launch at the 2015 Annual Meeting. In addition, we now have a joint submission page for the three journals.

### Open access

Also underway is a move to align article permissions and access with how the material is being funded. For instance, many European funders require the content to not only be freely accessible but for it to carry a gold open access (CC-BY) license. At present, both *JOV* and *TVST* are freely accessible from date of publication. *IOVS* currently has a six-month embargo period before content is free to view, although articles are always free to ARVO members. Our goal is that beginning in 2016, the journals will be fully open access with two possible license options depending on the authors' needs. We will offer both a CC-BY-NC-ND and a CC-BY option. While we are still working out the finer details, it is our hope that these new publishing options will be welcomed by the ARVO community.

### Publications Grant

The ARVO Publications Grant is up and running. This grant provides financial support to cover publication costs for those investigators who do not have the resources necessary to meet this obligation. The first grant was awarded earlier this year for a paper selected for publication in *IOVS* (read the article in the ARVO Foundation insert on page 2). Supported by the ARVO Foundation, the grant lines up with ARVO's goal to capture the full spectrum of vision sci-

ence in our family of journals. For more details regarding eligibility, visit [arvo.org/pubsgrant](http://arvo.org/pubsgrant).

### Journal highlights

*IOVS* had another successful year in 2014 thanks to the reviewers, readers and authors. We had a record number of submissions, and we see 2015 as another bright year. Our turn-around time is now only slightly more than one month.

*JOV* has three special issues that are open for submission: Ensemble Encoding in Vision, Perceptual Learning and Scene Perception from Central to Peripheral Vision. We also published the Optical Society of America's meeting abstracts in the December 2014 issue.

*TVST* had a big year in 2014. The journal more than tripled submissions. Also, our turnaround time is dropping from year to year, which promotes faster access to the science. In December 2014, the journal published a special issue from the Lasker Foundation/IRRF Initiative on restoring vision to the blind.

As the editors-in-chief, we are proud of our ARVO family of journals. We are looking forward to the improved functionality of the new website and the new prospects open access will bring.

**iovs** **investigative ophthalmology & visual science**  
an ARVO journal

**JOV** **journal of vision**  
an ARVO journal

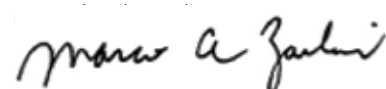
**tvst** **translational vision science & technology**  
an ARVO journal



David Beebe  
*IOVS* Editor-in-Chief



Dennis Levi  
*JOV* Editor-in-Chief



Marco Zarbin  
*TVST* Editor-in-Chief

## Comprehensive integrated technologies for Eye Research

Bert Massie, PhD, refers to his career as one of a “serial entrepreneur.” His endeavors have ranged from aerospace, including the Department of Defense’s Star Wars project, to ophthalmology, as founder of Massie Research Laboratories, the company that brought the digital imaging system known as RetCam to the clinic and hospitals for eye health experts.

His latest venture has been the founding of the California-based Phoenix Research Labs, which focuses on developing an integrated set of innovative tools to support eye and eye-brain research using laboratory animals.

These technologies all function in vivo. They include a retinal imaging microscope, known as the Micron IV, with resolution below four microns, and attachments for angiography and fluorescent imaging, image-guided optical coherence tomography (OCT), anterior segment slit lamp, image-guided laser and image-guided focal and Ganzfeld electroretinography (ERG).

“Our mission is to contribute to the war on blindness by developing and bringing to the community technologies to support eye and eye-brain research,” Massie explains. “Our team is proud of the global acceptance of our technologies and wide range of applications.”

Phoenix Research’s tools are optimized for the animal eye and are not ad hoc adaptations of clinical instruments. “The importance of optimizing our technology for the tiny animal eye and for the provision of in vivo examinations cannot be underestimated,” Massie says. “The ability to conduct longitudinal, whole-eye studies on the geography, structure and function of a single animal has the potential to revolutionize retinal research.”

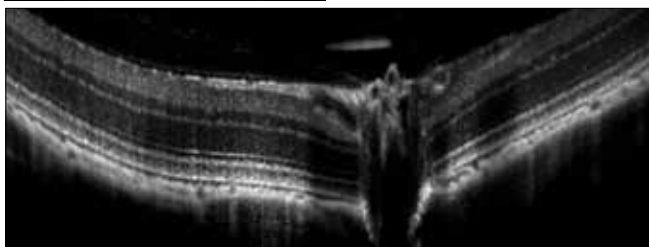
During one sedation of a mouse model, imaging including fluorescent studies, image-guided OCT and focal ERG can all be provided with one instrument — conserving time as well as bench space.

“While we anticipated the need for the in vivo Micron retinal imaging microscope, we were surprised by the rapid and eager adoption of the suite of tools,” Massie notes. Much like an emergency room doctor incorporates the findings of a history, neurological responses and imaging tests to arrive at a diagnosis and treatment plan in one setting, researchers can use Phoenix’s technology to compile the results of multiple imaging tests to be translated into scientific findings.

More than 180 ophthalmic researchers around the world are using Phoenix technology, and more than 60 peer-reviewed publications have detailed the results of eye and eye-brain findings.

“We have spoken with researchers who feel that autism, schizophrenia and other conditions affecting the brain can be detected through an eye exam, and we have already released data showing detection of Parkinson’s and Alzheimer’s disease through the eyes of mice,” Massie says.

Left: Bright field and line show where the OCT scan is located. Below: True guided OCT of the same image.



### See the eye, see the brain: Extending the mission of Phoenix Research Labs

Many researchers have long noted that the retina is an extension of the brain. In fact, vision requires more of the brain than any other sense.

“However, the question remains: Can scientists see the brain and other systemic problems through the eye?” Bert Massie, PhD, notes. “Now, this idea is being validated in eye research in animals.”

Recent experiments with tools from Phoenix Research Labs showed that it was possible to observe beta-amyloid plaques associated with Alzheimer’s disease in the retina.<sup>1</sup> Other studies in mouse models using the Phoenix tool set have demonstrated that proteins associated with Parkinson’s disease and Lewy Body dementia could be observed in the eye.<sup>2</sup>

Results yet to be released have shown the observation of malaria and prions in the eye, and results at another laboratory demonstrated stem cell rescue of vision.<sup>3</sup>

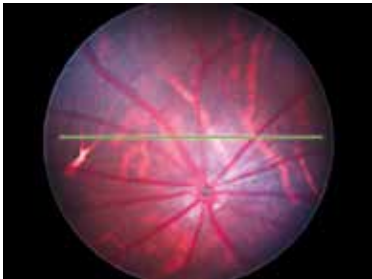
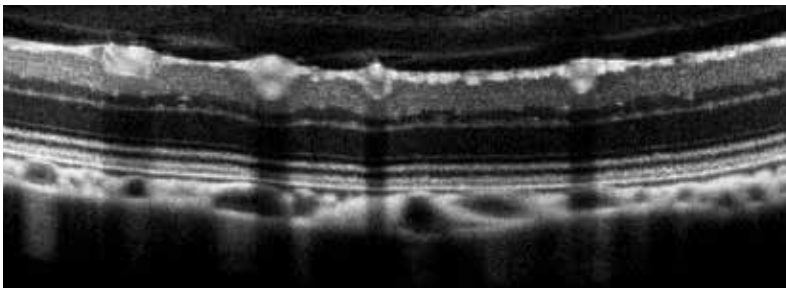
“We look forward to the possibilities of extending these results to the clinic in the future,” Massie says.

#### References

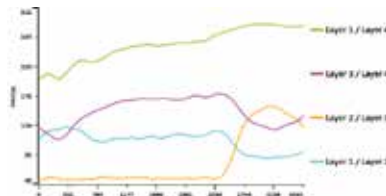
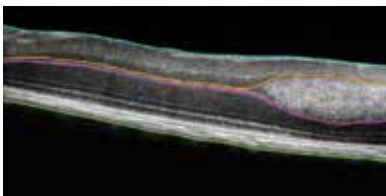
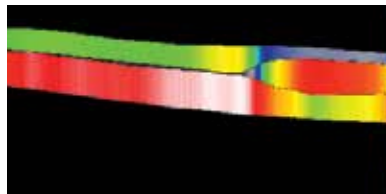
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# True Image-Guided OCT

Document the precise location of an OCT scan with Phoenix's Micron IV System



Precisely locate your OCT scan by placing a guide beam on the bright field image.



InSight provides 3 modes of structural analysis: traditional tomography display with lines delineating the layers, Phoenix's unique color banded/coded display, or numeric data.

## Optimized for small animals. Built for lab use.

Phoenix Research Labs' Image-Guided OCT System provides longitudinal resolution under two microns and delivers an exceptional level of image quality. In contrast to other systems, our image-guided OCT enables precise OCT scans by placing a guide beam on the bright field image. Longitudinal studies, previously not possible, are now available.

The Phoenix Micron IV retinal imaging microscope captures stunning retinal images, including bright field, angiography, and fluorescent imaging. By adding image-guided OCT, image guided focal ERG, anterior segment imaging and image-guided laser delivery modules, you can expand the images available for your research quickly and easily.

InSight, our segmentation software, is the only technology that enables interactive segmentation of retinal OCT scans. InSight employs its robust algorithm to create segmentation of the retinal layers automatically, or with full user interaction and control. Data from your scans can be visualized in 3 unique ways.

To learn more about the complete Phoenix system and true Image-Guided OCT, visit [oct.phoenixreslabs.com](http://oct.phoenixreslabs.com)

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