The external environment in which the Alliances operate changed dramatically early this year as the 114th Congress, First Session, convened with new Members, new Committee Chairs, and new staff. As you can see from this edition of the Report, NAEVR/AEVR and its member organizations have been engaged in Capitol Hill advocacy and education regarding National Institutes of Health (NIH) and National Eye Institute (NEI) funding, as well as that for the Peer Reviewed Vision Research Program (VRP) within the Department of Defense (DOD).

From an Advocacy Day held by ARVO in early February to that held by Research to Prevent Blindness (RPB) in late March, researchers and private funding foundations have been advocating for increased funding for vision research in Fiscal Year (FY) 2016 appropriations. Both events had a special emphasis on the environment for young investigators—which NIH Director Francis Collins, M.D., Ph.D. has described as “the worst in the past 50 years.” Young investigators with a future stake in NEI funding visited their Members with ARVO, while the representatives of the private funding foundations described their increased role in funding young investigators due to tight NEI funding, as well as providing bridge funding to more seasoned investigators due to delays in the annual appropriations process.

The Alliances will continue this emphasis on young investigators with a series of events planned around the October 7-8, 2015, “Young Vision Investigator Day” on Capitol Hill. By the time you read this, AEVR will be announcing this program and recruiting young researchers. I am especially pleased that Ophthalmology Chairs and Optometry Deans have already been so responsive this year by sponsoring young investigators and supporting NAEVR advocacy in their states/districts.

Concurrently, AEVR has held its Congressional Briefings about NEI and VRP-funded research, which have been time to support NAEVR’s funding requests. NAEVR has strong bipartisan support for increasing the VRP in FY2016 to $15 million—a $5 million increase over the FY2015-2015 appropriated levels. Although not all institutions are conducting eligible research in eye trauma, this funding source has netted $45 million for 60 researchers since it was created in FY2009. At the upcoming ARVO Annual Meeting in Denver, NAEVR will once again educate researchers about this funding opportunity. The box on the right lists several NAEVR/AEVR-supported sessions and, as always, Alliances’ Executive Director James Jorkasky will be present at the NAEVR Central Booth throughout the meeting.

Internally, the Alliances continue to see change as it relates to their Boards, as each has elected the following new Directors in 2015:

- Linda Hazlett, Ph.D., Chair, Department of Anatomy and Cell Biology, Wayne State University School of Medicine
- Iris Rush, CAE, Executive Director, Association for Research in Vision and Ophthalmology
- Earl Smith, O.D., Ph.D., Dean, College of Optometry, University of Houston

In late 2014, Ms. Rush was announced as the new Executive Director for ARVO, an Alliances founding member, and we welcome her extensive management experience. Additionally in late 2014, existing Director Steve Feldon, M.D. (Flaum Eye Institute/University of Rochester) was announced as the new Executive Vice President of the Association of University Professors of Ophthalmology (AUPO), also an Alliances founding member, who will now represent AUPO on the Boards. Immediate past AUPO EVP Bart Mondino, M.D., has been re-elected so that the Alliances can benefit from both Steve's and Bart’s organizational experience. The box to the right lists the current Directors.

I could not close without acknowledging those Directors who recently rotated off of the Boards—John Dowling, Ph.D. (Harvard University) and Tony Adams, O.D., Ph.D (University of California at Berkeley), who each served on the Alliances’ Boards since they were created—and long-time Director David Pyott, who recently retired from Allergan. I thank them for their contributions.

I also want to thank the vision community organizations that have committed time and financial resources to the Alliances in 2015.

Peter J. McDonnell, M.D.
NAEVR/AEVR Boards President
pmcdonn1@jhmi.edu

The Alliances’ Directors, in addition to Dr. McDonnell:

Craig Crosson, Ph.D., Associate Dean for Research, Medical University of South Carolina
Steven Feldon, M.D., Director, Flauim Eye Institute and Chair, Department of Ophthalmology, University of Rochester School of Medicine and Dentistry
Sabi Markabi, M.D., Senior Vice President, Research and Development and Chief Medical Officer, Alcon, Inc.
Bartly Mondino, M.D., Director, Jules Stein Eye Institute, David Geffen School of Medicine at University of California Los Angeles
Joan W. Miller, M.D., Chief and Chair of Ophthalmology, Massachusetts Eye and Ear Infirmary, Harvard Medical School
William Schmidt, J.D., Chief Executive Officer, Foundation Fighting Blindness
Walter Stark, M.D., Chief, Division of Cornea, Cataract, & External Diseases, Wilmer Eye Institute/Johns Hopkins University School of Medicine
David Tanzer, M.D., Chief Medical Officer and Divisional Vice President, Medical Affairs, Abbott Medical Optics, Inc.
Thomas Yorio, Ph.D., Provost and Executive Vice President for Academic Affairs, University of North Texas Health Science Center
Kara Zadnik, O.D., Ph.D., Dean, Ohio State University School of Optometry

Peter McDonnell M.D.,
William Holland Wilmer Professor and Director, Wilmer Eye Institute, Johns Hopkins University School of Medicine

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Kara Zadnik, O.D., Ph.D., Dean, Ohio State University School of Optometry

NAEVR/AEVR at the 2015 ARVO Annual Meeting

Saturday, May 2
ARVO’s Vision and Traumatic Brain Injury in Veterans and Athletes Session
10:00 am–12:00 pm, Mile High Ballroom, Section TCD, Colorado Convention Center

Sunday, May 3–Wednesday May 6
NAEVR Central
9:00 am–4:00 pm Daily, Located within ARVO Central

Monday, May 4
NAEVR’s Defense-Related Vision Research Opportunities Session
7:30 am–8:30 am, Room 205/207, Colorado Convention Center

Monday, May 4
Meeting Eye Health Needs Session
11:00 am–12:45 pm, Mile High Ballroom, Section TCD, Colorado Convention Center
Attitudinal Survey of Americans on Eye and Vision Health
12:30 pm, Based on AEVR’s 2014 study
LEGISLATIVE SCORECARD ISSUE: NIH/NEI FUNDING

**FY2015: NEI Budget Issues**

At the January 22 National Advisory Eye Council (NAEC) meeting, Director Paul Sieving, M.D., Ph.D. updated attendees about NEI’s FY2015 budget, finalized in December 2014 through the “CROMibus” spending bill, formally the Consolidated and Further Continuing Appropriations Act of 2015:

- NEI’s FY2015 appropriation of $684.2 million (a 3.3 percent over FY2014) will be reduced by $74.4 million as a result of the transfer back to NIH Central for the successfully completed Studies of the Ocular Complications of AIDS (SOCA) for an Operating Net of $662.15 million, or 0.2 percent increase over FY2014. The FY2015 net funding level is down $45 million from the FY2012 pre-sequester level.
- NEI’s appropriations increase of 0.3% was in line with most other Institutes and Centers (I/Cs), unless they were funded for special programs.
- The budget is split 85.6 percent Extramural ($579.2 million), 10.8 percent Intramural ($73.1 million), and 3.6 percent Administrative ($24.2 million).
- The FY2015 Success Rate is proposed at 22 percent, down from 27 percent in FY2014 but still higher than the NIH average of 17 percent. The FY2015 rate is down because of a higher denominator associated with the turnover of the four-year portfolio duration.

**FY2016: President Proposes NIH, NEI Increases**

On February 2, the President sent a $4 trillion FY2016 spending plan to Congress. The proposed budget, which replaces sequestration with a balanced approach to deficit reduction, increases the discretionary budget by $75 billion—$37 billion more for nondiscretionary spending in biomedical research, science, public health, education and infrastructure, and $38 billion more to defense programs. Highlights include:

- NIH would be funded at $31.3 billion, a $1 billion or 3.3 percent increase over the FY2015 level of $30.3 billion. NIH would support 10,303 new and competing Research Project Grants (RPGs)—an increase of 1,227 above the FY2015 estimate—for a total of 35,447 grants. NIH projects its FY2016 Success Rate at 19.3 percent, compared to its FY2015 estimate of 17.2 percent.
- NEI would be funded at $695.2 million, an increase of $18.4 million over its FY2015 operational budget of $676.7 million, or a 2.7 percent increase over NEI’s FY2012 pre-sequester funding level of $702 million. Per NEI’s Congressional Justification, it will support a total of 1,095 RPGs in FY2016. Noncompeting RPGs will decrease by 45 awards, while competing RPGs will increase by 56 awards.
- The Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative would be funded at $135 million, or a $70 million increase over the FY2015 level. Funded initially at $46 million in FY2014, vision researchers received $22 million in awards in the first funding cycle.
- NIH plans to spend $200 million on the Precision Medicine Initiative to focus on developing treatments tailored to the individual characteristics of each patient.

As expected, since the President’s budget exceeds the caps mandated in the Budget Control Act by proposing a new mix of cuts and taxes, it has faced intense scrutiny since Congressional appropriations hearings began in late February.

**Dr. Collins Testifies: “Least Favorable Environment for Young Investigators”**

On February 5, new House Labor, Health and Human Services, and Education (LHHS) Appropriations Subcommittee Chair Tom Cole (R-OK) met with research advocates and promised a series of timely appropriations hearings. True to his word, the Subcommittee held a March 3 hearing with NIH Director Dr. Collins, which was attended by all but one member. Although Chairman Cole was joined by members from both sides of the aisle in praising NIH’s accomplishments, he acknowledged the appropriators’ funding challenges in light of the Budget Control Act’s deficit reduction targets.

“Sequester is the law of the land. We might not be able to do all absent a larger bipartisan budget agreement—which I hope that we achieve. I am especially concerned about young investigators.”

He also cautioned that, given current NIH funding that does not even meet inflation, the increased funding for medical research in other countries will result in the U.S. “relinquishing its historical international lead in biomedical research in the next decade unless certain measures are undertaken.”

**NAEVR Requests NIH Funding at $32 Billion, NEI at $730 Million**

Although NAEVR recognized the President’s proposed FY2016 NIH/NEI increases as encouraging, the Alliance is urging FY2016 NIH funding of at least $32 billion and NEI funding of $730 million—waiving NIH from sequester cuts and Budget Control Act caps. For NIH, this reflects a 5 percent increase for modest growth and biomedical inflation (2.4 percent in FY2016). For NEI, the $730 million level reflects restoration of the remaining sequester cut and a 5 percent increase for modest growth and biomedical inflation.

In its advocacy and testimony, NAEVR is leading with the compelling results from AEVR’s September 2014 poll entitled *The Public’s Attitudes about the Health and Economic Impact of Vision Loss and Eye Disease* that was explicitly commissioned by Research!America from Zogby Analytics and sponsored by a grant from Research to Prevent Blindness. The poll, the most rigorous conducted to-date of attitudes about vision and vision loss among ethnic and racial groups, found that a majority of Americans describe losing vision as potentially having the greatest impact on their day-to-day life.

Visit the NIH/NEI funding section of NAEVR’s Web site at www.eyeresearch.org for full details.
In a February 6 Advocacy Day conducted by ARVO and NAEVR, members of ARVO’s Annual Meeting Program Committee (AMPC) were joined by a group of young investigators in advocating for FY2016 NIH/NEI funding increases. As in past years, ARVO was among the first organizations to speak with Congressional staff. The visits were especially timely since the President’s budget request issued to Congress earlier that week, and staff were engaged in reviewing it and seeking feedback from research advocates.

The 13 ARVO AMPC members—including ARVO Executive Vice President Craig Crosson, Ph.D. (Medical University of South Carolina) and international advocates Caterina Gagliano, M.D., Ph.D. (Neurovisual Science Technology, Catania, Italy) and Qingjiong Zhang, M.D., Ph.D. (Zhongshan Ophthalmic Center, China)—and the eight young investigators visited 40 Congressional offices with three important advocacy tools that supplemented the legislative request:

• A graphic showing how NEI’s FY2015 appropriation of $684 million is still down $18 million from the FY2012 pre-sequester level, translating into 45 fewer grants not funded by NEI—any one of which may hold the promise to save sight and restore vision.

• A list of successfully commercialized products resulting from NEI-funded investigator-initiated research and Small Business Innovation Research (SBIR) grants that demonstrates the return on the nation’s investment in vision research.

• A “Federal Funding for Vision Research is Vital” document that included the latest data about the incidence and cost of eye disease, estimated in a June 2014 Prevent Blindness Vital study at $145 billion annually and growing.

The young investigator delegation, which reflected clinicians, clinician-scientists, and basic researchers dealing with a wide range of eye diseases, added greatly to ARVO’s message, stressing the impact that the combination of cuts, flat funding, and lack of an inflationary increase at the NEI has on their training and career paths. “In many cases, the young investigators were speaking to staff members who are their contemporaries, so their message resonated with these individuals who may be examining their own career paths,” observed NAEVR’s James Jorkasky, who joined each young investigator for at least one visit.

The NAEVR and AEVR Alliances have a focus on young investigators in their 2015 activities. In May 2015, the Alliances will begin recruiting individuals to participate in a “Young Vision Investigator Day” on Capitol Hill, to be held on October 7-8 with a series of educational and advocacy events.
On March 25, NAEVR hosted an Advocacy Day for private foundations which had met the previous day under the auspices of RPB to discuss vision research funding challenges, especially due to lack of growth in the NEI’s budget. In addition to describing their important role in the local economy, the participants also noted their support for researchers at academic institutions throughout the country—often researchers in the early stage of their careers.

“The U.S. vision research community has sustained an effort, for decades, to prevent vision loss and restore sight and we are seeing some incredible breakthroughs with stem cell research, gene therapy, and regeneration approaches. Federal funding of vision research far exceeds all private foundation support combined. A recent convening of vision research funders—hosted and organized by RPB—established increasing federal funding of vision research through advocacy as a top priority for collective action on the part of the private foundations. For the sake of everyone confronting vision loss, we literally cannot afford to shortchange funding for eye research.”

—Brian F. Hofland, Ph.D., RPB President

“I have had Type 1 diabetes for 50 years. I have worked hard to maintain a good balance in my health, and so far I am okay. But those words ‘so far’ loom large. As a diabetic I am at higher risk for diabetic retinopathy, macular edema, glaucoma, corneal complications and dry eye. Insulin is not a cure, just as eye drops to treat glaucoma are not a cure. There are no guarantees. The closest we can come to a guarantee of good health is to ensure that the extraordinary scientists who will create cures and better treatments for our conditions are adequately funded.”

—Matthew Levine, RPB Director of Communications
On March 11, AEVR held its World Glaucoma Week 2015 Congressional Briefing, co-hosted by all major glaucoma societies and research organizations (see box below). Entitled Preventing Blindness and Controlling Intraocular Pressure (IOP) in At-Risk Populations, the event focused on glaucoma’s public health challenges. Featured speaker Steven Mansberger, M.D., M.P.H., who serves as the Vice Chair and Director of Glaucoma Service at the Legacy Devers Eye Institute and holds an appointment at Oregon Health and Science University as Affiliate Professor of Ophthalmology and Adjunct Professor in Public Health and Preventive Medicine, spoke about his NEI and the Centers for Disease Control and Prevention (CDC)-funded research into how IOP is measured and controlled, with an emphasis on drug regimen adherence across ethnic populations.

He described Legacy Devers’ extensive glaucoma screening and detection research, which has resulted in a formula that determines if an individual will develop glaucoma in the next five years with or without medication. Although noting the usefulness of screening for elevated IOP, he also emphasized the importance of examining the optic nerve disc, since damage to it can still result even if an individual has normal tension IOP. He cited the example of Northwest Native Americans, who have a lower IOP than other ethnic groups yet are susceptible to glaucoma, likely due to optic nerve sensitivity. They have less mixing of their gene pool with Europeans than other Native Americans, and display the same low IOP glaucoma as seen in the Japanese. Since the average glaucoma patient is treated for 14 years, a patient’s compliance with their IOP-reducing drug regimen is important in disease management, especially since NEI’s Ocular Hypertension Treatment Study (OHTS) found that pressure-reducing eye drops delayed disease onset. Dr. Mansberger reported that 20-80 percent of glaucoma patients have poor adherence, which includes not using the medication at designated times and using too much or too little—as in missing the eye. Risk factors for poor adherence include older age and systemic conditions (e.g. dementia), using multiple medications, lower educational level, and inadequate social support. He described Legacy Devers’ research to predict compliance and develop models to improve patient adherence.

He concluded by describing various current and future treatments to lower IOP, which include laser treatment and incisional surgery—such as a trabeculectomy—as well as minimally invasive surgeries. The latter includes development of a sustainable release medication injected into the eye which could treat it for the equivalent of three-to-six months of a daily drug regimen.
Since it was created by Congress in FY2009, DOD appropriations through NAEVR advocacy, the VRP has awarded 60 grants totaling $45 million to vision researchers. Research projects funded in the first two VRP funding cycles (2009-2010 and 2011-2012) have resulted in 80 published papers that are advancing knowledge about the diagnosis and treatment of eye trauma injuries.


In October 2014, DOD’s Congressionally-Directed Medical Research Program (CDMRP), which now manages the VRP, made notifications to researchers about FY2013 grant awards—13 Translational Research Awards (funding up to $1 million) and 9 Hypothesis Development Awards (funding up to $250,000), for a total of $15.2 million. Although the CDMRP is still finalizing FY2014 awards, as of mid-March 2015 it has announced six awards for a total of $5.2 million.

FY2015: Program Announcement Expected Shortly

In December 2014, Congress finalized FY2015 DOD appropriations with passage of the “CROMbus” spending bill, which funded the VRP at $10 million. The CDMRP is currently developing a Program Announcement and anticipates releasing it shortly. NAEVR and ARVO will alert researchers when the announcement is released.

FY2016: NAEVR Requests VRP Funding at $15 Million

NAEVR, working with the Blinded Veterans Association (BVA), ARVO, the American Academy of Ophthalmology, and the American Optometric Association, has been advocating for Congress for VRP funding at $15 million—the highest level ever and an increase of $5 million over the previous three years each of $10 million appropriations. Highlights include:

- In a February 5 letter, BVA was joined by 11 other Veterans Service Organizations (VSOs) and Military Service Organizations (MSOs) in requesting FY2016 VRP funding at $15 million.
- In early March, Army magazine, a publication of the Association of the United States Army, had an article which described the potential long-term vision loss implications for soldiers from exposure to blast waves or visual dysfunction from TBI.
- On March 26, Congressman Tim Walz (D-MN), the highest-ranking enlisted soldier ever to serve in Congress, sent a formal request letter to the House Appropriations Defense Subcommittee requesting VRP funding at the $15 million level. In 2012, he successfully offered an amendment on the House floor that doubled FY2013 VRP funding from $5 to $10 million—the level at which it has been funded in FY2013-2015.
- On March 26, Congressman Mario Diaz-Balart (R-FL), who is new in serving on the Defense Appropriations Subcommittee, requested VRP funding at $15 million. NAEVR was introduced to the office by Edward Alfonsio, M.D. Ophthalmology Chair of the University of Miami Miller School of Medicine/Bascom Palmer Eye Institute.

DOD-Funded Researcher Studies TBI-Related Photophobia

On March 18, AERV hosted a deployment-related vision trauma research Congressional Briefing entitled Understanding Light Sensitivity in Patients with Traumatic Brain Injury (TBI) featuring clinician-scientist Andrew Hartwick, O.D., Ph.D. (Ohio State University College of Optometry). Funded through a Hypothesis Development Award from the DOD’s VRP, his research addresses a major DOD-identified gap: the lack of understanding of the physiological causes of photophobia, or light sensitivity. Photophobia is a symptom frequently reported by troops who have suffered a TBI resulting from exposure to the blast from an Improvised Explosive Device (IED). Other visual symptoms of TBI include loss of focus, ocularmotor deficits, and visual field deficits. TBI is the most prevalent warfighter injury, with 300,000 soldiers experiencing it between years 2000-2014. It is also a common cause of injury in the civilian population, resulting from falls, automobile accidents, and sports-related injuries.

Dr. Hartwick’s research focuses on intrinsically photosensitive retinal ganglion cells, or ipRGCs, which are cells in the eye that are particularly sensitive to blue light. They express the photo-pigment melanopsin and play a key role in a number of non-visual functions, including the regulation of the body’s circadian rhythms. He theorized that exposure to a TBI caused these cells to “overreact” to light, thereby signaling to the brain that ambient light levels are brighter than they actually are. In a previous study, done in collaboration with Satchin Panda, Ph.D. (Salk Institute) and other researchers, evidence from experiments on young mouse pups supported a role for ipRGCs in photophobia. The young mice “froze” and stopped moving when exposed to light but, after being injected with a compound that inhibits melanopsin function, this light aversion behavior was no longer present.

Dr. Hartwick’s current DOD-funded research focuses on individuals who have been diagnosed with “mild” TBI, meaning that they were not in a coma after the injury and who had also experienced chronic photophobia for a minimum of six months. A central problem for clinicians is lack of an objective tool to measure the extent of photophobia that patients experience; they are simply asked if exposure to light causes them any discomfort. With his team, Dr. Hartwick initiated the Head Injury-associated Photosensitivity and Pupillary Rhythms (HIPPR) study to evaluate whether exposure to a TBI caused an alteration in the ipRGC contribution to light-evoked pupil constriction. A total of 40 subjects were enrolled in the study, including 28 TBI patients with photophobia and 12 control subjects. The researchers exposed subjects to alternating flashes of blue and red light and measured the change in pupil size during the light pulses and the rate at which the pupil re-dilated during the intervening dark periods. As ipRGCs continue to respond for many seconds after light offset, this latter measurement provided an objective measurement of the signal relayed by these cells to the brain center responsible for regulating the pupillary light reflex.

The data suggest that ipRGCs were not hypersensitive to bright light in the subjects with TBI-associated photophobia, as originally theorized, but there was evidence for a change in the ability of ipRGCs to adapt to repeated light exposure in these subjects. These results support the premise that ipRGC function can be altered after TBI, and this dysfunction can be detected using a short pupil test that is adaptable for clinical use. With a better understanding of the physiological processes in the eye that are causing the photophobia, the next step is the development of a therapeutic intervention that could “re-set” the ipRGCs to return to a normal response to light. In particular, many of the subjects experienced some level of relief from their photophobia through the use of relatively inexpensive orange-tinted glasses. Future research will further investigate whether this benefit is specific to certain tints and examine the effect of long-term wear of these glasses on ipRGC function.

Briefing co-sponsors included RPB, BVA, and ARVO.

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Visit the Defense-related Vision Research section of NAEVR’s Web site for full details

Featured speaker Andrew Hartwick, O.D., Ph.D. (Ohio State University College of Optometry)