

ANNUAL REPORT 2016



NEUROSURGERY LEADING THE WAY

NREF CHAIR'S MESSAGE



This was an extraordinary year to serve as chair of the Neurosurgery Research & Education Foundation (NREF), and it was an honor to do so. The generosity of neurosurgeons, neurosurgical societies, institutions, corporations and the public have enabled the NREF to ensure the future of our specialty. This support helps the NREF accomplish its mission of providing a private, non-governmental source of funding for research training in the neurosciences.

During this year's research/fellowship award cycle — for the first time — AANS/CNS Joint Sections provided reviewers the opportunity to score the applications for research grants and fellowships funded by the NREF. Eight \$40,000 grants were awarded using funding provided by the American Academy of Neurological Surgery, the Bagan Family Foundation and Medtronic, as well as the Cerebrovascular, Tumor, Pediatric and Pain Sections. Partnering with the private foundation focused on brain tumor research, B*CURED, enabled a ninth research grant to be funded this year, and additional private foundations are being considered for funding partnerships.

The creation of the Honor Your Mentor funds has provided opportunities for donors to support the individual purpose of each fund, as developed by the fund originator. As section support of the funds increases through pledges and donations by individuals, corporations and others, we have seen this peer-to-peer program grow to 24 funds since its inception in 2014. Our first corporate sponsor for an Honor Your Mentor fund, Brainlab, committed to a multi-year pledge: the first installment of \$50,000 was received this year to support the Andrew Parsa Fund. We look forward to seeing more industry support in the coming years.

We recognize the leadership role taken by the AANS/CNS Section on Disorders of the Spine and Peripheral Nerve for its pledge of \$100,000 for the upcoming fiscal year for five NREF Honor Your Mentor funds and the generosity of Dr. Arvind Ahuja's pledge of \$100,000 for the next five years, providing funds for a Challenge Grant to the AANS/CNS Joint Cerebrovascular (CV) Section for CV research grants.



Advancing the specialty is directly related to the contributions of the individuals, institutions and organizations that share our vision to further education and research for the neurosurgical specialty.

The Development Committee of the NREF (comprised of members of each section, the NREF and AANS Boards of Directors and the Young Neurosurgeons Committee (YNC)) considered the many ways sections, individual neurosurgeons, private and academic group practices, corporate sponsors, state and regional societies and public donors can identify, cultivate and steward financial support with individuals, groups and corporations to support the foundation.

The NREF is closely aligned with NeuroPoint Alliance (NPA) and has provided funding for new and existing neurosurgical treatments in order to identify links between best practices and improved outcomes in patient care.

For the past five-and-a-half years, we have worked closely with Albert L. Rhoton Jr., MD, FAANS(L), to preserve his legacy in the best possible way. The Rhoton Collection® was established to curate his material and make it available for free throughout the world. The implications of this work have already extended far beyond the original vision; for example, the *Journal of Neurosurgery* has introduced a new feature that links select articles on its website directly to The Rhoton Collection. With the loss of Dr. Rhoton in February, it is more important than ever to continue his legacy of education by providing good stewardship to fund the extraordinary photos and lectures that are part of the Rhoton Collection and supplement with new video content each month. Please consider a contribution to the NREF Rhoton Fund to support this material, neuroanatomical fellowships for medical students and anatomical research, as well as his memory.

Advancing the specialty is directly related to the contributions of the individuals, institutions and organizations that share our vision to further education and research for the neurosurgical specialty. As always, we greatly appreciate the generosity of your financial support.

Jon H. Robertson, MD, FAANS
NREF Chair

JANUSZ SUBCZYNSKI: A LEGACY OF PHILANTHROPY



The late Janusz Subczynski, MD, FAANS(L), once observed, “The younger generations in this country are growing in an entirely different environment than I did ... I went through the horror stories. I can appreciate the danger that exists in the world.”

His comments were not hyperbole. Dr. Subczynski survived both the German and the Russian occupation of his homeland, Poland. “He had a very good childhood, until one night he found himself on the road escaping from Warsaw with his parents, under bomb and machine gun fire.”

While living under occupied control, he managed to complete medical school, receive degrees in philosophy and psychology and become a surgeon, finishing his neurosurgical training here in the U.S. From within the U.S., he became deeply involved in POMOST, a Polish-American organization that broadcast information about conditions in Poland, efforts that earned organization leaders, including Subczynski, a death sentence in that country. However, those same political efforts brought him within Ronald Reagan’s sphere. During the Reagan White House years, Subczynski was often in attendance at presidential social events: his dancing skills made him a favorite of Nancy Reagan.

After his retirement from neurosurgery, he became an author, writing two autobiographical books, and “was also a philanthropist who funded a vocational training center in Santa Cruz in Guatemala... he lived modestly and preferred to spend the cash on some lofty goals,” according to his obituary. Subczynski died Jan. 6, 2014.

Recently, the NREF was notified that it would be a beneficiary of Subczynski’s posthumous philanthropy, as he left NREF a sizeable bequest in his will. While the details are still being finalized, his gift is likely to be one of the largest individual donations ever received by the NREF. His interest and activism in supporting the younger generations and education will continue on, serving as a fitting legacy for Dr. Subczynski and providing an appropriate epilogue to his story.

“Beyond the fact that this was a truly exceptional man, what I hope people will take from this story is how Dr. Subczynski planned ahead and secured his legacy. We have many different ways to support the NREF’s education and research programs, including trusts, direct gifts from IRAs, charitable gift annuities and book/product royalties. Please consider continuing to support the NREF’s efforts, even after you are no longer here,” said Jon H. Robertson, MD, FAANS, chair, NREF.

The Board of Directors is grateful to Dr. Subczynski for the generosity of his bequest to the NREF. For more information on the variety of [Charitable Planning Strategies](#), including planned gifts, bequests, stock transfers, memorials, royalties and more, contact the NREF.

NREF: BROADENING THE SCOPE OF EDUCATION TO NEUROSURGEONS

Educating neurosurgeons by offering training to neurosurgical residents, fellows and practicing surgeons is the mission of the NREF. The organization actively supports state-of-the-art, cutting-edge educational courses for those in all stages of their careers.

Securing over \$1.2 million last year from corporate supporters provided funding for preeminent training courses. In addition, the NREF was pleased to offer the first webinar on the topic of 5-ALA in Fluorescence in Fall 2015. The extraordinary success of this webinar provided the impetus to plan for more web-based training in the near future.

The first *International Brain Mapping* course was held in Spring 2016 and will be offered again, as registration almost immediately sold out. Planning has begun for a first-time symposium specifically designed for mid-career neurosurgeons and several international courses are in the early stages of discussion.

In addition, over \$1 million is being provided by the NREF to fund research grants and Young Clinician Investigator Fellowships annually to help launch the careers of medical students and young surgeons.

Since 2006, the generous contributions of industry partners have allowed more than 1,600 residents, fellows and practicing surgeons to learn critical surgical skills, quantitative analysis and career planning from expert faculty at leading academic institutions across the country. Participants in these courses are nominated by their institutions.

2015-2016 NREF COURSES

- 16th Brazilian Congress of Spinal Surgery
- 5-ALA in Fluorescence Webinar
- CCNS-AANS/NREF Clinical Course in Spinal Surgery in Qingdao, China
- Endovascular and Vascular Techniques for Senior Residents
- Fellows Course in Endovascular Techniques (in collaboration with SNIS and SVIN)
- *First International Brain Mapping* course
- Fundamentals in Spinal Surgery for Residents
- Peripheral Nerve Course for Residents
- Skull Base for Senior Residents Course
- Spinal Deformity Course for Residents
- Stereotactic and Functional Neurosurgery Hands-on Workshop

CLINICAL FELLOWSHIPS

POST-RESIDENCY CLINICAL FELLOWSHIPS FUNDED WITH CORPORATE SUPPORT

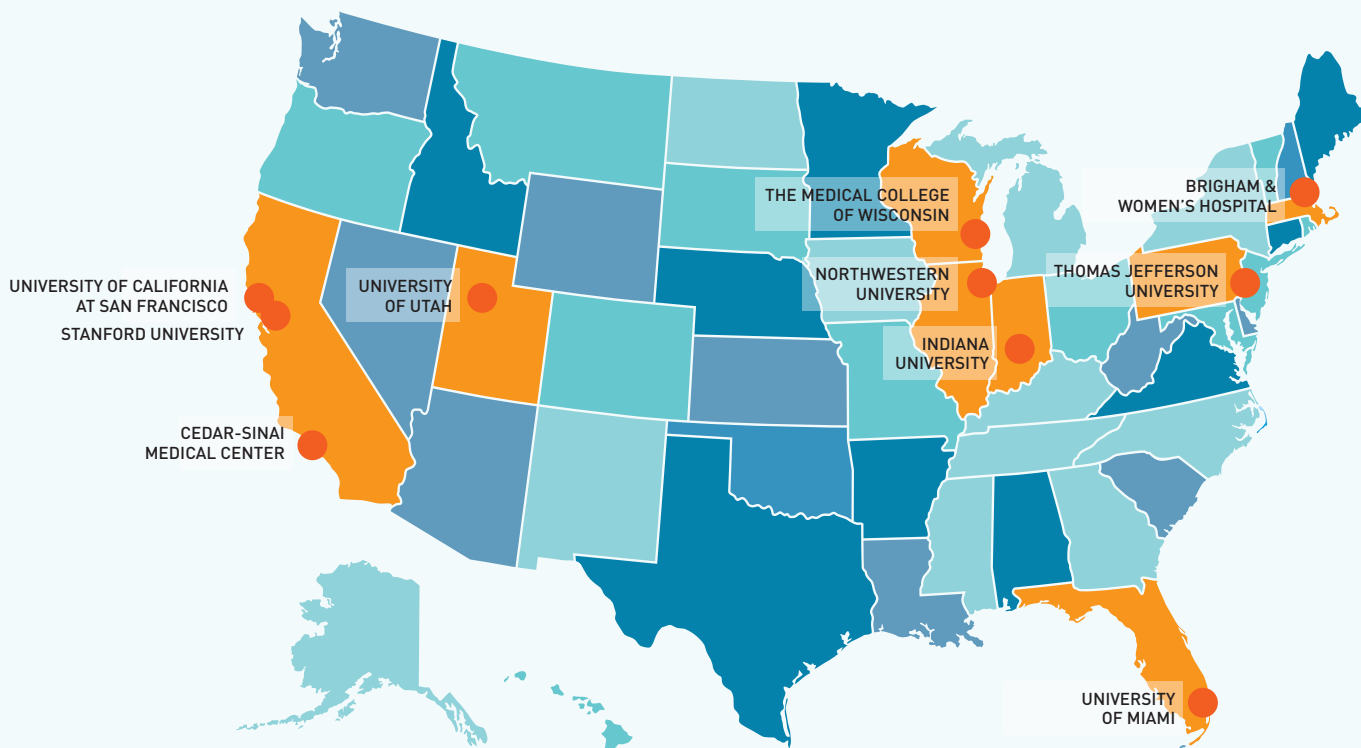
Since 2010, the NREF has supported 77 post-residency clinical fellowships (PRCF) at more than 25 neurosurgery training programs in North America.

Funding for post-residency fellowships is made possible by industry supporters. Applications are accepted in areas such as spine, endovascular, pediatric, stereotactic, tumor neurosurgery and others. PRCF awardees are independently chosen by an unbiased committee of neurosurgeons, and fellowships range from up to \$75,000 for spine fellowships to \$50,000 for other subspecialties.

The NREF gratefully recognizes corporate support of the 2015-2016 PRCF program from the DePuy Synthes Companies of Johnson & Johnson and Medtronic, Inc.

The following programs were awarded fellowship grants for the 2015-2016 academic year:

- Brigham and Women's Hospital
- Cedars Sinai Medical Center
- Indiana University
- The Medical College of Wisconsin
- Northwestern University
- Stanford University
- Thomas Jefferson University
- University of California at San Francisco
- University of Miami/Jackson Memorial Hospital
- University of Utah



COMMITTED TO OUR MISSION:

Providing Research Grants and Young Clinician Investigator Awards

The mission of the NREF is to enhance lives by advancing neurosurgical care, and one pathway to achieving this mission is to fund research for both new and current neurosurgical treatments. Research fellowships and Young Clinician Investigator Awards are funded by the NREF for studies in basic, translational and patient clinical research. The ongoing goal is to fund research that can help to identify links between best practices and improved outcomes in patient care.

Research fellowships for residents provide funding for neurosurgeons who are preparing for academic careers as clinician investigators and who have been accepted into, or who are currently in, approved neurosurgical residency training programs in North America. Young Clinician Investigator Awards support junior faculty who are pursuing careers as clinical investigators and are neurosurgeons who are no more than two years from the end of their clinical training at North American teaching institutions.

Supported by donations from the public and neurosurgeons with a keen interest in giving back to their chosen profession, as well as corporate and allied neurosurgical groups, the funded research has wide-reaching ramifications in helping those suffering from epilepsy, stroke, brain tumors, spinal disorders, sports-related head injuries, lower back pain, Parkinson's disease and many others. Since 1980, over \$8 million in grant funding has been awarded to over 200 residents and young clinician investigators at 72 academic institutions.

The NREF would like to thank the following organizations that helped support NREF Research Grants and Young Clinician Investigator Awards in fiscal year 2016:

- American Academy of Neurological Surgery
- AANS/CNS Joint Section on Pain
- AANS/CNS Section on Pediatric Neurological Surgery
- AANS/CNS Section on Tumors
- Bagan Family Foundation
- Medtronic, Inc.

The 2015-2016 Research Grant and Young Clinician Investigator Award (\$40,000 for one year) recipients are:

Casey H. Halpern, MD

NREF/Medtronic Research Fellow

Stanford University

Project Title: Responsive neurostimulation for obesity: evidence from a mouse model of diet-induced obesity

Ammar Hawasli, MD

NREF Research Fellow

Washington University

Project Title: Resting-state brain functional magnetic resonance imaging to predict functional recovery following spinal cord injury

Betty Y.S. Kim, MD

NREF Research Fellow

Mayo Clinic College of Medicine

Project Title: Normalizing tumor vasculature to promote targeted nanomedicine delivery and therapy of glioblastoma multiforme

Phillipe Magown, MD

NREF/Academy of Neurological Surgery

Edward H. Oldfield, MD, Research Award Hotchkiss Brain Institute, University of Calgary

Project Title: Network and neuronal activity evoked by DBS of the ventro-medial prefrontal cortex: a therapeutic model for treatment refractory depression.

Peter Morgenstern, MD

NREF Research Fellow

Memorial Sloan Kettering Cancer Center

Project Title: The role of menin and a novel approach for targeted therapy in Diffuse Intrinsic Pontine Glioma

Ziev Moses, MD

NREF Research Fellow

Massachusetts General Hospital

Project Title: Developing a novel cortical-spinal neural prosthesis for reconstituting volitional movement of a paralyzed limb

Amanda Saratsis, MD

NREF/Bagan Family Foundation

Young Clinician Investigator Award

Northwestern University Feinberg School of Medicine

Project Title: Tenascin-C as a Therapeutic Target in Pediatric Brainstem Glioma (AGFs) in the development of Medulloblastoma

Gentian Toshkezi, MD

NREF Research Fellow

The Research Foundation for the State University of New York, Upstate Medical University

Project Title: The therapeutic role of hematopoietic growth factors in the subacute phase of traumatic brain injury.

Andrew Venteicher, MD

NREF Research Fellow

Massachusetts General Hospital

Project Title: Identifying human glioma propagating cells and their vulnerabilities using single cell transcriptome sequencing technology

Pascal Zinn, MD

NREF Research Fellow

University of Texas, MD Anderson Cancer Center

Project Title: Targeting Radiogenomics-derived core Periostin Correlated Gene Networks in Glioblastoma

MEDICAL STUDENT SUMMER RESEARCH FELLOWSHIP PROGRAM

ENCOURAGING MEDICAL STUDENTS TO EXPLORE NEUROSURGERY

In the hope of fueling interest in neurosurgery for top medical students, the NREF has offered up to 20 Medical Student Summer Research Fellowships for the past nine years to first and second year medical students.

Hoping to encourage the brightest and most dedicated students to select neurosurgery, the fellowship is open to medical students in the U.S. and Canada who have completed one or two years of medical school and wish to spend a summer working in a neurosurgical laboratory, mentored by an AANS-member neurosurgical investigator sponsor.

With generous support from royalties provided by Aaron Cohen-Gadol, MD, FAANS, a total of 20 awards were provided this summer, each totaling \$2,500. "These students are the key to the future of neurosurgery, and I look forward to many years of working with the NREF to support their mission to enhance and confirm the critical role that neurosurgeons play in improving lives," said Dr. Cohen-Gadol.

Neurosurgeons interested in providing funding for any of the NREF grants and fellowships through royalties, planned gifts, stock transfers, donor-advised funds or other ways, can do so through the [NREF website](#) or by contacting the NREF at 847.378.0500.



2016 AARON COHEN-GADOL MEDICAL STUDENT SUMMER RESEARCH FELLOWSHIP AWARDEES

Patrick M. Flanigan
University of California San Francisco

Anadjeet Singh Khahera
New York University

Samuel Tomlinson
Children's Hospital of Philadelphia

Daniel Oyon
Northwestern University Feinberg School of Medicine

Rachel Kalani Greene
Washington University School of Medicine

Weining Yang
Toronto Western Hospital

Natalie Elizabeth Griffin
Washington University School of Medicine

Christopher Marnell
Weill Cornell Medical College-New York Presbyterian Hospital

Alessandra Hirsch
Columbia University Medical Center

Luke Alan Mugge
The Ohio State University

2016 MEDICAL STUDENT SUMMER RESEARCH FELLOWSHIP AWARDEES

Claire Collison
Albany Medical Center

Vaidehi Mahadev
Cleveland Clinic Foundation

Joseph Scott Hudson
University of Iowa

Ankush Chandra
University of California San Francisco

Prateek Agarwal
University of Pennsylvania

David J. Cote
Brigham and Women's Hospital

Krish Suresh
Northwestern University

Michael Mathison
Washington University School of Medicine

William Roberson Johnston
Washington University St. Louis Mo.

Erin Elizabeth Good
GW School of Medicine and Health Scienc



BEST 2015 MSSRF ABSTRACT PRESENTED AT 2016 AANS ANNUAL SCIENTIFIC MEETING

Brandon Lucke-Wold

MD Candidate, Class of 2017

West Virginia University School of Medicine

Project Title: Targeting Tauopathy by Limiting Neurotrauma Related Axonal Damage

NEW TIMELINE FOR PRESTIGIOUS VAN WAGENEN FELLOWSHIP



Awarded annually since 1968, the William P. Van Wagenen Fellowship is offered for post-residency study in a foreign country for a period of 12 months. The Fellowship was established by the estate of Dr. Van Wagenen, who was one of the founders and also the first President of the Harvey Cushing Society, now the AANS.

In considering the contribution he might make to neurosurgery, Dr. Van Wagenen chose to provide support scientifically enriching foreign travel for a post-neurosurgical resident, prior to him or her beginning an academic career in neurological surgery. The Van Wagenen Fellowship was designed to provide freedom in scientific development without the restrictive limitations imposed by many research grants and fellowships.

To allow more flexibility and planning time for both residents and their institutions, the Van Wagenen Fellowship application deadlines have been changed. Applications for both the 2017-2018 academic year and the 2018-2019 academic year are being accepted at the

NREF website. Candidacy is open to all senior neurosurgical residents (PGY6 and PGY7) in approved neurosurgery residency programs and whose intent is to pursue an academic career in neurological surgery.

The William P. Van Wagenen Fellowship includes the following:

- \$120,000 stipend for living and travel expenses to a foreign country for a period of 12 months;
- \$6,000 family travel and living allowance if a spouse and/or children will accompany the Fellow;
- \$15,000 of research support to the university, hospital or laboratory sponsoring the Fellow; and
- \$5,000 for medical insurance, if needed.



An award such as the Van Wagenen Fellowship can have a tremendous impact on a neurosurgeon's career. The 2016 recipient, Lisa Feldman, MD, PhD, a sixth-year neurosurgery resident at Virginia Commonwealth University Medical Center, traveled to New Zealand and worked alongside physicians, scientists and researchers from the University of Auckland and Malaghan Institute of Medical Research in Wellington.

During her Van Wagenen year in New Zealand, Dr. Feldman studied perfluorocarbons as a new oxygen delivery therapy in hope of reversing the death of healthy cells that result from radiation treatment of brain cancers. In an interview with *VCU News*, Dr. Feldman said, "Our preliminary findings are very exciting. We are discovering that nanoparticles do improve tumor sensitivity to radiation." The local government in New Zealand and the University of Otago are supporting ongoing research, and Dr. Feldman continues to collaborate with her colleagues there in an effort to replicate their findings. The next step would be clinical trials.

A donation to the Van Wagenen fund through the NREF website will help promising residents pursue this amazing professional opportunity, and ultimately, your support will have a major impact on neurosurgical patients, educators, researchers and clinicians.

PARTNERSHIPS

NEW PARTNERSHIP WITH B*CURED FUNDS BRAIN CANCER RESEARCH

The NREF Board of Directors announced a partnership this year with B*CURED, a non-profit organization based in Greenwich, Conn. B*CURED was founded in 2008 by Melissa Salamé and Debbie Needle after each lost a parent to brain cancer. The organization's primary goal is to help find a cure for brain cancer through research grants.

To date, B*CURED has awarded 14 grants to investigators searching for a cure for brain cancer at nationally-ranked universities and hospitals and has raised over \$1,500,000 for brain cancer research.

"The missions of B*CURED and the NREF are aligned with respect to funding brain cancer research, and the NREF is uniquely positioned to enhance B*CURED's research funding efforts by expanding its access to high-quality research proposals," commented Jon H. Robertson, MD, FAANS, NREF chair. The NREF receives, on average, 70-80 requests for research grants annually related to brain tumors and brain cancer.

The organizations jointly offered a B*CURED-NREF Research Grant of \$50,000, which was funded by B*CURED. The inaugural recipient of the research grant was Jamie Purzner, MD, who will be conducting research on medulloblastoma (MB), the most common malignant pediatric brain tumor. Dr. Purzner is a resident in the University of Toronto training program for neurosurgery and pursuing a PhD in developmental biology at Stanford University.



CAMPAIGN FUNDS COLLABORATION BETWEEN NPA & THE INSTITUTE FOR HEALTHCARE IMPROVEMENT (IHI)

This year, the NREF launched a campaign to provide ongoing support for the NPA joint study with the Institute for Healthcare Improvement (IHI). The one-year cooperative project will develop, test and implement an approach to improving outcomes for spine surgery patients. “The end product will be a ‘tool kit’ for participating surgeons and hospitals around the nation to improve health outcomes following elective spine surgery,” said Anthony L. Asher, MD, FAANS, director of the Quality Outcomes Database (QOD).

The NREF facilitates research funding opportunities as a means to make advances in the diagnosis and treatment of neurological conditions such as brain tumors, strokes and spinal disorders. “We are delighted to support this NPA initiative with IHI. The results of this research will ultimately give neurosurgeons at hospitals around the country innovative, state-of-the-art techniques to manage spine care outcomes,” added Dr. Robertson. “These additional resources will enhance our ability to help thousands of patients with debilitating neurosurgical conditions well into the future.”

“QOD is distinguished by its emphasis on patient-reported outcomes measures. We have demonstrated that we can collect extensive, audited data. Now we need to prove that we can use this data to improve the quality of neurosurgical care. I believe that the NPA-IHI project will do this,” commented Robert E. Harbaugh, MD, FAANS, NPA chair. “NPA is very grateful to the NREF for its continued support of this ground-breaking initiative.”

Support for this joint study or other outcome registries can be provided by visiting the NREF website and selecting QOD or Outcome Fund options for the subspecialty area of your choice. Your contribution will provide funding for data collection, analysis and reporting on clinical data from neurosurgical practices around the country.

CORPORATE

PINNACLE PARTNERS: COMMITTED TO SUPPORTING NEUROSURGERY

The generous support of our corporate partners through the Pinnacle Partners in Neurosurgery program has provided funding for research, education and training in neurosurgery across all subspecialties. Residents have learned from world-renowned neurosurgeons about a variety of topics in training made possible only because of corporate supporters who have – decidedly – advanced the specialty of neurosurgery as a whole.

The NREF gratefully acknowledges the continued support from the following companies for their multi-year contributions as Pinnacle Partners in Neurosurgery:

- Brainlab, Inc.
- Carl Zeiss Meditec, Inc.
- DePuy Synthes Companies of Johnson & Johnson
- Elekta
- Globus Medical, Inc.
- Integra Life
- Leica Microsystems
- Medtronic, Inc.
- Varian Medical Systems, Inc.

NREF CORPORATE LEADERSHIP COUNCIL: AN ANNUAL FORUM TO STRENGTHEN TIES

The mission of the Corporate Leadership Council (CLC) is to provide a forum for discussion and collaboration between the NREF, NPA, the AANS and corporate supporters on issues related to neurosurgical education, research, advocacy and patient care. The CLC includes representatives from current corporate partners, joined by members of the NREF Board of Directors and NREF Development Committee.

The 2016 meeting of the CLC was held Saturday, Jan. 16, 2016, in Dallas. Led by Michael W. Groff, MD, FAANS, chair of the NREF Development Committee, the meeting focused on the success of current NPA registries and how corporate partners can work with the NREF and NPA on future projects. Participating companies included Brainlab, Nuvasive, Penumbra, Varian, DePuy Synthes, Integra, Medtronic, K2M and Intrinsic Therapeutics. An update on legislative issues and physician/industry relations was also presented by the Washington, D.C., Office.



HONOR YOUR NEUROSURGICAL MENTOR

Neurosurgeons have demonstrated tremendous generosity while paying tribute to the luminaries of the specialty who have helped build careers. Once donations to an Honor Your Mentor fund total \$50,000 or more, the accounts generate ongoing support for a designated educational or research purpose. Pictured is the Honor Your Mentor wall from the NREF exhibit booth at the 2016 AANS Annual Scientific Meeting where attendees had the opportunity to recognize those who have impacted their careers. Visit the [NREF website](#) to pledge a donation to your neurosurgical mentor.

Current Honor Your Mentor funds represent nearly \$1.5 million received of the nearly \$2.3 million in current pledges:

A. Leland Albright Fund

To support neurosurgery resident and fellow education in Africa

Roy Bakay Fund

To be utilized for research in stereotactic and functional neurosurgery

Ulrich Batzdorf Fund

To be utilized for basic science research in spinal cord injury

Dr. Warren C. Boop Jr. Family Fund

To support resident education and research within the Department of Neurosurgery at the University of Arkansas for Medical Sciences

Charles L. Branch Sr. Fund

To support clinical outcomes research for lumbar interbody fusion and cervical fusion using registry data

Edward S. Connolly Fund

To be utilized for clinical outcome studies, clinical or basic science research and fellowships in spine

Charles Drake Fund

To honor the memory of the late Charles Drake, professor and chair Emeritus at the University of Western Ontario

Stewart Dunsker Fund

To be utilized for clinical or basic science research and fellowships in spine

Regis W. Haid Jr. Fund

To be utilized for spinal clinical outcomes studies, fellowship research projects

John A. Jane Sr. Fund

To be utilized for resident education and research through the NREF

David Kline Fund

To support education and clinical or basic science research in peripheral nerve

Charles Kuntz IV Fund

To be utilized for spinal clinical outcomes studies and fellowship research projects

Sanford Larson Fund

Award for best spine research paper at the AANS Annual Scientific Meeting

UNIVERSITY OF MIAMI WINS ANNUAL NEUROSURGERY CHARITY SOFTBALL TOURNAMENT



Thirty-four teams of neurosurgeons from top medical institutions around the country competed on June 11, 2016, in New York City's Central Park as part of the 13th Annual Neurosurgery Charity Softball Tournament (www.NeuroCharitySoftball.org). The event was hosted by Columbia University and raised funds for the Andrew T. Parsa Honor Your Mentor fund for brain tumor research. In the past, the annual event has raised as much as \$75,000 for neurosurgical research. "The event was a success again this year, securing much-needed support for brain tumor research," according to tournament founder and co-director Ricardo Komotar, MD, FAANS, of the University of Miami. The University of Miami claimed their second championship in five years by beating Emory in the finals.



OUR DONORS: BUILDING A CULTURE OF PHILANTHROPY

CUSHING CIRCLE OF GIVING

The Cushing Circle is comprised of philanthropists who are passionate about helping patients through the specialty of neurosurgery by supporting neurosurgical research, education and outcome studies. Join this elite group of members committed to the mission of the NREF by contributing cumulative (lifetime) giving of \$25,000 or more by visiting the [NREF's Donate webpage](#) or contacting the NREF office.

The NREF is grateful to the following generous individuals and groups who comprise the NREF Cushing Circle of Giving as of June 30, 2016:

INDIVIDUALS

Platinum (\$100,000 and above)

Arvind Ahuja, MD, FAANS
Merwyn and Carol Bagan
Mrs. E. Laurie Bittner
Dr. and Mrs. John Guarnaschelli
Lester A. Mount, MD*
Dr. and Mrs. Albert L.* Rhoton Jr.

Gold (\$75,000-\$99,999)

Timir Banerjee, MD, FAANS
Dr. and Mrs. Regis W. Haid Jr.
Griffith R. Harsh IV, MD, FAANS, and
Ms. Margaret C. Whitman
Dr. and Mrs. Russel H. Patterson Jr.

Silver (\$50,000-\$74,999)

Charles L. Branch Jr., MD, FAANS
Hans C. Coester, MD, FAANS
Robert F. Heary, MD, FAANS
Ms. Virginia Van Sant Reeves*

Bronze (\$25,000-\$49,000)

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Robert F. Spetzler, MD, FAANS

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Seth M. Weingarten, MD, FAANS(L)
David Whelan
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Ahmet Yildizhan, MD, IFAANS
Gregory J. Zipfel, MD, FAANS
Mario Zuccarello, MD

**Denotes Deceased Donor*

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Hospital of the University of Pennsylvania-
Department of Neurosurgery
Louisiana Neurosurgical Society
Mayfield Clinic
Mayo Clinic-Department of
Neurologic Surgery
New England Neurosurgical Society
Pennsylvania Neurosurgical Society
Pennsylvania State University
Department of Neurosurgery
Semmes-Murphey Clinic/University
of Tennessee
Southern Neurosurgical Society
Tennessee State Neurological Society
Toronto Western Hospital
University of Utah Department of
Neurosurgery
UT Southwestern Department of
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Charles R. Watts, MD, PhD, FAANS
Charles E. Weaver Jr., MD, PhD, FAANS
Kristen Weber
Howard L. Weiner, MD, FAANS
Jason Samuel Weinstein, MD, FAANS
George Kojo Wepeba
G. Alexander West, MD, PhD, FAANS

Nicholas M. Wetjen, MD, FAANS
Benjamin T. White, MD, FAANS
Daniel Vernon White, MD, FAANS
Sandra Wieczorek
David A. Wiles, MD, FAANS
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Steven B. Wilkinson, MD, FAANS
Arthur W. Williams, MD, FAANS
Amber and Brian Willis
Crystl Dove Willison, MD, FAANS
Diana E. Wilson, MD, FAANS
Fremont P. Wirth Jr., MD, FAANS(L)
Thomas C. Witt, MD, FAANS
Wayne L. Wittenberg, MD, PhD, FAANS
Suzan Wollard

Daniel Won, MD, FAANS
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Masaaki Yamamoto, MD, IFAANS
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Karen Yoshikawa
Ronald LeRoy Young, MD, FAANS
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Julius D. Zant, MD, FAANS
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Sharon Zimmer
John L. Zinkel, MD, PhD, FAANS
Kevin M. Zitnay, MD, FAANS

#WhyIGive

The NREF is one of the most important initiatives in organized neurosurgery.

I have always considered supporting the NREF a priority because I know my donation will go towards supporting neurosurgery residents and fellows around the continent who are doing groundbreaking research in areas of need in our specialty. —James Rutka, MD, PhD, FAANS

MEMORIALS

The following contributions were made in memory of colleagues, family members and friends:

Albert Thomas Adams in memory of Kate Carney
Anonymous in memory of Kate Carney
Anthony Asimou in memory of Kate Carney
Dianne Bailey Alton in memory of Kate Georgia Carney
Christian Babini, Medtech Surgical, Inc.,
in memory of Professor Albert Rhoton
Baker & Hostetler LLP in memory of Kate Carney
Richard Bamberger in memory of Kate Carney
Lois Baru in memory of Kate Carney
Brian Bash in memory of Kate Carney
Alexis Beachdell in memory of Kate Carney
Jack and Char Blanton in memory of Kate Carney
Susan Blouch in memory of Kate Carney
James Earl Boggan, MD, FAANS in memory of Al Rhoton
Joanne M. Bonaminio in memory of Emilio Scalzitti
Nancy Bondy in memory of Kate Carney
Marsha Bookman in memory of Kate Carney
Sarah Bowers in memory of Kate Carney
John Brashear in memory of Ana Patterson
Paul and Alethea Brinkerhoff in memory of
Kate Georgia Carney

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Gary Bryenton in memory of Kate Carney
Carrie B. Cabelka in memory of Kate Carney
George J. Caranasos in memory of Albert L. Rhoton Jr., MD
Tom & Ann Carney in memory of Kate Carney
Bob and Julie Carney in memory of Kate Georgia Carney
Ann Carney Pomper in memory of Kate Carney
Carolina Spine & Neurosurgery Center, PA,
in memory of Albert L. Rhoton Jr., MD
William and Susan Chandler in memory of Kate Carney
Diane P. Chapman in memory of Kate Carney
Barbara Bombaci Clancy in memory of Joseph F. Lisitano Sr.
Nancy Janz Clark in memory of Kate Carney
Donna Sassi and James Clyburn in memory of
Joseph F. Lisitano Sr.
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Robert Cunningham in memory of Kate Carney
Heather Daina in memory of Kate Carney
Dr. & Mrs. T. Mark Davis in memory of Dr. Albert Rhoton

David and Kay Dawson in memory of Kate Georgia Carney
Elizabeth Dawson & Derek Kipps in memory of
Kate Georgia Carney
Margo Deba in memory of Kate Carney
Jeanine Delay in memory of Kate Carney
Ruth & Paul C. Dell in memory of Albert L. Rhoton Jr., MD
Lauren Deminico in memory of Kate Carney
The Dessoffy Family in memory of Kate Carney
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Jim and Sara Doan and Family in memory of Kate Carney
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Stewart B. Dunsker, MD, FAANS(L) in memory of
Albert L. Rhoton Jr., MD, FAANS
Lamar, Lisa, Jayla & Mason Elony in memory of Kate Carney
Janet Erml in memory of Kate Carney
Domenic and Susan Esposito in memory of Albert Rhoton, MD
Jon Fancher in memory of Kate Carney
Carolyn F. Farmer in memory of Kate Carney
Dr. and Mrs. Juan C. Fernandez-Miranda in memory of
Prof. Albert L. Rhoton Jr., MD
J. Angeline Fisher in memory of Kate Carney
The Fleming Family in memory of Albert Rhoton
Melanie Fredrickson in memory of Kate Carney
Mark T. Freeman in memory of Kate Carney
Patricia French, RN, in memory of Barry N. French, MD
Linda French in memory of Kate Carney
Steph & Ben Geletka in memory of Kate Carney
John Gherlein in memory of Kate Carney
Virginia Going in memory of Kate Carney
Matthew Goldman in memory of Kate Carney
Barry & Nancy Goldstein in memory of Kate Carney
Matthew & Miki Graban in memory of Kate Carney
Dr. Vicente & Meridell Gracias in memory of Dr. Albert Rhoton
The Hackett Family in memory of Kate Carney
Regis W. Haid Jr., MD, FAANS, in memory of
James E. Pruett, MD
Regis W. Haid Jr., MD, FAANS, in memory of JoAnn Craig
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M.T. Hatchell in memory of Kate Carney
Anne Henning in memory of Kate Carney
Michelle Hervey in memory of Kate Carney
Karen Hill in memory of Kate Carney
Carolyn Hodges in memory of Kate Carney
Suzanne Hoffner in memory of Kate Carney
Liza Holder in memory of Kate Carney
Joseph Hutchinson Jr. in memory of Kate Carney
Stacey Hutton in memory of Kate Carney
Denise Ilitch in memory of Kate Carney
The Jordan family in memory of Kate Carney
Joyce Kane in memory of Kate Carney
Paul and Elizabeth Karlsgodt in memory of Kate Carney
Kathleen Kasiborski in memory of Kate Carney
Amy Kellogg in memory of Kate Carney
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in memory of Kate Carney
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Marilyn K. Lipnik in memory of Kate Carney
Jim and Kim Lites in memory of Kate Carney
Patrick Long in memory of Kate Carney
Mary Lucchesi in memory of Kate Carney
Mary & Tom Lucchesi in memory of Kate Carney
Michelle Manzoian in memory of Kate Carney
Joseph Masington in memory of Kate Carney
Nicole Matwijiw in memory of Kate Georgia Carney
Mike McDonald in memory of Kate Carney
Ann Bridget McGillicuddy in memory of Kate Carney
Dan and Kathy McKenzie in memory of Kate Carney
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Kimberly Morelock in memory of Albert L Rhoton Jr., MD
Michael Mumford & Neil Vakharia in memory of Kate Carney
Bill Nygren Foundation in memory of Kate Carney
Matt and Tammy Oliver in memory of Kate Carney
Katie Orrico, JD, in memory of Albert L. Rhoton Jr., MD
Maria and Mark Owens in memory of Kate Carney
Holly Pangrace in memory of Kate Carney
John D. Parker in memory of Kate Carney
Trudy A. Pauken in memory of Kate Carney
Stephen Petras in memory of Kate Carney
Linda J. Polke in memory of Joseph F. Lisitano Sr.
JoAnn Post in memory of Kate Carney
Mitchell & Allison Prince in memory of Kate Carney
Edward G. Ptaszek Jr. in memory of Kate Carney
Kathleen Pullen in memory of Kate Carney
Sandra Quarrie in memory of Kate Carney
Donald O. Quest, MD, FAANS(L), in memory of
Albert L. Rhoton Jr., MD
Rocky River Girls Soccer in memory of Kate Carney
The Roper family in memory of Dr. Albert Rhoton Jr.
Sacramento Zoological Society in memory of Barry French, MD
Irv and Trudy Salmeen in memory of Kate Carney
The Schmole family in memory of Kate Georgia Carney
Nash Whitney Schott in memory of Dr. Albert Loren Rhoton Jr.

Paula F. Seger in memory of Kate Carney
 Hewitt Shaw Jr. in memory of Kate Carney
 Sindelar Family in memory of Kate Carney
 Jim and Megan Slater in memory of Kate Carney
 Brian Smith in memory of Kate Carney
 Judith Smith in memory of Kate Carney
 Randall W. Smith, MD, FAANS(L), in memory of
 Arthur A. Ward, MD
 Margaret Spaly in memory of Kate Carney
 David Stonehill in memory of Kate Carney
 Karen Swanson Haan in memory of Kate Carney
 Dolores Thornton in memory of Kate Carney
 Sam Toth in memory of Kate Carney
 Steven & Marcella Trowern in memory of Kate Georgia Carney
 U9 Girl's Soccer Team in memory of Kate Carney
 Sandra Wieczorek in memory of Joseph F. Lisitano Sr.

J.M. Wilkins in memory of Kate Carney
 The Willis Family, Portland, OR, in memory of Kate Carney
 Ahmet Yildizhan, MD, IFAANS, in memory of Fatma Yildizhan
 and Hasan Yildizhan
 Sharon Zimmer in memory of Kate Carney
 David Zodikoff in memory of Kate Carney
 American Association of Neurological Surgeons
 in memory of Edward Borst
 American Association of Neurological Surgeons
 in memory of James Broussard
 American Association of Neurological Surgeons
 in memory of JoAnn Craig
 American Association of Neurological Surgeons
 in memory of Mary M. Dufner
 American Association of Neurological Surgeons
 in memory of Teddy Madej



In the past year, the NREF has received donations totaling over \$20,000 in memory of Kate Georgia Carney (2006-2015), an eight-year old girl from Rocky River, Ohio, who died in September 2015 after suffering a large hemorrhage from an arteriovenous malformation (AVM).

Through donations from the public and matching gifts from our fellow neurosurgeons in the CV Section, plans are to award the “Kate Carney Cerebrovascular Research Fellowship Grant” focused on AVMs in Spring 2017. The NREF is grateful to the Carney family and their local community for their generosity in directing donations from a community-wide 5K race and other activities in her memory.

The earthquakes in Nepal in 2015 caused widespread devastation and more than 7,000 deaths. The NREF, in collaboration with the American Association of South Asian Neurosurgeons (AASAN) and the World Federation of Neurological Societies (WFNS), created a Nepal Relief fund that raised contributions from individuals and corporations for the relief effort and to facilitate the donation of equipment and supplies from companies. The joint effort was led by the AASAN, a U.S.-based organization committed to national and global neurosurgical efforts. Donations were enough to help 50 patients in Nepal, as reported by Sushi K. Shilpakar, MD.

TRIBUTES

The following contributions were made in honor of colleagues, family members and friends:

- Akash D. Agarwal, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Anonymous in honor of Kate Carney
- Dawit Aregawi in honor of Robert E. Harbaugh, MD
- James E. Boggan in honor of Charles B. Wilson
- Kevin M. Cockroft, MD, FAANS, in honor of Robert E. Harbaugh, MD
- James Connor in honor of Robert E. Harbaugh, MD
- Dr. & Mrs. T. Mark Davis in honor of The Rhoton Family
- Carlo M. De Luna, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Department of Neurologic Surgery, Mayo Clinic, in honor of Dr. Albert Rhoton
- Mark S. Dias, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Donald D Dietze, MD, in honor of Albert Rhoton, MD
- Facial Pain Association in honor of Albert Rhoton, MD
- Dr. and Mrs. Juan C. Fernandez-Miranda in honor of Prof. Albert L. Rhoton Jr., MD
- Thomas D. Fulbright in honor of Warren Boop, MD
- Michael Glantz, MD, in honor of Robert E. Harbaugh, MD
- Kimberly S. Harbaugh, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Carl Barnes Heilman, MD, in honor of Dr. Albert Rhoton
- Philip J. Hlavac, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Marci Hower in honor of Kate Carney
- Mark R. Iantosca, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Dr. Richard H. Jackson in honor of Dr. Albert Rhoton
- Marcus F. Keep, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Myron B. Kratzer in honor of Steven Kratzer
- Mark J. Kubala, MD, FAANS(L), in honor of Dr. James Greenwood
- Daniel B. Kueter, MD, FAANS, in honor of Jon H. Robertson, MD, FAANS
- Sang Y. Lee in honor of Robert E. Harbaugh, MD
- Achuthamangalam Madhankumar in honor of Robert E. Harbaugh, MD
- James McInerney, MD, FAANS, in honor of Robert E. Harbaugh, MD
- L. Madison Michael II, MD, in honor of Al Rhoton Jr.
- Michael Mumford & Neil Vakharia in honor of Michael Mumford
- Paul B. Nelson, MD, FAANS(L), in honor of Robert E. Harbaugh, MD
- Neuberger Berman in honor of I. Melbourne Greenberg, MD, FAANS(L)
- Maria and Mark Owens in honor of Kate Carney
- Haejoe Park, MD, in honor of Robert E. Harbaugh, MD
- Walter A. Patton in honor of Robert E. Harbaugh, MD
- George Timothy Reiter, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Elias B. Rizk, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Michael David Sather, MD, FAANS, in honor of Robert E. Harbaugh, MD
- Scott Douglas Simon, MD, FAANS, in honor of Robert E. Harbaugh, MD
- The Sindelar Family in honor of Kate Carney
- Matthew D. Smyth, MD, in honor of Charles B. Wilson
- Tetsuo Tatsumi, MD, in honor of Dr. Albert L. Rhoton Jr.
- Hiroki Toda in honor of Professor Charles Tator
- Kristen Weber in honor of Dr. Regis Haid
- Lisa and Joel Winer in honor of Gerald Edward Rodts Jr., MD, Chief of Neurosurgery and Director of Neurosurgery, Emory University School of Medicine
- Ahmet Yildizhan, MD, in honor of Fatma Yildizhan and Hasan Yildizhan
- Brad Evan Zacharia, MD, in honor of Robert E. Harbaugh, MD
- Joseph Christopher Zacko, MD, FAANS, in honor of Robert E. Harbaugh, MD

#WhyIGive

Several Chinese neurosurgeons were trained in Dr. Rhoton's lab, and his book is regarded as the 'bible' by nearly every young neurosurgeon in China. We have learned very much from his legendary work. We believed it was our responsibility to do something to honor the memory of this great mentor. It is our sincere hope that his lab will remain open and train more young neurosurgeons from all over the world.

—Tao Xu, MD, PhD, on behalf of over 100 Chinese neurosurgeons and "Neurosurgery News" in support of the Rhoton Fund.

CORPORATE AND INSTITUTIONAL GIVING 2015–2016

AANS/CNS Cerebrovascular Section
AANS/CNS Section on Disorders of the
Spine and Peripheral Nerve
AANS/CNS Section of Neurotrauma and Critical Care
AANS/CNS Section on Pain
AANS/CNS Section on Pediatric Neurological Surgery
AANS/CNS Section on Tumors
American Association of Neurological Surgeons
American Brain Tumor Association
Baker & Hostetler LLP
Bill Nygren Foundation
Brainlab
Brigham and Women's Hospital
Carolina Neurosurgery & Spine Associates
Codman Neuro, a Johnson & Johnson Company
Columbia University/Charity Softball Tournament
DePuy Orthopaedics, Inc.

DePuy Synthes, companies of Johnson & Johnson
Integra Foundation
International Business Machines
Louisiana Neurosurgical Society
Medtronic
National Neurotrauma Symposium
Neuberger Berman
Pennsylvania Neurosurgical Society
Princeton Brain & Spine Care, LLC
Semmes Murphey Clinic, Memphis, TN
ThinkFirst National Injury Prevention Foundation
Toronto Western Hospital
Toshiba Medical Systems
University of Toronto
UT Southwestern Department of Neurosurgery
Zimmer Biomet

NIRREF

FISCAL 2016 FINANCIAL SUMMARY

AANS, NREF AND NPA

Over the last decade, with the good stewardship of its governance, the AANS built a healthy reserve that serves to protect the organization in the event of financial adversity. Now that the AANS has reached, and even exceeded, its reserve goals, there has been a change in the policies that relate to how the organization budgets for investment income.

Fiscal year 2016 was the first year the AANS established a budget based on anticipated income from investments. This practice enables the AANS to use all of its available resources in the pursuit of benefits for the membership. Based on both history and projections for the future, the AANS anticipated an investment yield of \$600,000 in fiscal year 2016. As it turned out, those 12 months were not a strong investment period. The organization ended up losing nearly \$100,000 instead of realizing the anticipated \$600,000 gain and caused the association's final numbers to show a net loss of \$685,000. Based on historical investment data, it is anticipated that future investment performance will even this out.

Similar investment performance resulted in a loss for the NREF of \$200,000 in fiscal year 2016.

NPA showed a modest profit in this fiscal year.

This report reflects the financial statements of the AANS, NREF and NPA covering the period of July 1, 2015 to June 30, 2016.

While the year-end financials of the AANS, NREF and NPA are audited by outside auditors, this Annual Report is being prepared prior to a completed audit and contains unaudited final numbers. Any material differences between a published financial statement and the auditor's report will be communicated to AANS members in *AANS Neurosurgeon*. Copies of the most recent audit are available to members by writing to: AANS Accounting Department, 5550 Meadowbrook Drive, Rolling Meadows, IL 60008-3852.



AANS AND RELATED ORGANIZATIONS STATEMENT OF FINANCIAL POSITION* 06/30/2016

*This report reflects unaudited financials.

ASSETS 2015-2016	AANS	NREF	NPA	Consolidated
Cash and Investments.....	\$21,698,886	\$5,634,105	\$102,447	\$27,435,438
Other Current Assets	6,299,330	1,296,792	894,907	8,491,029
Property and Equipment, net.....	2,675,555	0	0	2,675,555
Other Assets	218,949	0	0	218,949
TOTAL ASSETS.....	\$30,892,720	\$6,930,897	\$997,354	\$38,820,971

LIABILITIES AND EQUITY

Liabilities

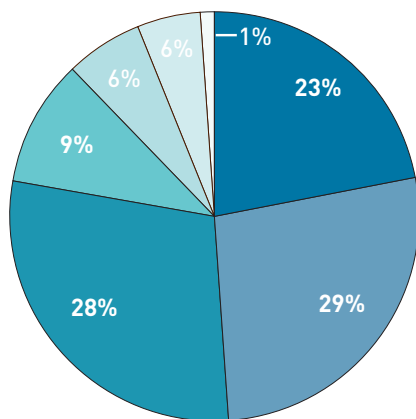
	AANS	NREF	NPA	Consolidated
Accounts Payable	4,435,080	\$1,125,302	\$1,166,663	\$9,884,488
Deferred Revenues.....	4,952,927	243,000	863,956	5,778,972
TOTAL LIABILITIES	\$9,388,007	\$1,368,302	\$2,030,619	\$15,663,460

Equity

Beginning Net Assets.....	\$22,205,869	\$4,281,839	\$(197,050)	\$27,070,333
Net Income	(701,156)	(137,981)	28,204	(19,783)
TOTAL EQUITY	\$21,504,713	\$4,143,858	\$(168,846)	\$27,050,550
TOTAL LIABILITIES AND EQUITY	\$30,892,720	\$5,512,160	\$1,861,773	\$42,714,010

AANS AND RELATED ORGANIZATIONS INCOME STATEMENT For the Year Ended 06/30/16

Revenues	AANS	NREF	NPA	Consolidated	% of total revenue
Dues/Contributions	\$ 2,613,416	0	\$ 1,806,555	\$4,419,971	23%
Annual Meeting	5,564,431	0	0	5,564,431	29%
Publications	5,383,422	0	0	5,383,422	28%
EPM.....	1,725,328	0	0	1,725,328	9%
Fundraising.....	0	1,055,522	0	1,055,522	6%
Resident & Clinical Courses	0	1,057,145	0	1,057,145	6%
Investments	(52,737)	(77,399)	0	(130,136)	-1%
Total Revenue	15,233,860	2,035,268	1,806,555	19,075,683	100%



CONSOLIDATED REVENUE SOURCES

- Dues/Contributions Income
- Annual Meeting Income
- Publications
- EPM
- Fundraising
- Resident and Clinical Courses
- Investments

AANS MISSION STATEMENT

The American Association of Neurological Surgeons (AANS) is the organization that speaks for all of neurosurgery. The AANS is dedicated to advancing the specialty of neurosurgery in order to promote the highest quality of patient care.

AANS VISION STATEMENT

- The American Association of Neurological Surgeons will ensure that neurosurgeons are recognized as the preeminent providers of quality care to patients with surgical disorders that affect the nervous system.
- The American Association of Neurological Surgeons will work to expand the scope of neurosurgical care as new technologies and treatments of neurological disorders become available.
- The American Association of Neurological Surgeons will be the organization speaking for neurosurgery through its communications and interactions with the public, media, government, medical communities and third-party payors.
- The American Association of Neurological Surgeons will be its members' principal resource for professional interaction, practice information and education.
- The American Association of Neurological Surgeons will promote and support appropriate clinical and basic science to expand the scope of neurosurgical practice.

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Christopher I. Shaffrey, MD, FAANS

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Blas E. Lopez Felix, MD, FAANS

Basant Kumar Misra, MD

Nathan R. Selden, MD, PhD, FAANS

Edgardo Spagnuolo, MD

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Peter B. Kuhn

Associate Executive Director

Joni L. Shulman, MPH

Associate Executive Director

Alice I. Kelsey

Parliamentarian/Legal Counsel

Michael A. Chabraja, Esq

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American
Association of
Neurological
Surgeons
