



2017
ANNUAL REPORT

NEUROSURGERY: A WORLD OF INNOVATION



NREF CHAIR'S MESSAGE



I am very pleased to report that the NREF has continued to grow, supported by the neurosurgical and corporate communities this year. When I accepted the role of NREF chair, I was hopeful about the potential of the giving culture of neurosurgery. Now, I am enthusiastically optimistic about what the future holds.

The NREF has more than doubled its assets, mainly due to the Sections' support of the Honor Your Mentor (HYM) funds created since 2014. Working hand-in-hand with the Section representatives on the NREF Development Committee, the Sections have the opportunity to build their HYM Funds for specific purposes.

When NREF established the HYM Funds in 2014 to recognize those who have advanced neurosurgery, six funds — each with a specific purpose — were created with pledges from 37 donors totaling \$177,195. By the close of 2015, there were 22 funds representing 257 donors and \$1,182,225 in pledges. As of June 30, 2017, there are 31 HYM funds; with an additional eight funds currently being discussed. Pledges to HYM funds now total \$3,670,931 from 695 donors.

This year, NREF recognized the first Andrew T. Parsa Research Fellowship sponsored by the NREF and the AANS/CNS Joint Section on Tumors. Funded by the proceeds of the Annual Charity Softball Tournament and Brainlab, this year's award is a \$50,000 research grant. Also, a \$50,000 tumor research grant to Jamie Purzner, MD, of Stanford University for his project titled "Exploring the Epigenetic Regulation of Neuronal Differentiation to Differentiate Medulloblastoma Cells" is being funded by the private foundation of B*CURED, in partnership with NREF. These newly-formed relationships are just the first of what we hope will be many other partnerships to fund neurosurgical research.

The NREF continues to provide funding to NPA by securing over \$380,000 in corporate funding from Medtronic and other industry leaders for the Effectiveness of Fusion for Grade I Spondylolisthesis Study, in addition to \$80,000 for a joint study with the IHI, to develop, test and implement an approach to improving outcomes for spine surgery patients.

NREF

The NREF Research Grant and Young Clinician Investigator awardees are listed in a related article, and we are grateful for the ongoing support of The Bagan Family Foundation, the AANS, Medtronic and the AANS/CNS Joint Sections on Pain, Tumors, Trauma, Pediatric and Cerebrovascular Neurosurgery, as well as B*CURED.

The loss of Albert L. Rhoton Jr., MD, FAANS(L), last year reminded many of us of the extraordinary legacy he left with *The Rhoton Collection* and of his desire to allow this material to reach as many people as possible. The NREF Rhoton Fund was created to support *The Rhoton Collection*, neuroanatomical fellowships for medical students and new anatomical research. Your support is needed to continue to release additional video lectures that have yet to be curated for the collection as we honor his legacy.

Whether you support your subspecialty with a contribution to research, education, outcomes or greatest need, *The Rhoton Collection*, the prestigious Van Wagenen Fellowship or other areas of neurosurgery, we will continue to serve as good stewards of your support and improve patient care by funding the highest levels of education and research.

As Regis W. Haid Jr., MD, FAANS, takes the helm of the NREF at the start of FY 2018, I will continue to serve as the vice chair, and I do, as always, thank you for your ongoing support.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon H. Robertson", with a stylized flourish at the end.

Jon H. Robertson, MD, FAANS
NREF Chair

NEW AWARD FUNDED BY NEUROSURGEON PHILANTHROPIST

In a presentation held during the 2017 AANS Annual Scientific Meeting in Los Angeles, AANS president Frederick A. Boop, MD, FAANS, reflected on the impact of philanthropy as the investment of financial resources in research that will ultimately improve patient health care. He challenged the membership to support the next generation of neurosurgeons with a pledge to the NREF, stating that it was “an honor to be able to give back.”

A member who has heeded that call to give back is Arvind Ahuja, MD, FAANS.

Dr. Ahuja’s efforts to provide his patients with the highest level of care possible is demonstrated in his unyielding commitment to excellence in both his clinical practice and surgical skills and his dedication to advancing the field of neuroscience beyond his individual practice.

As a Platinum-level member of the foundation’s [Cushing Circle of Giving](#), Dr. Ahuja shares its commitment to research into new treatment possibilities and the development of educational resources that train neurosurgeons throughout the country. The Cushing Circle of Giving acknowledges those who have made a lifetime giving pledge of \$25,000 or more to the NREF in any one of dozens of funds with general, specific and global purposes. Briefly stated, this elite group of philanthropists celebrate the potential for a shared future of improved neurosurgical care.

In recognition of his contributions, the NREF extends its sincere thanks to Dr. Ahuja for his \$125,000 contribution to fund the L. Nelson “Nick” Hopkins NREF Young Clinician Investigator Award. The award is jointly sponsored by Dr. Ahuja and the AANS/CNS Cerebrovascular Section.





NREF Vice Chair Regis W. Haid Jr., MD, FAANS; Arvind Ahuja, MD, FAANS; and NREF Chair Jon H. Robertson, MD, FAANS; at the NREF Donor Reception in Los Angeles this spring.

In addition to his support for the NREF, Dr. Ahuja's community involvement extends to the Kenosha Unified School District, Neighborhood House (Milwaukee), Gold in September (Delafield, Wisc.), Hunger Task Force, Donald Driver Foundation, Straight Up Boxing, Wisconsin Humane Society, Steve Nash Foundation and Midwest Athletes Against Childhood Cancer (MACC Fund), among other organizations.

The Board of Directors is immensely grateful to Dr. Ahuja. His generosity will help blaze a trail of advancements in our field and serve as an exemplar to his peers.

To join your fellow philanthropists who help light the way for young neurosurgeons and support the advancement of the specialty, contact the NREF for information on the variety of donation options available.

NREF

CUTTING-EDGE EDUCATIONAL COURSES, RESIDENTS TO PRACTICING NEUROSURGEONS

The NREF is dedicated to providing education to neurosurgeons at all stages of their careers to stimulate learning and enhance their educational opportunities.

In cooperation with the AANS, the NREF offers free [Resident Courses](#) to provide advanced resident educational training in topic areas not always covered within neurosurgical residency. Course participants are nominated by their institutions.

Thanks to the NREF, the AANS and valued corporate supporters, nearly 2,000 residents have attended a Resident Education Course, with thousands more viewing presentations online. Residents that have attended these courses have described them as [unparalleled learning](#) and networking opportunities.

The NREF also expanded its informational and educational offerings with a [complimentary webinar series](#) on fluorescence-guided surgery and plans are already underway for additional webinars on a variety of topics.

Course topics have included:

- Spinal Deformity;
- Peripheral Nerve;
- Endovascular;
- Open Vascular;
- Skull Base;
- Stereotactic Radiosurgery;
- Pediatric Resident Review;
- Exit Strategies;
- Science of Practice;
- Stereotactic and Functional; and
- New this fall: MIS and Emerging Technologies in Spine.

OTHER EDUCATION NEWS

The NREF sponsored a Neurocritical Care Symposium to fill practice and knowledge gaps practicing neurosurgeons may encounter post-training, as the state of neurocritical care is evolving. The symposium was held in September 2016 in conjunction with the Western Neurosurgical Society's Annual Meeting.

POST-RESIDENCY CLINICAL FELLOWSHIP PROGRAM EXPANDED THIS YEAR

For the 2016-17 academic year, the NREF awarded nine Post-residency Clinical Fellowships (PRCF), including the first pediatric and oncology fellowships awarded since the inception of the PRCF in 2010. Since then, the NREF has supported over 80 of these fellowships at more than 25 neurosurgery training programs in North America.

The NREF recognizes the following corporations for their support of the PRCF program: DePuy Synthes Spine, Companies of Johnson-Johnson; Arbor Pharmaceuticals, LLC; Medtronic; Zimmer Biomet; and Rosa.

“The NREF is grateful to our corporate sponsors who continue to help in its mission to ensure that tomorrow’s leaders in medicine receive cutting-edge training that expands knowledge and improves patient care,” stated Ennio A. Chiocca, MD, PhD, FAANS, NREF Education Advisory Committee chair.

The NREF encourages institutions to apply for funding for clinical neurosurgical fellowships in spine surgery, endovascular neurosurgery, general neurosurgery, neurocritical care, neurosurgical oncology, cerebrovascular-related fellowships, pediatric neurosurgery, peripheral nerve surgery and stereotactic/functional neurosurgery.

The following programs were awarded PRCF grants for the 2016-17 academic year:

- Ann & Robert H. Lurie Children’s Hospital of Chicago
- Barrow Neurological Institute of St. Joseph’s Hospital & Medical Center
- Cedars Sinai Medical Center
- Thomas Jefferson University
- University of Miami
- University of Michigan
- University of Virginia
- University of Wisconsin
- Washington University

OUR MISSION:

To Provide Research Grants and Young Clinician Investigator Awards

As the premier funder of neurosurgical studies, the NREF provides funding for [Research Fellowship Grants and Young Clinician Investigator Awards](#) for studies in basic, translational and patient-oriented clinical research for investigators in North America through two neurosurgical research grant programs. Since 1980, residents and young clinician investigators at 91 academic institutions have received funding from the NREF.

Open to residents only, the NREF Research Grant provides training for neurosurgeons who are preparing for academic careers as clinician investigators. Applicants must be physicians who have been accepted into or who are currently in approved residency training programs in neurological surgery in North America.

The NREF Young Clinician Investigator Award supports junior faculty who are pursuing careers as clinical investigators. Applicants must be neurosurgeons, no more than two years from the end of their clinical training, who are full-time faculty in North American teaching institutions.

“The NREF is grateful to the donors, sponsors and partner organizations who make it possible for us to continue funding groundbreaking neurosurgical research and providing extraordinary training opportunities for neurosurgeons,” stated Dr. Chiocca.

The members of the NREF Education Advisory Committee are responsible for the review of grant applications based upon established fellowship program criteria and the needs of the requesting hospital and/or academic institution and do so in an independent, unbiased manner. Individuals serving on the committee are neurosurgeon volunteers and do not receive compensation from the NREF or any other entity for their efforts.

Thank you to the following organizations that provided financial support to the NREF Research Fellowship Grants and Young Clinician Investigator Awards in FY 2017:

- American Academy of Neurological Surgery
- AANS/CNS Joint Cerebrovascular Section
- AANS/CNS Joint Section on Pain and Peripheral Nerves
- AANS/CNS Joint Section on Pediatric Neurological Surgery
- AANS/CNS Joint Section on Tumors
- Bagan Family Foundation
- B*CURED
- Medtronic

**THE 2016-2017 RESEARCH FELLOWSHIP GRANT &
YOUNG CLINICIAN INVESTIGATOR AWARD RECIPIENTS**

Christopher Alvarez-Breckenridge, MD, PhD, Massachusetts General Hospital

AANS/CNS Joint Section on Tumors Research Fellowship Grant

Project Title: “Genomic characterization of melanoma’s metastatic genetic drivers to the brain and predictors of response to immune checkpoint blockade”

Han-Chiao Isaac Chen, MD, University of Pennsylvania

Bagan Family Foundation Young Clinician Investigator Award

Project Title: “Restoring visual cortex function using self-aggregating cortical spheroid tissue or dissociated neurons”

Kimberly Hamilton, MD, University of Wisconsin-Madison

AANS/CNS Joint Section on Pediatric Neurological Surgery Research Fellowship Grant

Project Title: “The Folate and Methylation Pathway in Regeneration and Recovery of the Injured Peripheral Nervous System”

Mark Alexander Mahan, MD, University of Utah

NREF and American Academy of Neurological Surgery Young Clinician Investigator Award

Project Title: “Preclinical model of rapid-stretch nerve injuries”

Matthew Mian, MD, Massachusetts General Hospital

AANS/CNS Joint Section on Pain and Peripheral Nerves Research Fellowship Grant

Project Title: “Emotional Conflict Processing in Humans”

Jamie Purzner, Stanford University School of Medicine

*B*CURED-NREF Research Grant*

Project Title: “Exploring the Epigenetic Regulation of Neuronal Differentiation to Differentiate Medulloblastoma Cells”

Visish Srinivasan, MD, Baylor College of Medicine/M. D. Anderson Cancer Center

AANS/CNS Joint Cerebrovascular Section Research Fellowship Grant

Project Title: “Endovascular Delivery of Allogenic Human Mesenchymal Stem Cells Transfected with the Delta-24 Oncolytic Virus in a Canine Model of Glioblastoma”

Ananth Vellimana, Washington University School of Medicine

NREF/Medtronic Research Fellowship Grant

Project Title: “Activation of Endogenous Protective Mechanisms: A Potential Therapeutic Strategy to Combat SAH-induced Neurovascular Dysfunction”

Marcus Zachariah, MD, Massachusetts General Hospital

NREF and American Academy of Neurological Surgery Research Fellowship Grant

Project Title: “Circulating Tumor Cells and Brain Metastasis”

MEDICAL STUDENTS EXPERIENCE NEUROSURGERY IN SUMMER RESEARCH FELLOWSHIPS

Thanks to the support of Dr. Cohen-Gadol, who provided royalties from the sale of the COHEN™ Bipolar Forceps from Kirwan Surgical Products, the NREF was able to increase the number of [Medical Student Summer Research Fellowships](#) (MSSRF) awarded in 2017. Twenty-five medical students will receive an award in 2017.

“Dr. Cohen-Gadol’s commitment not only sets a terrific example for others to follow, but allows us to further harness the power of donor support and build on the upward momentum of the Foundation,” says NREF vice chair, Dr. Haid. Funding for these and other NREF grants and fellowships can be provided through royalties, planned gifts, donor-advised funds, stock transfers and other ways.

The MSSRF program offers fellowships in the amount of \$2,500 to medical students in the U.S. or Canada who have completed one or two years of medical school and wish to spend a summer working in a neurosurgical laboratory, mentored by a neurosurgical investigator sponsor who is a member of the AANS.

Annually, these fellowships go to the brightest and most dedicated students, whose research projects are aimed at the better understanding, treatment and prevention of neurological disorders and improved patient care.

An award from the NREF can be a springboard to future success.

“I received a 2015 NREF Medical Student Summer Research Fellowship. The research supported by the Fellowship has been published in the *JNS*, and I have had the opportunity to speak at neurosurgical meetings. I want to thank the NREF for their generous support that made this project possible. It has been a tremendous experience for me as I pursue an academic career. The Fellowship allowed me to work closely with physicians who’ve become instrumental mentors in my life and we are continuing to collaborate on new research initiatives.”—Eugene Vaios, Harvard Medical School

2017 Aaron Cohen-Gadol Medical Student Summer Research Fellowship Awardees

Dustin Roberts

University of California Los Angeles

Mounica Reddy Paturu

Washington University in St. Louis
School of Medicine

Jason K. Karimy

Yale University

Erin Nicole D'Agostino

Dartmouth Hitchcock Medical Center

Ali Jamal

University of Saskatchewan

2017 Medical Student Summer Research Fellowship Awardees

Akop Seksenyan

University of Illinois at Chicago

Vivek Sudhakar

University of California San Francisco

Iyan Younus

Weill Cornell Medical College

Nicholas Goel

University of Pennsylvania

Huy Tram N. Nguyen

University of Wisconsin-Madison School
of Medicine and Public Health

Yongsoo Peter Joo

University of Rochester

Ben (Jiahe) Gu

Presbyterian Medical Center of
Philadelphia and Veteran's Administration
Medical Center

Ali Karim Ahmed

The Johns Hopkins School of Medicine
and The Johns Hopkins Hospital

Felicia Sun

Stanford University School of Medicine

Connor Berlin

Memorial Sloan Kettering Cancer Center

Fabiha Rahman

Ottawa Hospital Research Institute

Elliot Neal

University of South Florida

Breydan Hawkins Wright

Washington University

Faranak Dayani Dardashti

UCSF School of Medicine

David J. McCarthy

University of Miami

Samuel Daly

University of Minnesota Medical School

Brian Christian Kaszuba

Albany Medical College

Raghav Gupta

Beth Israel Deaconess Medical Center
Harvard Medical School

John Ta-Hsiang Tsiang

Cleveland Clinic Foundation

Kenan Rajjoub

George Washington University
School of Medicine

Best 2016 MSSRF Abstract Presented at the 2017 AANS Annual Scientific Meeting

Joseph Scott Hudson

University of Iowa

Project Title: "Determination of Biological Longevity in a Novel Hemocompatible and Antithrombotic Coating for Neurovascular Stents and Flow Diverters"



PRESTIGIOUS VAN WAGENEN FELLOWSHIP CELEBRATES 50 YEARS

On Saturday, April 22, 2017, Van Wagenen fellows from around the country gathered at The Palm restaurant in Los Angeles, to celebrate the 50th anniversary of the [Van Wagenen Fellowship](#).

The Van Wagenen Fellows honored the memory of William and Abigail Van Wagenen (pictured) whose vision and generous support opened so many pathways to excellence in American academic neurosurgery. A highlight of the evening were remarks from the event's special guest, Paula D. Wilson, MD, MPH, and Dr. Van Wagenen's great niece — who spoke eloquently about the family's ongoing commitment to preserving the Van Wagenen legacy.

The evening was an opportunity for the fellows to express their thanks to the Fellowship stewards: Frank Smith, MD, for nurturing the Fellowship through its early years; Robert A. Ratcheson, MD, FAANS(L), for guiding it when the endowment was established; the recent efforts of the Van Wagenen family and Webster H. Pilcher, MD, PhD, FAANS, and the NREF to ensure its future.

The 1981 Van Wagenen Fellow, Stephen J. Haines, MD, FAANS, presented a brief history of the Fellowship. Dr. Pilcher, chair of the Department of Neurological Surgery at the University of Rochester and a strong supporter of the Fellowship, spoke on Dr. Van Wagenen's contributions to the specialty.

Each decade of the Van Wagenen Fellowship was represented with remembrances from several fellows, including Ira C. Denton Jr., MD, FAANS(L) (1971); Larry Van Carson, MD, MBA, FAANS (1982); Timothy C. Ryken, MD, FAANS (1995); Uzma Samadani, MD, PhD, FAANS (2006); and Andrew W. Grande, MD, FAANS (2010).



Photograph of Dr. Van Wagenen in the Spielmeyer laboratory in Munich. Dr. Van Wagenen is seated in the center. Images courtesy of the Van Wagenen family.

“This fellowship has had a profound impact on my professional career, the extent of which I seem to better appreciate with each passing year. The opportunity to study in the company of master surgeons in Germany not only provided technical skills that I use on a daily basis, but did so in the context of an enriching cultural experience for both my family and me. With the benefits of the experience being as much cultural and philosophical as they were scholarly and neurosurgical, I regard the Van Wagenen Fellowship as one of the defining and most precious moments in my professional career.” —Kamal Thapar, MD, FAANS, Recipient, 1998 William P. Van Wagenen Fellowship

A donation to the Van Wagenen Fellowship Fund 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. Visit www.nref.org to make a donation.



**CURRENT VAN WAGENEN FELLOWSHIP RECIPIENT:
S. KATHLEEN BANDT, MD**

The 2017 recipient of the [William P. Van Wagenen Fellowship](#) was S. Kathleen Bandt, MD, a fellow in Epilepsy & Functional Neurosurgery at Yale University, who began her fellowship in July 2016.

Dr. Bandt traveled to France, hosted by Aix-Marseille University, and under the mentorships of Jean Regis, MD, and Dr. Maxime Guy, she pursued her research topic of Functional and Structural

Connectivity in Focal Epilepsy as Defined by Advanced MR Techniques. Dr. Bandt’s goal was to better understand the physiologic perturbations in network connectivity in human disease by advancing the understanding of human cortical neurophysiology through the study of both direct electrocorticography and noninvasive advanced imaging techniques.

Upon being named a Van Wagenen Fellow, Dr. Bandt said, “I accept this year’s Van Wagenen Fellowship with humble gratitude. I am thrilled to have the opportunity to complete my research on epilepsy network connectivity in Marseille, France, and look forward to walking through the doors this opportunity opens for me during my career ahead.”

Awarded annually since 1968, the Van Wagenen Fellowship is offered for post-residency study in a foreign country for a period of 12 months. The William P. Van Wagenen Fellowship was established by the estate of Dr. Van Wagenen, who was one of the founders and the first president of the Harvey Cushing Society, now the AANS. The Van Wagenen Fellowship was designed to provide freedom in scientific development without the restrictive limitations usually imposed by many research grants and fellowships.

CORPORATE SUPPORTERS ARE ESSENTIAL TO THE SUCCESS OF THE NREF



The NREF gratefully acknowledges Brainlab, Codman, DePuy/Synthes, Globus Medical, Integra, Leica Microsystem, Medtronic, Synaptive Medical, Varian Medical Systems and ZEISS for their commitment to advance neurosurgery and important areas such as research, education and training as FY17 Pinnacle Partners in Neurosurgery.

Invited to attend the Corporate Leadership Council in January 2017, corporate representatives met with AANS, NPA and NREF leaders to engage in an open dialogue regarding recent projects and future plans. This year's meeting provided a vital forum for the sharing of ideas and discussion of topics of mutual interest, including new developments in the field of neurosurgery, improvements in diagnostics and treatments, changes in health-care delivery and consumer expectations, advocacy, health-care reform, compliance, transparency and evidence-based medicine.

The annual meeting, led by Michael W. Groff, MD, FAANS, chair of the NREF Development Committee, focused on educational opportunities, advocacy and data registries.

- Charles L. Branch Jr., MD, FAANS, NREF Development Committee co-chair, provided a brief history of neurosurgery and the ways in which medical device companies have been instrumental in furthering the profession since its inception.
- Frederick A. Boop, MD, FAANS, provided an overview of the AANS.
- Jon H. Robertson, MD, FAANS, NREF chair, thanked the corporate partners for their support without which the NREF mission could not be fulfilled.
- Robert E. Harbaugh, MD, FAANS, discussed the important role of NPA as the data management entity of the AANS.
- John A. Wilson, MD, FAANS, NREF treasurer and past chair of the Washington Committee, explained that the AANS is involved in legislative advocacy for fair reimbursement, regulatory relief and trauma care, in some instances by collaborating with several other neurosurgical organizations. Representing all of neurosurgery, it also manages a strong grassroots program to support individual neurosurgeon's political involvement.

For more information about the Pinnacle Partners Program or the Corporate Leadership Council, contact the NREF at info@nref.org.

HONOR YOUR MENTOR FUNDS GROW IN NUMBERS AND SIZE

HYM Funds were established by the NREF three years ago to celebrate the mentors of neurosurgery: those who have advanced the specialty by giving generously of their time and talents to support and nurture future neurosurgeons.

Today, there are 31 HYM funds with an additional eight funds being finalized. Pledges to HYM funds now total \$3,670,931 from 695 donors.

The NREF is pleased to recognize the leadership role taken by Sections in support of the HYM program:

- The [AANS/CNS Section on Disorders of the Spine and Peripheral Nerves](#) has pledged multi-year financial support of \$500,000 toward five NREF HYM Funds: Stewart Dunsker; Regis Haid Jr.; Charles Kuntz IV; Sanford Larson; and Volker K. H. Sonntag. This vote of confidence to invest in HYM funds demonstrates the section's commitment to their research and educational goals. In addition, a fundraiser was held at the Spine Summit to raise monies for a number of funds.
- Member dues invoices from [Women in Neurosurgery](#) (WINS) include a voluntary pledge to the Karin M. Muraszko HYM Fund, which will develop leaders in neurosurgery by providing mentoring and didactic education.
- The [AANS/CNS Section on Neurotrauma & Critical Care](#) member dues notices also included a voluntary pledge to the Anthony Marmarou HYM Fund for neurotrauma activities.

Awards from the HYM Funds made during this fiscal year include:

- Heather Pinckard-Dover, MD, of the University of Arkansas was selected as the first recipient of an award from the [Warren C. Boop Jr. HYM Fund](#). Dr. Pinckard-Dover made a presentation to the Southern Neurosurgical Society on her findings from a study of head and spinal injuries resulting from falls from tree stands while hunting.
- The first tumor research project funded by the [Andrew T. Parsa HYM Fund](#) was awarded this spring by the AANS/CNS Section on Tumors to Darryl Lau, MD, of the University of California, San Francisco.
- Funds from the [Charles Drake HYM Fund](#) will be used for the Cerebrovascular registry with oversight by the NPA.
- The [Regis W. Haid Jr. HYM Fund](#) is supporting the administration and launch of the QOD study for NPA: "Effectiveness of Fusion for Grade I Spondylolisthesis".
- The [Charles Kuntz IV HYM Fund](#) supported resident travel to the 2017 Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves.

HONOR YOUR MENTOR FUNDS

(AS OF JUNE 30, 2017):

A. Leland Albright Fund

To support neurosurgery resident and fellow education in Africa

Roy A.E. Bakay Fund

To fund research in stereotactic and functional neurosurgery

Ulrich Batzdorf Fund

To fund basic science research in spinal cord injury

Ed Benzel Fund

To support clinical outcomes studies to analyze posture and deformity in cervical spondylotic myelopathy patients

Warren C. Boop Jr. Fund

To support resident education and research at the University of Arkansas

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 support clinical outcome studies, clinical or basic science research and fellowships in spine

Charles G. Drake Fund

To support the cerebrovascular registry within the NPA. In memory of the late Charles Drake, Professor and Chair Emeritus at the University of Western Ontario

Stewart B. Dunsker Fund

To support clinical or basic science research and fellowships in spine

Regis W. Haid Jr. Fund

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

John A. Jane Sr. Fund

To support resident education and research through the NREF at the University of Virginia

David Kline Fund

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

Charles Kuntz IV Fund

To fund awards for residents and fellows to present research at the Spine Section's Annual Meeting

Sanford J. Larson Fund

To fund award for best spine research paper at the AANS Annual Scientific Meeting

Edward R. Laws Fund

To support resident education and research within the Department of Neurosurgery at the Brigham and Women's Hospital

Lyal G. Leibrock Fund

To contribute funds for medical students, residents and young neurosurgeons for socio-economic education

Anthony Marmarou Fund

To fund TBI registry research and/or young investigator research in ICP and brain edema, and to support the Marmarou Named Lectureship on ICP, cerebral edema, and/or TBI-related topics at the Neurotrauma Section session of the annual AANS meeting

Karin M. Muraszko Fund

To help develop leaders in neurosurgery by providing mentoring and didactic education

Kent C. New Fund

To fund research and the clinical treatment of spinal cord injury

Andrew T. Parsa Fund

To fund a fellowship or research grant for brain tumor research

Donald O. Quest Fund

To fund the Quest Research Awards

Albert L. Rhoton Jr. Fund

To support maintenance and development of The Rhoton Collection and funding for micro neuroanatomical research fellowships

Jon H. Robertson Fund

To support education and research within the University of Tennessee neurosurgery resident program

James T. Rutka Fund

To support the Tumor Section in their area of greatest need

Henry G. Schwartz Fund

To support staff and resident education and research within the department of Neurosurgery training program at the Barnes-Jewish Hospital/Washington University in St. Louis

Volker K. H. Sonntag Fund

To support clinical outcome studies, clinical or basic science research and fellowships in spine

Philip E. Stieg Fund

To fund a skull base research fellowship at the Weill Cornell Medical College Department of Neurological Surgery

Charles H. Tator Fund

To support basic science research in spinal cord injury

Martin H. Weiss Fund

To support research training in residents

Charles B. Wilson Fund

To fund brain tumor research

Military Heroes

To honor those that have served with funds utilized for military surgeons and surgeons-in-training

NIRREF

ANDREW T. PARSA HYM FUND PROVIDED ITS FIRST RESEARCH GRANT



The [Andrew T. Parsa HYM Fund](#) awarded its first grant for brain tumor research to Dr. Lau, of the University of California, San Francisco for his project, “The Role of c-Met/ β 1-integrin Complex Formation in the Establishment of Brain Metastases.” This grant was made possible through the ongoing support of Brainlab and the Columbia University Annual Neurosurgery Charity Softball Tournament.

“At Brainlab, we focus on boosting cancer survivorship by developing new and minimally invasive methods to treat cancers of the brain and body and increase patient comfort during treatment,” says Sean Clark, president of U.S. Operations for Brainlab. “We are delighted to support

the Andrew Parsa Fund in its mission to provide resources to researchers that will ultimately give neurosurgeons at hospitals around the country innovative, state-of-the-art techniques in treating and managing brain tumors.”

“The softball tournament brings together teams from across the U.S, Canada and the Caribbean, securing much-needed funding for brain tumor research,” according to tournament co-director, Jeffrey N. Bruce, MD, FAANS, of Columbia University.

Forty teams of neurosurgeons — the most ever in the history of this tournament — from top medical institutions competed on June 3 in New York City’s Central Park in the [14th Annual Neurosurgery Charity Softball Tournament](#) hosted by Columbia University.

This year’s expanded field of competing neurosurgical departments included: Albert Einstein, Barrow, Case Western Reserve, Columbia, Duke, Emory, Harvard, Johns Hopkins, Louisiana State University, Mayo Clinic, Mount Sinai, New York University, Thomas Jefferson, Penn State, George Washington, Ohio State, Alabama, University of Buffalo, Tennessee, University of Texas-Houston, Utah, Florida, Miami, Michigan, Penn, Pittsburgh, Puerto Rico, University of South Florida, Toronto, University of Virginia, Vanderbilt, Cornell/Memorial Sloan-Kettering, Kansas University, Wake Forest, Washington University, Carolina Neurosurgery and Spine Associates, Colorado, Indiana, Northwestern and Yale.

The final four teams were USF, Ohio State, Emory and Vanderbilt. Vanderbilt (pictured in the team photo) claimed their first championship by beating USF 20-13 in the finals.

THE CUSHING CIRCLE OF GIVING

The NREF **Cushing Circle of Giving** was established in 2008 to provide a cumulative, lifetime and planned giving society for individuals with the goal of increasing donations and creating a premier recognition society. The Cushing Circle honors Dr. Harvey Cushing and provides camaraderie among philanthropists who have made a financial commitment to the NREF with a contribution of at least \$25,000 or a deferred gift of \$50,000 or more.

Cushing Circle members represent over \$3,000,000 in cumulative donations.

July 2013: 35 Individual Members

July 2013: 0 Academic Programs & Institutions

June 2017: 120 Individual Members

June 2017: 27 Academic Programs & Institutions

The NREF is grateful for the generosity of the following philanthropic individuals, institutions and affiliated organizations who comprise the Cushing Circle of Giving as of June 30, 2017:

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, FACS
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)

Frederick G. Barker II, MD, FAANS
Charles L. Branch Jr., MD, FAANS
Hans C. Coester, MD, FAANS
Robert F. Heary, MD, FAANS
Praveen V. Mummaneni, MD, FAANS
Ann R. Stroink, MD, CPE, FAANS
Ms. Virginia Van Sant Reeves*
Seth M. Weingarten, MD, FAANS(L)

**Denotes deceased donor*

NREF

Bronze (\$25,000-\$49,999)

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The [Young Neurosurgeons Circle of Giving](#) was established in 2016 to introduce neurosurgical residents into the culture of philanthropy within their profession with the goal of increasing donations over their lifetime and eventual membership in the NREF's premier recognition society: the Cushing Circle of Giving.

Membership is open to residents who demonstrate a commitment to advancing neurosurgery with a cash contribution of \$500. Eligibility for inclusion in the Young Neurosurgeons Circle expires at the conclusion of the residency period. Gifts can be made as a one-time contribution, in regular monthly or annual installments or as part of a tiered plan during the course of residency.

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Nicholas M. Wetjen, MD, FAANS	Charles J. Winters, MD, FAANS	Kevin M. Zitnay, MD, FAANS

MEMORIALS

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

Ravi Agarwal, MD, in memory of Brig. A.D. Agarwal
 American Association of Neurological Surgeons in memory of Elizabeth McNulty Kuhn
 American Association of Neurological Surgeons in memory of Marion Prisby
 Howard & Linda Blethen in memory of William David Hynes
 Dan W. Branch, MD, in memory of Dr. Charles L. Branch Sr.
 Susan and Chris Cascino in memory of Hsiang-lai Wen, MD, FAANS
 John H. Chi, MD, FAANS, in memory of Dr. Hsiang Lai Wen
 Courtney C. Coke, MD, in memory of Dr. Hsiang Lai Wen MD
 Kathleen T. Craig in memory of Jo Ann Craig
 Sarajune Dagen in memory of Dr. Hsiang Lai Wen
 Glenn Fidge in memory of Connie Fidge
 Katherine Fung in memory of Dr. Hsiang-Lai Wen
 Regis W. Haid, Jr., MD, FAANS, in memory of Marion Prisby
 John D. Heiss, MD, in memory of John Heiss
 Brett Johnson and David McSweeney in memory of Dr. Hsiang Lai Wen
 Joyce Kane & Family in memory of Kate Carney on her 10th birthday
 Molly King in memory of Robert B. King
 Ian Krinock in memory of Anita Brown
 Mark J Krinock, MD, in memory of Anita Louise Brown
 Lynette Lee and Family in memory of Dr. Hsiang Lai Wen
 J. Richard Lister MD, MBA, FAANS, in memory of Dr. Albert L. Rhoton Jr.
 Eric W. Nottmeier, MD, in memory of Natalie New
 The Powers Family in memory of Marion Prisby
 Vikram C. Prabhu in memory of Dr. Lyal Leibrock
 Rocky River City School District in memory of Kate Carney
 Irfan Samad in memory of Irfan R
 Joni L. Shulman, MPH, in memory of Jen Bloomgarden
 Joni L. Shulman, MPH, in memory of Marion Prisby
 Randy Smith in memory of Justin Renaudin
 Richard A. Stea, MD, FAANS, in memory of Robert B. King, MD
 The Dana-Farber Center for Neuro-Oncology in memory of Dr. Hsiang-Lai Wen
 Earl White in memory of Dr. Maxim Koslow
 Les Wu and family in memory of Dr. Hsiang-Lai Wen

TRIBUTES

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

Philipp and Carmina Aldana in honor of Dr. Benigno S. Aldana Jr.
 Cargill H. Alleyne, Jr. in honor of Regis W. Haid Jr., MD
 Walter L. Bailey, MD, FAANS(L), in honor of George A. Ojemann, MD, FAANS(L)
 Susan and Chris Cascino in honor of Susan Cascino
 The Chahlavi family in honor of Dr. Kent New
 Edmund Frank, MD, in honor of Stewart Dunsker, MD, FAANS(L)
 Aruna Ganju, MD, FAANS, in honor of Karin M. Muraszko, MD, FAANS
 Ira M. Garonzik, MD, FAANS, in honor of Regis W. Haid Jr., MD, FAANS
 Charles F. Goetz in honor of Dr. John Jane and Dr. John Jane Jr.
 Peter Grossi, MD, FAANS, in honor of Dr. Kent New
 Robert L. Grubb, Jr., MD, FAANS(L), in honor of Dr. & Mrs. Robert L. Grubb, Jr.
 John D. Heiss, MD, in honor of Stewart Dunsker, MD
 Jason H. Huang, MD, FAANS, in honor of Dr. David Kline
 Brett Johnson and David McSweeney in honor of Patrick Y. Wen, MD
 Mark J. Kubala, MD, FAANS(L) in honor of Dr. James Greenwood

Daniel and Jennifer Kueter in honor of Dr. Warren Boop
Steven Lee in honor of Dennis Wen
Dr. Stuart Lee in honor of Dr. Volker Sonntag
S. Scott Lollis, MD, FAANS in honor of Dr. Ed Benzel
Margaret Lovell in honor of Dr. LaVerne R. Lovell
Georges Z. Markarian, MD, MBA, FAANS, FACS in honor of Ed Benzel, MD, FAANS
L. Madison Michael II, MD in honor of Dr. Al Rhoton, Jr.
Eric W. Nottmeier, MD in honor of Dr. Kent New
Dr. and Mrs. Eric Rhoton in honor of Father and Teacher
Ron Riesenburger, MD, FAANS and Tara Riesenburger in honor of Dr. Ed Benzel
James Thomas Robertson, MD, FAANS(L) in honor of Jon H. Robertson, MD, FAANS
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Martin A. Samuels and Susan F. Pioli in honor of Dr. Edward Laws
Daniel Scodary MD in honor of Stewart Dunsker, MD
Dr. and Mrs. R. Michael Scott in honor of Dr. Edward Laws
Clarence & Christy Watridge in honor of Donald F. Dohn
Robert E. Wharen, Jr., MD, FAANS in honor of Dr. Kent C. New
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CORPORATE AND INSTITUTIONAL GIVING 2016-2017

AANS/CNS Cerebrovascular Section
AANS/CNS Section of Neurotrauma and Critical Care
AANS/CNS Section on Disorders of the Spine and Peripheral Nerves
AANS/CNS Section on Pain
AANS/CNS Section on Pediatric Neurological Surgery
AANS/CNS Section on Tumors
Amazon.com Books
American Academy of Neurological Surgery
American Association of Neurological Surgeons
Arbor Pharmaceuticals, LLC
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Princeton Brain & Spine Care, LLC
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Rocky River City School District
Semmes Murphey Clinic, Memphis, TN
Singer Foundation
Southern Neurosurgical Society
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Toshiba Medical Systems
United Way of Long Island
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USC Department of Neurological Surgery
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FISCAL 2017 FINANCIAL SUMMARY

AANS, NREF AND NPA

Over the last decade, with the good stewardship of its governance, the AANS has built a healthy reserve that serves to protect the organization in the event of financial adversity. Strong results in FY17 added to those reserves. In recent years, the AANS has begun to use funds in excess of these reserves for special one-time activities, such as NPA projects, JNS website investment and partial funding of the Society of Neurological Surgery's Neurosurgery Portal.

The AANS experienced a solid financial year in FY17. Corporate support was robust, annual meeting attendance was strong and expenses remained in line with prior years. Despite the AANS' core program centers staying in line with budget, the real success story of last year was the very strong showing of investments. The AANS was able to return more than \$1 million, significantly exceeding its \$600,000 investment budget. The AANS finished the year with a net excess (addition to reserves) of more than \$600,000.

The NREF shared a similar story with the AANS: investment earnings exceeded budget by more than \$130,000. This resulted in a net excess of \$195,000.

The NPA is in a period of rapid expansion and the FY17 budget reflected this reality. Although, as anticipated and budgeted, the NPA operated at a deficit last year, there is cause for cautious optimism: several of its registries are maturing and increasing in value and the costs of the various NPA registries may begin to decline, both through economies of scale and the reality of a more competitive marketplace for the vendors providing necessary registry services.

This report reflects the financial statements of the AANS, NREF and NPA covering the period of July 1, 2016, to June 30, 2017.

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.



FINANCIAL STATEMENT

AANS AND RELATED ORGANIZATIONS STATEMENT OF FINANCIAL POSITION* 06/30/2017

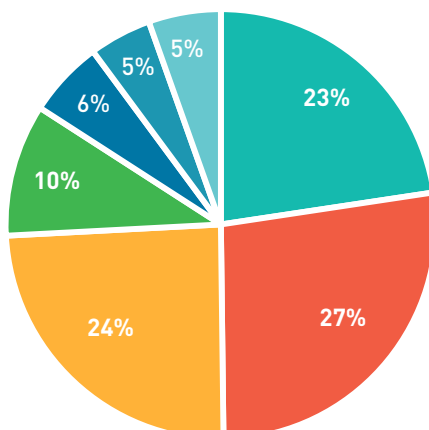
*This report reflects unaudited financials.

ASSETS 2016-2017	AANS	NREF	NPA	CONSOLIDATED
Cash and Investments	\$21,687,035	\$6,341,612	\$467,363	\$28,496,010
Other Current Assets	6,918,183	1,909,543	1,062,588	9,890,314
Property and Equipment, net	2,340,298	0	0	2,340,298
Other Assets	218,949	0	0	218,949
Total Assets	\$31,164,464	\$8,251,155	\$1,529,951	\$40,945,570

LIABILITIES AND EQUITY	AANS	NREF	NPA	CONSOLIDATED
Liabilities				
Payables	4,474,446	1,123,618	1,344,541	6,942,605
Deferred Revenue	4,673,088	227,499	658,766	5,559,353
Total Liabilities	\$9,147,534	\$1,351,117	\$2,003,307	\$12,501,958
Equity				
Beginning Net Assets	21,402,001	6,704,842	(67,664)	28,039,179
Net Income	614,930	195,195	(405,691)	404,434
Total Equity	\$22,016,931	\$6,900,037	\$(473,355)	\$28,443,613
Total Liabilities and Equity	\$31,164,464	\$8,251,155	\$1,529,951	\$40,945,570

AANS AND RELATED ORGANIZATIONS INCOME STATEMENT FOR THE YEAR ENDED 6/30/17

Revenues	AANS	NREF	NPA	Consolidated	Total %
Dues/Contributions	\$2,683,580	0	\$2,219,701	\$4,903,281	23%
Annual Meeting	5,892,460	0	0	5,892,460	27%
Publications	5,280,557	0	0	5,280,557	24%
EPM	2,156,512	0	0	2,156,512	10%
Fundraising	0	1,247,816	0	1,247,816	6%
Resident & Clinical Courses	0	1,016,901	0	1,016,901	5%
Investments	1,045,749	132,710	0	1,178,459	5%
Total Revenue	\$17,058,858	\$2,397,427	\$2,219,701	\$21,675,986	100%



CONSOLIDATED REVENUE SOURCES

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

AANS MISSION STATEMENT

The AANS promotes the highest quality of patient care and advances the specialty of neurological surgery.

AANS VALUES

- Integrity
- Leadership
- Excellence
- Professionalism

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