



THE BRAIN ANEURYSM FOUNDATION AT-A-GLANCE

OUR HISTORY

The Brain Aneurysm Foundation was established in Boston in 1994 as a public charity. The Foundation developed from a close relationship between patients and healthcare professionals who identified the need for comprehensive information and support for brain aneurysm patients, their families, and the medical community. The Brain Aneurysm Foundation is the nation's only nonprofit organization solely dedicated to providing critical awareness, education, support, and research funding to reduce the incidence of brain aneurysms.

MISSION

To provide support and educational materials to the medical community, the newly diagnosed, survivors, family members, friends and the general public regarding the facts, treatment options, and recovery process for brain aneurysms. With the help of the medical community, remain steadfast and earnest in the pursuit of brain aneurysm research that can directly benefit those affected.

THE FACTS

Brain aneurysms are a silent killer because most show no symptoms over time. It is estimated that up to 1 in 50 people in the U.S. will develop a brain aneurysm during their lifetime. Due to the lack of awareness and research funding, the situation today is grim. Each year about 25,000 people will suffer a ruptured brain aneurysm. Almost half of the victims will die and of those surviving, only a third will recover without disabilities. While the vast majority of brain aneurysms occur in adults over 40, they can also strike children and young adults, often resulting in death.

THE BRAIN ANEURYSM FOUNDATION NEEDS YOU!

There is hope. Research is being done today to save lives tomorrow. The Brain Aneurysm Foundation is funding essential research that can directly benefit those affected. The Brain Aneurysm Foundation recently awarded two grants to fund basic scientific research directed at early detection, improved treatment modalities, and technological advances that will ultimately improve outcomes for patients with brain aneurysms and will be increasing our research funding in the future.

We invite you to become part of our growing team with a personal or corporate contribution. We welcome resources and opportunities that support our mission and goals. Thanks for helping us to help others.

To learn more about
The Brain Aneurysm Foundation,
please go to www.bafound.org

The Brain Aneurysm Foundation, 269 Hanover Street, Bldg. 3, Hanover, MA 02339
781-826-5556 or 888-BRAIN02
office@bafound.org

THE *Fourth Annual* BRAIN ANEURYSM FOUNDATION *Research Grant Awards Symposium*



September 22, 2010



**A Special Thank You
to Dr. Robert Rosenwasser as Chairman
of The Brain Aneurysm Foundation's
Research Grant Committee**

*His support, professionalism, expertise, and dedication to the mission
of The Brain Aneurysm Foundation is greatly appreciated.*

Dr. Rosenwasser



Dr. Rosenwasser is Professor of Neurological Surgery and Radiology, and Chairman of the Department of Neurological Surgery at Thomas Jefferson University. Dr. Rosenwasser is an internationally renowned expert in open, endovascular and radiosurgical treatment of brain aneurysms and arteriovenous malformations. He has authored over 100 articles and book chapters; and has been an invited speaker/lecturer at national and international neurosurgical meetings on the topic of aneurysmal subarachnoid hemorrhage. He has had a key role in the development and writing of training, competency, and credentialing standards for endovascular neurosurgery, as well as recommendations and guidelines for the management of intracranial aneurysms, AVMs and ischemic stroke.

In addition, Dr. Rosenwasser has served as Chair of the Cerebrovascular Section of the AANS/CNS and as Chairperson of the Development Committee of the AANS, sits on the Medical Advisory Board of the Brain Aneurysm Foundation, is a member of the Executive Committee of the American Society of Therapeutic and Interventional Neuroradiology, and Delegate to the Neurovascular Coalition of the Congress of Neurological Surgeons.

Current clinical trials in which Dr. Rosenwasser, is involved include :

- A Registry to Evaluate Outcomes at One Year Post-Embolization with the Micrus Cerecyte MicroCoil System
- Licox Brain Tissue Oxygen Monitoring for Subarachnoid Hemorrhage
- Prospective Multi-Center Feasibility Trial to Evaluate the Safety and Performance of ALGEL-1 Used in Presurgical Embolization of Cerebral AVMs
- Carotid Revascularization Endarterectomy vs Stent Trial (CREST)
- Carotid Occlusion Surgical Study (COSS).

*Please visit our new website,
online support community, and Facebook page!*





The Brain Aneurysm Foundation
would like to thank those who
provided support for this evening:

THIS PROGRAM HAS BEEN PARTIALLY
FUNDED BY THE FOLLOWING SPONSORS:

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Department of Neurological Surgery



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FOR EXHIBITING AT OUR CONFERENCE:



SUPPORTER:



THE Fourth Annual
BRAIN ANEURYSM FOUNDATION
Research Grant Awards Symposium

Wednesday - September 22, 2010

6:00 – 10:00 P.M.
The Ritz-Carlton
Orlando, Florida

2010 AWARD RECIPIENTS

SHIRLEY DUDEK DEMMER CHAIR of RESEARCH:

Timothy Ellmore, Ph.D., *University of Texas*

“Imaging Neurocognitive Sequelae of Ruptured Intracranial Aneurysms”

CYNTHIA LYNN SHERWIN CHAIR of RESEARCH:

J. Javier Provencio, M.D., *Cleveland Clinic*

“Timing Neutrophil Inactivation to Prevent Vasospasm in Murine Model”

TIMOTHY P. SUSCO CHAIR of RESEARCH:

Justin Cetas, M.D., Ph.D., *Oregon Health and Science University*

“The Protective Effect of P450 Eicosanoids in Subarachnoid Hemorrhage”

DAWN BREJCHA CHAIR of RESEARCH:

Steven Chang, M.D., Ph.D., *Stanford University*

“Identification of Genetic Indicators to Predict Cerebral Vasospasm
Following Subarachnoid Hemorrhage”

ROSEANN DONATO CHAIR of RESEARCH:

David Frakes, Ph.D., *Barrow Neurological Institute*

“Fluid Dynamic Optimization of Endovascular Treatment of Cerebral Aneurysms”

NORTH SHORE UNIVERSITY HOSPITAL,

BRAIN ANEURYSM CENTER CHAIR of RESEARCH:

Mohammed Sabri, H.BSc, Ph.D. Candidate, *St. Michael's Hospital*

“eNOS Uncoupling as a Potential Target for Treatment of Delayed
Cerebral Ischemia After Subarachnoid Hemorrhage”

COMBINED FUNDING GRANT:

The Brain Aneurysm Foundation

Pepsi Refresh Challenge Grant Competition via Clint Dempsey

William Orthwein in memory of Anna Orthwein

Alessandro Veneziani, Ph.D., *Emory University*

“Computational and Statistical Analysis of Brain Aneurysm
Morphology and Hemodynamics”

6:00 – 7:00 P.M.

Cocktail Reception & Display of Posters

7:00 – 10:00 P.M.

WELCOME & OPENING REMARKS

Christine Buckley,

The Brain Aneurysm Foundation Executive Director

Stephen B. Lewis, M.D., F.R.A.C.S.

Associate Professor, Department of Neurological Surgery, University of Florida

RESEARCH PRESENTATION

Rafael Tamargo, M.D.

Director of Cerebrovascular Neurosurgery, Johns Hopkins Hospital

Christopher Ogilvy, M.D.

*Director, Endovascular and Operative Neurovascular Surgery,
Massachusetts General Hospital*

UPDATE FROM LAST YEAR'S RECIPIENTS

Dr. Brian Hoh, M.D.

McKnight Brain Institute

Dr. Gregory Zipfel, M.D.

Washington University

Dr. Byung Hee Han, Ph.D.

Washington University

Dr. Michael Stiefel, M.D.

University of Pennsylvania

Dr. Tom Schweizer, M.D.

St. Michael's Hospital

Dr. G. Edward Vates, M.D.

University of Rochester, School of Medicine

PRESENTATION OF AWARDS

Robert Rosenwasser, M.D., F.A.C.S., F.A.H.A.

*Professor and Chairman of Neurological Surgery, Professor of Radiology Neurovascular
Surgery, Interventional Neuroradiology, Thomas Jefferson University*

CLOSING REMARKS

Target Audience: Specialty Physicians, Physicians Assistants, Nurses, Survivors, Family, Caregivers



This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the University of Florida College of Medicine and The Brain Aneurysm Foundation. The University of Florida College of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

The University of Florida College of Medicine designates this educational activity for a maximum of 2.25 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

2010 RESEARCH PRESENTATION GUESTS

Rafael Tamargo, M.D., F.A.C.S. – Johns Hopkins Hospital (Continued)

training program in microsurgical neuroanatomy and microvascular techniques. On a clinical level, Dr. Tamargo is nationally and internationally recognized as one of the leading cerebrovascular and skull base neurosurgeons. His reputation is that of an innovative and technically gifted neurosurgeon with outstanding results. His devotion to patients and his meticulous care are widely recognized. Dr. Tamargo has been selected to the Best Doctors in America by Best Doctors, Inc. To date, Dr. Tamargo has published 114 peer-reviewed scientific articles, 159 abstracts, 27 book chapters, 37 academic reviews and commentaries, and one book on aneurysmal subarachnoid hemorrhage. He has given more than 100 invited talks. His early research in vasospasm was funded primarily by the prestigious Bugher Foundation Award from the American Heart Association. Dr. Tamargo also has an interest in the history of neurosurgery and has published several academic articles on this topic.



LEARNING OBJECTIVES:

1. Understand the natural history of unruptured brain aneurysms in order to provide better and more comprehensive management of patients.
2. Identify the role of blood flow biomechanics in unruptured brain aneurysms.
3. Understand the impact of blood flow on unruptured brain aneurysms and the effect on long term management of patients.

Thank you to our existing Chairs of Research for your continued support of brain aneurysm research.



CYNTHIA LYNN SHERWIN



TIMOTHY P. SUSCO



SHIRLEY DUDEK DEMMER

Please visit the BAF website at www.bafound.org to learn more about these stories and individuals.

2010 RESEARCH PRESENTATION GUESTS



Christopher Ogilvy, M.D. – Massachusetts General Hospital

Christopher S. Ogilvy, M.D. is the Director of Endovascular and Operative Neurovascular Surgery at the Massachusetts General Hospital and Robert G. and A. Jean Ojemann Professor of Neurosurgery at Harvard Medical School. Dr. Ogilvy is known nationally and internationally for his work in neurointerventional procedures and surgeries, and has been a moving force in the field of neurovascular disease for the last twenty years.

Dr. Ogilvy's research and academic endeavors are in the areas of neurovascular disease including intracranial aneurysms, arteriovenous malformations and atherosclerotic disease. In the laboratory, efforts have been focused on studying cerebral ischemia in the setting of neurovascular procedures, with a recent focus on the biology of intracranial aneurysms and the use of tissue engineering techniques to treat saccular intracranial aneurysms. He has pioneered several techniques in surgical procedures and is pursuing avenues of research in clinical treatment of patients with intracranial vascular problems using endovascular techniques.

Dr. Ogilvy is past President of the New England Neurosurgical Society and has served on a number of other national neurosurgical committees. He is the medical advisor to the Scientific Advisory Board of the Brain Aneurysm Center. He is an Associate Editor for the journal Neurosurgery. He has published extensively, with over 300 manuscripts in the area of neurovascular surgery.



Rafael Tamargo, M.D., F.A.C.S. – Johns Hopkins Hospital

Dr. Tamargo is the Walter E. Dandy Professor of Neurosurgery at the Johns Hopkins University School of Medicine in Baltimore, Maryland. He is also Professor of Otolaryngology and Head & Neck Surgery at Johns Hopkins. Born in Cuba, Dr. Tamargo grew up in Central America and the Caribbean, and graduated from high school as class valedictorian in Puerto Rico. He then attended Princeton University from 1976 to 1980, and graduated magna cum laude in

the Department of Biology with a minor concentration in Science in Human Affairs. He received his M.D. from Columbia University College of Physicians and Surgeons in 1984, completed his General Surgery internship at the Columbia-Presbyterian Medical Center in 1985, and completed his Neurosurgery residency at the Johns Hopkins Hospital in 1992. He joined the Johns Hopkins faculty in 1992 and was promoted to full professor in 2004. He is currently Director of the Division of Cerebrovascular Neurosurgery and a Vice-Chairman of the Department of Neurosurgery.

Early in his career, Dr. Tamargo focused his clinical and research efforts in cerebrovascular neurosurgery while also developing an extensive collaborative skull base practice with members of the Department of Otolaryngology and Head & Neck Surgery. His current clinical focus is in cerebrovascular and skull base neurosurgery. His research focus is in inflammatory injury mechanisms after aneurysmal subarachnoid hemorrhage, controlled-release polymer technology, and the epidemiology and treatment of aneurysms. He has always had a particular interest in aneurysms and has published extensively in this area. Earlier in his career, Dr. Tamargo was the co-developer of controlled-release chemotherapy polymers for the treatment of malignant brain tumors. In the field of skull base neurosurgery, Dr. Tamargo is recognized as an authority in the treatment of acoustic neuromas. Dr. Tamargo is widely recognized as an outstanding teacher and mentor, and has developed at Johns Hopkins a residency

(Continued)

The Brain Aneurysm Foundation would like to thank those that have set up Research Chairs in 2010 supporting our mission to fund research. We couldn't do it without you!



DAWN BREJCHA CHAIR OF RESEARCH

In February 2009, Dawn Brejcha lost her life at age 41, the result of a ruptured brain aneurysm. To honor her memory, Dawn's friends and family created The Dawn Brejcha Foundation, a nonprofit organization dedicated to raising awareness of brain aneurysms and funding for much needed research directed towards early detection, prevention and cure of this silent killer.

The Dawn Brejcha Memorial Softball Tournament in Escondido, CA was held in September 2009. As Dawn was an avid softball player, the charity softball tournament was the natural choice for a first fund-raising event for the foundation and featured men's and co-ed slow pitch divisions as well as a coed 3-pitch division.

At the recommendation of the Board of Director's and with full support of Dawn's family, The Dawn Brejcha Foundation partnered with the Brain Aneurysm Foundation to establish The Dawn Brejcha Chair of Research. This chair will provide an annual grant of \$10,000 to be awarded to a deserving project in the area of brain aneurysm research at The Brain Aneurysm Foundation Research Grant Symposium.



ROSEANN DONATO CHAIR OF RESEARCH

On May 13, 2009, Rosann M. Donato, wife of State Representative Paul J. Donato, succumbed to a brain aneurysm. On May 16, 2010, friends, family and supporters of Mrs. Donato came together to commemorate her life with the first annual Walk for the Cure to raise funds for brain aneurysm research for The Brain Aneurysm Foundation. Funds raised benefited the organization's efforts in research, education and raising awareness of brain aneurysm, which ultimately saves lives.

The family had already donated several thousand dollars to the Foundation in the matriarch's name. Following her death, Representative Donato asked that in lieu of flowers, donations be made to The Brain Aneurysm Foundation. Another \$2,000 was given to the organization following Representative Donato's annual fundraising breakfast, when the Friends of Paul Donato put aside \$5 from every ticket for brain aneurysm research.



NORTH SHORE UNIVERSITY HOSPITAL, BRAIN ANEURYSM CENTER CHAIR OF RESEARCH

In October 2009, 300 walkers and runners hit Jones Beach's boardwalk to raise \$45,000 in funds for research, education and awareness of brain aneurysms to support Long Island's first Brain Aneurysm Awareness Walk, organized by the Harvey Cushing Institutes of Neuroscience Brain Aneurysm Center at North Shore University Hospital (NSUH) in Manhasset and The Brain Aneurysm Foundation. Supporters included doctors, nurses and staff members of the Brain Aneurysm Center and the North Shore-LIJ Health System; KJOY, of the Long Island Radio Group, as well as brain aneurysm survivors, their families and friends. Participants at the event also paid tribute to Jessica Lynn Nolan, a senior at CW Post Long Island University, who died earlier this year from a ruptured brain aneurysm. Dr. Chalif and Avi Setton, MD, co-directors of the Brain Aneurysm Center, honored all the brain aneurysm survivors at the walk, most of whom were patients they had treated at NSUH, as well as family and loved ones who supported them throughout their recovery.

Please visit the BAF website at www.bafound.org to learn more about these stories and individuals.

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Professor Mario Zuccarello, M.D.
Univ. of Cincinnati Medical College, Cincinnati, OH

2010 AWARD RECIPIENTS (Continued)

joined the faculty at ASU where he currently serves as a jointly appointed Assistant Professor in the School of Biological and Health Systems Engineering and the School of Electrical, Computer, and Energy Engineering. He also serves as a Research Scientist at the Barrow Neurological Institute in Phoenix, AZ. Prof. Frakes is a member of the Georgia Institute of Technology Council of Outstanding Young Alumni and was the recipient of the 2009 ASU Centennial Professor of the Year Award and 2010 Mimics Innovation Award. His research on image processing and biomedical fluid dynamic problems is funded by the Arizona Biomedical Research Commission, Mayo Clinic Arizona, and Army Research Laboratory.

Dr. Mohammed Sabri of St. Michael's Hospital, Toronto, Ontario



“eNOS Uncoupling as a Potential Target for Treatment of Delayed Cerebral Ischemia After Subarachnoid Haemorrhage (SAH)” SAH comprises approximately 7% of all stroke cases, however, it is associated with a disproportionately high morbidity and mortality, as high as 50% of individuals die immediately while the remaining survivors suffer sequela of complications and cognitive deteriorations, thus impeding their quality of life and survivability. My research focuses on understanding the role of endothelial nitric oxide synthase (eNOS) in the pathogenesis of SAH, and

how the initial bleeding into the subarachnoid space may actually result in eNOS dysfunction and eventual brain injury. My recent research results demonstrated that eNOS is uncoupled in an experimental model of SAH, resulting in increased oxidative stress, microthromboembolism (micro-clots in small arteries) and neuronal injury – all of which could be key complications that result in the continued morbidity observed in SAH patients. The next steps in my research involve utilizing therapeutic approaches to re-couple eNOS and reverse the observed complications in the hopes of finding a novel therapeutic approach for SAH patients and to deepen our understanding of the pathogenesis of SAH.

Mr. Sabri studied the sciences from an early age, his desire fuelled by his mother's own work as a postdoctoral researcher in clinical physiology. After graduating top of his class in Kuwait, where he was born and raised, his passion for science eventually took him to Canada, where he pursued and earned an Honour's Bachelor of Science degree at the University of Toronto, specializing in Human Biology: Health & Disease, graduating with highest distinction. Never satisfied with just academic excellence, Mohammed made a name for himself as a leader among his peers through his involvement in a number of student organizations and through his engagement in research in his early undergraduate years. These exploits as well as his tireless devotion to his studies and his passion for research propelled him to enter the PhD Neuroscience program in the Institute of Medical Sciences at the University of Toronto, working and studying under Dr. R. Loch Macdonald, Division Head of Neurosurgery at St. Michael's Hospital. He has published a number of papers on SAH in prestigious specialty journals during his time in Dr. Macdonald's lab, highlights include a recent publication on eNOS uncoupling in the Journal Cerebral Blood Flow Metabolism. Additional research highlights include the creation of a novel mouse model of SAH which has recently been published in the Journal of Brain Research and has provided SAH researchers with an alternative, novel and unique way to replicate SAH in animals. Among the awards and grants he has received are the Ontario Graduate Scholarship, IMS entrance awards, the Gordon Cressy Student Leadership Award, and the Jon S. Dellandrea Award for excellence in academics and research and now the Brain Aneurysm foundation 2010 research grant award.

2010 AWARD RECIPIENTS *(Continued)*

at Emory University, Atlanta, GA, where he is currently collaborating with medical doctors, radiologists from the Emory School of Medicine and bioengineers from Georgia Tech. His interests are devoted to application of numerical mathematics and scientific computing to medicine and industrial applications. He has been awarded of the 2007 International Sacchi Landriani Prize for the Numerical Analysis from the Academy of Arts, Science and Literature in Lombardia (Italy) and by the 2004 Outstanding Paper Prize from the American Society of Industrial and Applied Mathematics(SIAM).



Dr. Steven Chang of Stanford University

“Identification of Genetic Indicators to Predict Cerebral Vasospasm Following Subarachnoid Hemorrhage” As Professor of Neurosurgery at Stanford University, Dr. Steven Chang has been instrumental in the cerebrovascular and neuro-oncology programs phenomenal success in achieving an international reputation for its innovation, outstanding clinical care, and rigorous academic standards. The Stanford cerebrovascular team consists of neurosurgeons, interventional radiologists, and neurologists working together to treat neurological disorders. Dr. Chang’s research attempts to define new indications and rigorously assess clinical outcomes for patients with arteriovenous malformations and intracerebral aneurysms, skull base tumors including acoustic neuromas and craniopharyngiomas, and brain metastases. Due to his extensive experience in treatment of vascular lesions with radiosurgery, Dr. Chang has been invited to organize and lecture at stereotactic radiosurgery symposia around the world. In addition to his expertise in radiosurgery treatment, Dr. Chang has an extensive clinical practice performing microsurgical resection of brain tumors such as gliomas, meningiomas, acoustic neuromas, and vascular lesions. He routinely demonstrates his surgical skills by obtaining outstanding clinical results in patients harboring the most challenging brain tumors.

Dr. Chang is also a prolific academic researcher publishing more than 200 manuscripts and book chapters, primarily related to the radiosurgical treatment of vascular malformations and brain tumors. He directs the Stanford Radiosurgery Fellowship Program that has trained many neurosurgeons who have become faculty members at leading academic medical institutions. As a testament to Dr. Chang’s scholarly and clinical work, in 2008 he became the youngest faculty member in Neurosurgery at Stanford to receive a Stanford University Endowed Chair, the highest honor bestowed on a professor.



Dr. David Frakes of The Barrow Neurological Institute, Phoenix, Arizona

“Fluid Dynamic Optimization of Endovascular Treatment of Cerebral Aneurysms” Coil embolization is the most popular endovascular treatment for cerebral aneurysms, but failure rates remain in the 20%-50% range depending on aneurysm type. Coil embolization, and endovascular treatments in general, address a fundamental fluid dynamic problem. One barrier to successful treatment is that fluid dynamic outcomes associated with treatment are poorly understood. Furthermore, interventional planning is customarily performed without identifying specific quantitative targets and fluid dynamic objectives. The goal of current research at the Arizona State University (ASU) Image Processing Applications Laboratory (IPALab) is to elucidate the fluid dynamics that result from coil embolization, and to use that knowledge to design patient-specific interventions that contribute to improved outcomes for patients with cerebral aneurysms.

David H. Frakes received the B.S. and M.S. degrees in electrical engineering, the M.S. degree in mechanical engineering, and the Ph.D. degree in bioengineering, all from the Georgia Institute of Technology. He also performed postdoctoral work at Georgia Tech, and in 2003 he founded 4-D Imaging, Inc., a small software company that specializes in image and video processing applications for the biomedical and military sectors. In April 2008, Prof. Frakes

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2010 AWARD RECIPIENTS OF THE BRAIN ANEURYSM FOUNDATION'S RESEARCH GRANT PROGRAM



Dr. Timothy Ellmore of The University of Texas Medical School
“Imaging Neurocognitive Sequelae of Ruptured Intracranial Aneurysms” The most frequently reported cognitive impairment after aneurysmal subarachnoid hemorrhage (aSAH) involves memory. Intact memory function is critical for full recovery after aSAH, and even mild deficits can impair one's quality of life. Yet a specific pattern of brain damage following aSAH has yet to be discovered that could explain these deficits. Dr. Ellmore plans to test the hypothesis that in many cases

aSAH causes a functional disconnection between frontal and temporal lobe brain areas that are critical for working memory, the ability to hold information online for flexible use later. He will compare functional MRI activity patterns between a group of aSAH patients and healthy controls as they perform standard verbal and spatial working memory tasks. He will also map brain structural and functional connectivity patterns to determine how large axon bundles may change following aSAH. Finally, he will relate activity and connectivity differences to memory performance and to the extent and distribution of bleeding following aneurysm rupture. By understanding brain changes after aSAH, targeted therapies to restore function and alternative behavioral strategies for encoding and retrieving information may be developed.

Dr. Ellmore was born and raised near Poughkeepsie, New York. He graduated from The George Washington University with a bachelor's degree in psychology, and earned his Ph.D. from The University of Arizona. He is now Assistant Professor in the Department of Neurosurgery at The University of Texas Medical School at Houston where he uses neuroimaging and electrophysiology to study brain structure and function and their relationship to cognition in patients with cerebrovascular, epilepsy, and neurodegenerative disorders.



Dr. J. Javier Provencio of The Cleveland Clinic, Ohio

“Timing Neurophil Inactivation to Prevent Vasospasm in Murine Model” Dr. Provencio is an intensive care doctor in the Neurological Intensive Care Unit at the Cleveland Clinic Neurological Institute. In addition, he is an Assistant Professor at the Lerner Cleveland Clinic College of Medicine in the Neurological Institute and Neurosciences. He is boarded in Neurology, Medical Intensive Care, and Neurocritical

Care. He has been at the Cleveland Clinic since 2003. He currently spends time caring for patients with critical illnesses and studying the effects of inflammation in acute brain injuries in the laboratory. Dr. Provencio received his medical degree in 1993 from the Pennsylvania State University College of Medicine in Hershey, Pennsylvania. He completed a residency in neurology and internal medicine and clinical fellowships in Medical critical care and neurological critical care at the University of Virginia in Charlottesville, Virginia. He also completed a post doctoral fellowship in Biology at the University of Virginia under Dr. Anthony Frankfurter.

As part of the Neuroinflammation Research Center at the Lerner Research Institute, Dr. Provencio's laboratory studies the inflammatory underpinnings of subarachnoid hemorrhage (SAH) and two of its complications: vasospasm and cardiac injury.

He the director of the Neurocritical Care fellowship and is the chairman of the Donation/Transplantation committee at the Cleveland Clinic. He is the Associate Director for Research for the Bakken HeartBrain Institute. In addition, Dr. Provencio is part of the national writing group for the new board certification exam in Neurocritical care and is the Chair of the Scientific Session for the 2010 Neurocritical Care Meeting. He is a fellow of the American College of Critical Care Medicine and the American Academy of Neurology. Dr. Provencio is married with two children. He lives in Cleveland Heights, Ohio.



Dr. Justin Cetas of The Oregon Health and Science University

“The Protective Effect of P450 Eicosanoids in Subarachnoid Hemorrhage” Delayed vasospasm is a common and devastating consequence of subarachnoid hemorrhage (SAH) that is poorly understood with few effective treatments. The aim of this study is to identify a novel biomarker for predicting a patient's risk for developing delayed vasospasm and subsequent neurological deficits, as well as a new potential therapeutic

target for the medical prevention of delayed vasospasm. Specifically, our preliminary data both in animal models and patients of SAH suggest that a group of potent vasodilator metabolites of arachidonic acid (called epoxyeicosatrienoic acids or simply EETs) are linked to the development of vasospasm and may predict its development after SAH. We propose to test the hypothesis that EETs levels after SAH correlate with the development of delayed vasospasm and that polymorphisms in the gene EPHX2 (which regulates the metabolism of EETs) correlate with an individual's EETs response. We anticipate that individuals whose EETs levels are elevated after SAH will not go on to develop vasospasm. Furthermore, we predict that those individuals who do not elevate their EETs levels after SAH will have a higher frequency of polymorphisms in the EPHX2 gene.

Dr. Cetas was raised in Tucson, Arizona. He attended St John's College in Santa Fe NM as an undergraduate and studied philosophy. Afterwards, he completed a joint MD/ Ph.D. program in Neuroscience at the University of Arizona. He completed a residency in neurological surgery at Oregon Health & Science University, followed by a fellowship in cerebrovascular and skull base neurosurgery also at OHSU. He is currently Assistant Professor of Neurological Surgery at OHSU and Staff Physician at the Veteran's Administration Hospital in Portland, Oregon. The major focus of his laboratory is to understand the effects of subarachnoid hemorrhage on the brainstem and central nervous system and their subsequent role in determining long-term outcomes.



Dr. Alessandro Veneziani of Emory University, Atlanta, Georgia

“Computational and Statistical Analysis of Cerebral Aneurysm Morphology” Computational methods have progressively been included in biomedical and bioengineering applications since the last 20 years. Extensive adoption of mathematical and computational models supports traditional in vivo and in vitro investigations in both basic and clinical research, providing accurate computation of important data that are in general difficult to measure. Following this approach, Alessandro Veneziani

has been the PI of a Project called Aneurisk (involving other co-workers of the present project, Tiziano Passerini and Marina Piccinelli) for the evaluation of the impact of the parent vessel of a cerebral aneurysm on the evolution of the disease. Moving from a data set of rotational angiographies, the cerebral vessels network has been reconstructed for several patients in a mathematical world where it is possible to carry out virtual but perfectly controlled experiments. Preliminary results show that some morphological computable features of the parent vessels coupled with hemodynamic analysis obtained by solving the equations describing the blood can predict - at a statistical level - the development of the pathology (rupture/unrupture). This project will work in the same direction, considering more patients and extending the analysis to different possible hemodynamic indexes in view of the assessment of a potential rupture risk index. The basic tools will be medical images, statistical analysis and advanced numerical simulations possibly involving parallel architectures. The reconstructed data set will be made available to the scientific community by means of a web portal, for involving different groups, comparing results obtained with different simulations and eventually validating the results.

Alessandro Veneziani received his Master in Electronic Engineering from the Technical University of Milan (Italy, 1994) and then his PhD in Applied Mathematics from the University of Milan (Italy, 1998). He has been assistant Professor at the University of Verona and then at the Technical University of Milan, where he has been promoted to the position of Associate Professor in 2002. In 2007 he joined the Department of Mathematics and Computer Science

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