The Board of Directors of the Brain Mapping Foundation invite you to become a member or sponsor of a CME credited multidisciplinary clinical and basic science research forum.



Breaking Boundaries of Science, Technology, Medicine, Art, and Healthcare Policy







7th Annual World Congress of IBMISPS On Brain, Spinal Cord Mapping and Image Guided Therapy



# May 24-27, 2010

Held at USUHS Uniformed Services University of the Health Sciences Bethesda, Maryland, USA













# Info:

IBMISPS Global Headquarters 8159 Santa Monica Blvd., Suite 200 West Hollywood, CA 90046 Tel: 310.500.6196 - Fax: 323.654.3511 contact@ibmisps.org ibmisps.org

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## Mission Statement and Educational Objectives

## **IBMISPS MISSION STATEMENT**

International Brain Mapping & Intraoperative Surgical Planning Society (IBMISPS) is a non-profit society organized for the purpose of encouraging basic and clinical scientists who are interested in areas of brain mapping and intra-operative surgical planning in order to improve the diagnosis, treatment and rehabilitation of patients afflicted with neurological disorders.

This society promotes the public welfare and improves patient care through the translation of new technologies into life saving diagnostic and therapeutic procedures. The society is committed to excellence in education, and scientific discovery. The society achieves its mission through multidisciplinary collaborations with government agencies, patient advocacy groups, educational institutions, private sector, industry, and philanthropic organizations.

## ANNUAL IBMISPS WORLD CONGRESS

The annual IBMISPS World Congress is a multi-disciplinary forum designed to facilitate cross-disciplinary dissemination of technological and medical advances and scientific discovery. Thus the attendees are mixture of neurosurgeons, radiologists, neurologists, psychiatrists, rehabilitation medicine, cardiologists, pulmonologists, bioethicists, policy makers, government officials, engineers, physicists, graphic designers, allied healthcare professionals, healthcare executives, students, post-docs., residents and fellows. IBMISPS annual meeting are world class scientific events designed to have a significant impact on cross-disciplinary flow of information and scientific advancements.

## **CONGRESS CHAIRS:**

Babak Kateb, Michael Roy, John Heiss, Elizabeth Bullitt, David Moore, Shouleh Nikzad

## EDUCATIONAL OBJECTIVES

Upon completion of the scientific meeting, participants should be able to:

- Identify new findings in brain and spinal cord mapping and image guided therapy most relevant to their own field such as molecular imaging, nanomedicine, neuro engineering and biophotonics as well as spine instrumentation.
- Describe the effect of newly developed methods in brain and spinal cord mapping and image guided therapy.
- Discuss and design the possible future research and developments in brain and spinal cord mapping and image guided therapy, and assess the possible impact of such research and development on their own clinical and scientific work.
- Describe and assess the latest technology in brain and spinal cord mapping and image guided therapy
- Explain ways to build a bridge amongst different physical and biological disciplines in respect to clinical brain and spinal cord mapping
- Discuss and describe governmental agencies roles in research and development in the field.



## **CHARTER OF IBMISPS**

The International Brain Mapping and Intraoperative Surgical Planning society (IBMISPS) was founded in 2004 to break boundaries in healthcare. The society promotes policies that support rapid, safe, and cost-effective translation of new technology into medicine.

The IBMISPS globally promotes interdisciplinary research to improve the diagnosis, treatment, and rehabilitation of patients with central nervous system diseases regardless of race, creed, color, national origin, gender, or age.

The IBMISPS catalyzes interactions between clinical, biological, physical and engineering sciences. The Society builds inter-disciplinary and translational consortia which break down traditional barriers that impede application of new technology to medical problems.

Translational research applies cutting edge basic science and advanced technologies to clinical neurosciences. The Society examines emerging disciplines such as nanotechnology, image-guided therapy, stem cell therapy, multi-modality imaging, biophotonics, and biomaterial and tissue engineering for their application to the diagnosis, treatment, and rehabilitation from neurological diseases. The Society seeks to apply these technologies to clinical problems such as brain tumors, stroke, epilepsy, neurodegenerative diseases (Parkinson, Alzheimer, multiple sclerosis and ALS), traumatic brain and spinal cord injuries, autism, post traumatic stress disorder and other psychiatric illnesses.

The Society achieves its goals through meetings, fellowships, publications, international collaborations, consortiums, and policy forums. The IBMISPS is a nonprofit society which has obtained support from many government agencies (USA, EU, middle east and Asia), foundations, and multi-national corporations. The Society maintains its headquarters in West Hollywood, California.



#### **Alexandra Golby**

Associate Surgeon at Brigham and Women's Hospital Department of Neurosurgery Director of Image-guided Neurosurgery Assistant Professor of Surgery Harvard Medical School, USA

#### Antonio A.F. De Salles

Professor of Neurosurgery Department of Neurosurgery Head of Stereotactic Surgery Section UCLA School of Medicine, USA

#### **Aneesh Singhal**

Associate Professor of Neurology, Harvard Medical School Assistant in Neurology, Massachusetts General Hospital Director, Neurology Clinical Performance Mgmt, Massachusetts General Hospital Director, Stroke and Neuro-ICU Observership Program, Massachusetts General Hospital Director, Neurology Consultations, Spaulding Rehabilitation Hospital USA

#### Aria A. Tzika

Director of NMR Surgical Laboratory at Massachusetts General Hospital and Shriners Burns Institute, Harvard Medical School, Boston, MA Department of Surgery, MGH, USA

#### **Babak Kateb**

Founding Chairman of the Board of Directors, IBMISPS Founding Chairman of the Board of Brain Mapping Foundation Scientific Director of Brain mapping Foundation and IBMISPS Editor-in-Chief NeuroMapping & Therapeutics Managing Editor IBMISPS-NeuroImage Special Issue Research Scientist, Department of Neurosurgery, Cedars Sinai Medical Centre, CA, USA

#### **Bernd Weber**

Head - NeuroCognition | Imaging Life&Brain Research Center & Department of Epileptology University Hospital Bonn Board of Directors Center for Economics and Neuroscience University of Bonn Research Affiliate German Institute of Economic Research (DIW), Berlin GERMANY

#### **David F. Moore**

Deputy Director for Research DVBIC, Interim Director DVBIC/DCoE - AFIP Laboratory of Traumatic Brain Injury TBI Scientific Advisor, DCoE, and BG Loree K. Sutton Director Defense Center of Excellence for Psychological Health and Traumatic Brain Injury Visiting Scientist MIT and the Institute of Soldier Nanotechnology, USA

### Elizabeth Bullitt

Professor of Neurosurgery Van Weatherspoon Jr. Distinguished Professor of Surgery University of North Carolina, Chapel Hill, USA Adjunct Professor Radiology, Computer Science Lineberger Comprehensive Cancer Center, USA

#### John Heiss

Head, Clinical Unit Surgical Neurology Branch, NINDS, NIH 10 Center Drive, Room 5D37, MSC-1414 Bethesda, MD 20892-1414, USA

#### Peter Gruen

Associate Professor of Neurosurgery LA County & University Southern California Medical Center, USC Keck School of Medicine, USA

#### Michael J. Roy

Colonel, Medical Corps, U.S. Army Director, Division of Military Internal Medicine Professor of Medicine Uniformed Services, University of the Health Sciences, USA

#### Michael S. Okun

President-Elect of IBMISPS 2010-2011 Adelaide Lackner Associate Professor of Neurology Co-Director Movement Disorders Center, McKnight Brain Institute National Medical Director, National Parkinson Foundation Medical Advisor, Tyler's Hope for a Dystonia Cure, USA

#### Michael Y. Chen

Assistant Professor of Neurosurgery Section Head, Malignant Brain Tumor Program City of Hope National Cancer Center, USA

#### Neal Prakash

Neal Prakash

President of IBMISPS 2009-2010 Assistant Clinical Professor, Department of Medicine at University of Hawaii-John A. Burns School of Medicine Director of Neurological Services of Hawaii Inc. Neurologist, Veterans Affairs Pacific Island Health Care Services Board of Directors, Hawaii Neurological Society Founding Director of Optical Imaging in Laboratory of Neuro Imaging, UCLA, USA

#### P. Sarat Chandra

Associate Professor of Neurosurgery All India institute of Medical Science, New Delhi, INDIA

#### Shoichiro Ishihara

Associate Professor, Department of Neurosurgery Chief of Division of Endovascular Neurosurgery Stroke Center at International Medical Center Saitama Medical University, Saitama, JAPAN

#### Stephen Erberich

Assistant Professor of Research Keck School of Medicine of USC University of Southern California, USA

#### Venkatesh Rao Aiyagari

Adviser and Head of Science and Engineering Research Council (SERC), Department of Science and Technology Government of India, New Delhi, INDIA

#### Warren Grundfest

Professor of Bioengineering & Electrical Engineering The Henry Samueli School of Engineering & Applied Science Professor of Surgery David Geffen School of Medicine, UCLA, USA

#### Scientific Organizing Committee Members:

Charles L. Rice, Mike Roy, Ken Curly, Raj Gupta, David Moore, Audrey Kusiak, John Heiss, Jay Pillai, Leigh Hochberg, Justin Sanchez, Mike Chen, Elizabeth Bullitt, Shouleh Nikzad, Michael Okun, Neal Prakash, Michael Leggieri, Aria Tzika, Roscoe O. Brady, Lucien Levy, Bernd Weber, Michael Jaffee, Tammy Crowder, David Cifu, John Ulmer and Babak Kateb.



## IBMISPS Founder's Address



Dear Participants,

It is my great pleasure and honor to welcome members of our society, scientists, physicians, and members of industry, academia, government officials, students and faculties of USUHS to the 7th annual World Congress of IBMISPS. This year's theme is: Breaking boundaries of science, technology, art, medicine and healthcare-policy.

We conduct this meeting at USUHS to build a broad-based multidisciplinary collaborative society focused on multidisciplinary neuroscience in order to

foster intervention in the fields of Brain, Spinal cord mapping and image guided therapy.

IBMISPS brings together a diverse scientific, medical, and engineering community to tackle complex problems and diseases in the field of neuroscience and medicine. Therefore, the society facilitates unprecedented cross-disciplinary interactions among all scientific fields. In just 6 years we have expanded the membership to Japan, India, France, China, Brazil, Spain, Republic of Georgia, Iran, Israel, Russia, South Korea, Taiwan, Hong Kong, Germany, Netherland, Lithuania, Saudi Arabia, Malaysia, Indonesia, Poland, Italy and the UK.

IBMISPS has been achieving its vision through establishing government relations and encouraging the interdisciplinary approach to scientific technological advancements and the formation of better healthcare and research policies in the US and abroad. In this regard we have built strong collaborative efforts with the US Congress and House of Representatives. The organization intend not only push the boundaries of science, technology and policy but also has established a program called "Global Physicians and Scientists (GPS)" in order to bring such advancements to poor and homeless.

IBMISPS is also a grass root organization with deep interest in cultivating future leaders from K12 to postgraduate training level. Therefore, we have encouraged formation of student chapters in the universities around the world to help train future generations of scientists, physicians, surgeons, and policy makers who take a multidisciplinary approach in solving difficult issues. These student chapters along with our annual meeting allows the exchange of ideas across the world, bridges cultural boundaries, and contributes to better global and regional healthcare, health policies, and scientific progress.

We are especially honoured to have the honourable General Charles Bolden, NASA Administrator, at this meeting as an Honorary Keynote Speaker. His vision and remarkable leadership qualities could help IBMISPS focus its efforts and facilitate translation of NASA technology into medical field, since NASA/JPL is been part of DNA of IBMISPS.

We thank scientific organizing committee members:

Charles L. Rice, Mike Roy, Ken Curly, Raj Gupta, David Moore, Audrey Kusiak, John Heiss, Jay Pillai, Leigh Hochberg, Justin Sanchez, Mike Chen, Elizabeth Bullitt, Shouleh Nikzad, Michael Okun, Neal Prakash, Michael Leggieri, Aria Tzika, Roscoe O. Brady, Lucien Levy, Bernd Weber, Michael Jaffee, Tammy Crowder, David Cifu, John Ulmer for their significant contribution to this program.



We congratulate IBMISPS award recipients of this year:

The Honourable President Barak H. Obama receiving the Pioneer and Healthcare Policy Crystal Award for his continues support of medical research and his tireless effort in revamping the US healthcare system;

The Honourable majority leader Senator Harry Reid of Nevada who is the recipient of Pioneer in Healthcare Policy Crystal Award for his significant, and indispensible role in healthcare reform as well as his advocacy for science, technology and medical research;

**The Honourable Tammy Duckworth** for receiving the Beacon of Courage and Dedication Crystal Award for her continuous support of wounded warriors and her strong advocacy for Traumatic Brain Injury and PTSD while increasing awareness about other neurological diseases relevant to our beloved soldiers and veterans.

**Drs. Jonathan Wolpaw, Andrew Schwartz, and John Donoghue** for receiving the Pioneer and Medicine Crystal award; they are truly pioneer in the field human computer brain machine interface. Their work has revolutionized the field of prosthetics and artificial limbs and has provided quality of life to many patients who are suffering from loss of limbs or have locked in syndrome.

We appreciate Colonel David Southerland for give a keynote speech about wounded warriors. He is truly a war hero whose experience could help us focusing on what matters the most.

We thank Mr. John Ngoi, Associate Director of Continuing Medical Education and his committee members at Kern Medical Centre for providing this necessary and well deserved accreditation. I also thank Mr. Eduardo Motto for his hard work on the local logistics of this program.

This program may not have been possible without the generous contributions from Brain Mapping Foundation, US Army-Research and Material (USA-MRMC), National Aeronautics and Space Administration (NASA), Department of Veteran Affairs (DOV), Combat Casualty Care, Blast Injury Program, Defence Veteran Brain Injury Center (DVBIC), BrainLab, Codman, NordicNeuroLab, Medtronic, Ad-Tech, NINDS, TATRC, ORlive, Clinical Prism and Darioush.

Sincerely and respectfully,

Babak Kateb Founding Chairman of the Board of Directors, IBMISPS Founding Chairman of the Board of Brain Mapping Foundation Scientific Director of Brain mapping Foundation and IBMISPS Editor-in-Chief NeuroMapping & Therapeutics Managing Editor IBMISPS-NeuroImage Special Issue Research Scientist, Department of Neurosurgery, Cedars Sinai Medical Centre, CA, USA





Dear Participants,

This past year we have witnessed extraordinary growth in our society from its core of brain mapping and intraoperative surgical planning. We now bring together top international and national scientists, clinicians, and policy makers, working from sectors generally insulated from each other: academic, private, military, and veterans affairs. Enormous changes in the healthcare system also parallel our societies growth and goal of bridging together

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health information, care, and technology across these sectors.

This year we continue to highlight the cutting edge research across these sectors in traumatic brain injury--a highly prevalent disease in civilians, soldiers, and veterans. Moreover, the future is here now. So we aim to also focus on the "space age" therapies for brain disorders and intraoperative planning, such as nanotechnology and robotics.

All new technologies bring new costs and benefits to a nation's health care. IBMISPS maintains an active role in health care policy making, and continues to recognize forward-thinking policy makers that advance our health care and science.

We look forward to sharing ideas and your participation in our warm and cordial setting. The annual meeting is your chance to meet colleagues and discuss stimulating data through highly scientific discussions. Conference attendees will also be given the chance to publish their work in our peer-reviewed journal. On behalf of the board of the IBMISPS, welcome to USUHS in Bethesda Maryland.

I look forward to the continued growth of IBMISPS through the vision and leadership of the President-elect, Dr. Okun!

Neal Prakash MD, PhD President of IBMISPS 2009-2010 Assistant Clinical Professor, Department of Medicine at University of Hawaii-John A. Burns School of Medicine Director of Neurological Services of Hawaii Inc. Neurologist, Veterans Affairs Pacific Island Health Care Services Board of Directors, Hawaii Neurological Society Founding Director of Optical Imaging in Laboratory of Neuro Imaging, UCLA, USA



## **IBMISPS** President-Elect's Message



Dear Participants,

It is a great honor to assume the presidency of the International Brain Mapping & Intraoperative Surgical Planning Society (IBMISPS) from Dr. Neal Prakash from Honolulu who has served the society in an exemplary fashion for the past 12 months. Our society is unique in that we have taken an interdisciplinary approach to solving problems that will drive the advances in science and technology, and will also help to shape

the future of healthcare policy. With 50 countries, 100 universities, as well as members of government, industry, and the general public represented, we believe we have created a true think-tank atmosphere. The society operates on a simple principle: use our interdisciplinary membership to identify important issues in science and in healthcare and then create a pathway to solve them. It is the only conference of its kind where a neurologist and a neurosurgeon may directly interface with neuroscientists (NASA, DARPA, NIH, etc.), nanotechnologists, radiologists, engineers, physicists, rehabilitation specialists, CEOs, allied healthcare professionals (military and civilian), as well as students of all specialties and of all disciplines. We take pride in pairing our students and trainees with leading scientists as we believe passionately that we are shaping a brighter future.

We are particularly proud this year to hold our meeting at The Uniformed Services University of the Health Sciences (USU) in Bethesda, Maryland. This location was chosen strategically so that in addition to our usual research agenda, we could focus specifically on the issues facing our United States military personnel who have placed themselves in harms way. We will use our interdisciplinary think-tank to identify their and their family's health related problems, and we will work toward providing research-based pathways that will ultimately lead to meaningful solutions.

Again, we welcome everyone to this years IBMISPS meeting, which we anticipate to be the largest and most successful to date.

### Michael S. Okun, M.D.

President-Elect IBMISPS, 2010-11 National Medical Director, National Parkinson Foundation Adelaide Lackner Associate Professor of Neurology, University of Florida



## Letter from The Honorable Vice President Joseph R. Biden, Jr.



#### OFFICE OF THE VICE PRESIDENT WASHINGTON

June 26, 2009

Babak Kareb 8159 Santa Monica Boulevard Suite 200 West Hollywood, CA 90046

Dear Babak.

Thank you for your taking the time to write me. This is an extraordinary moment in our nation's history and it will take the passion and ideas of citizens like you to help solve the issues before us. I appreciate your sharing your thoughts regarding our healthcare system with me.

With so many American families struggling just to stay afloat, today more than ever we need to fix a healthcare system that for too long has worked for drug and insurance companies instead of American families, children, and those who need care the most. Providing accessible and affordable healthcare is no new news; Americans feel it in their everyday lives and see it in their budgets.

President Obama and I will work to lower the price of coverage for those who prefer their current plans and fight to find new plans for those under insured or uninsured. We will work to make insurance companies accountable and ensure patient choice of doctor and care without government interference. Also, we must promote public health and renew effort to use preventive service to address health problems that may be avoidable.

Let me say this again, the Obama-Biden plan will build on the existing health care system, and use existing providers, doctors, and plans if they are working. We will lower costs by making sure safe generic drugs are not blocked from the market and overcharging is no longer tolerated. We will require pre-existing conditions be covered, so all Americans regardless of their health status or history can get comprehensive benefits. We will make sure large businesses provide their employees the coverage they are capable of. As well, we are proposing a small business health tax credit to make sure start up companies and small businesses are not penalized.

Again, thank you for writing.

Sincere Joseph R. Biden, Jr.



Letter from Charles L. Rice, M.D



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES 4301 JONES BRIDGE ROAD BETHESDA, MARYLAND 20814-4799 www.usuhs.mil



OFFICE OF THE PRESIDENT

Dear Colleagues,

The Uniformed Services University of the Health Sciences (USU) is proud to serve as host for the International Brain Mapping and Intraoperative Surgical Planning Society's (IBMISPS) 7th World Congress, May 23-27, 2010.

USU -- located on the grounds of the National Naval Medical Center and across the street from the National Institutes of Health in Bethesda, Maryland -- is the nation's federal school of medicine and graduate school of nursing. Our mission is to create an academic center of excellence where students, faculty and scientists are challenged to do their best. USU students learn the art and science of military medicine and public service, while joining our faculty and staff in cutting-edge research that leads to life-saving advances. Our research programs, devoted to traumatic brain injury, post-traumatic stress, trauma and critical care, preventive medicine and infectious diseases, are relevant both locally and globally.

USU and the IBMISPS have a shared interest in helping to ensure that improved diagnostic techniques and therapeutic modalities are studied, proven, and promptly made available to help our service members and citizens alike following traumatic injuries.

On behalf of the USU community, I would like to welcome IBMISPS members to our campus and encourage you to learn more about our unique university (<u>www.usuhs.mil</u>) during your visit. We hope you also will enjoy exploring the many opportunities the National Capital Area has to offer during your stay in our area.

Sincerely:

Charles L. Rice, M.D. President

Learning to Care for Those in Harm's Way



# IBMISPS Programs

## **CONSORTIA**

The purpose of the IBMISPS consortia is to impact global biomedical science and healthcare through international partnerships with governments and multi-national corporations. The following programs as part of the consortia:

#### **Scientific Meetings**

This includes national meetings, international meetings, and world congress. The world congress is the society's annual meeting that invites prominent scientists and clinicians from all over the globe. Scientific Meetings are broken down into three categories:

#### Scientific Exhibits & Posters

- Basic and Clinical Research in image guided therapy.
- Novel research and development in brain mapping and intra-operative surgical planning.
- Clinical trials
- Bio-Ethics

#### Special Focus Sessions

- TBI, PTSD
- Governmental Regulation
- Government Education
- Patient Advocacy
- Healthcare Policy
- Funding Opportunities

#### **Student Funding Opportunities**

- Graduate and Post Graduate
   Interdisciplinary Fellowships
- Student Travel awards
- University Student chapters mentorship programs
- Scholarships for undergraduate students studying neurological disorders

### **World Congresses**

The following are lists of previous Annual World Congresses organized in the last six years: Harvard Medical School, 2009; UCLA-CNSI, Los Angeles, California 2008; Washington Plaza Hotel, Washington DC, District of Columbia 2007; University of Avergine, Clermont Ferrand, France 2006; Westin Hotel, Pasadena, California 2005, USC-Keck School of Medicine, Los Angeles, California 2004.

#### IBMISPS Annual Meeting Organizers Encourage Cross-Disciplinary Subjects:

- Image guided systems
- Neurovascular coupling and Perfusion imaging
- ISP & Image guided surgery (OR of the future)
- BM and ISP in Stereotactic Radiosurgery (proton Therapy, Novalis, Tomo-therapy, Varian system, Xknife, gamma knife and cyberknife technologies will be compared and contrasted)
- Molecular and cellular imaging including: the use of nano-particles for stem cell and T-cell imaging
- Neuro Anatomy and histopathology in brain mapping
- Nanoscience, genomics, computational informatics genetics in brain mapping
- Rehabilitation Medicine (e.g. TBI, Stroke, Spinal Cord Injury)
- Novel imaging techniques for TBI and PTSD (eg. DTI, PET, SPECT)
- NeuroImaging for Psychiatric Diseases (eg. PTSD, Autism, Schizophrenia)
- Nanoscience, genomics, computational informatics genetics in brain mapping
- Neurophysiology (EEG, MEG, Evoked Potentials, EMG/NCS, ESM)

- Functional brain mapping (fMRI, PET, SPECT, Intrinsic Signal Optical Imaging)
- Brain Mapping and Intra-operative Surgical Planning
   using Endoscopy
- · Biophotonic techniques for Brain Mapping
- Multi-modality imaging techniques
- Ultrasound Imaging
- Magnetic Resonance Spectroscopic Imaging
- High-field and low-field magnetic resonance
- High-field and low-field MRI, MR Spectroscopic Imaging, microMRI
- Magneto encephalographic
- Transcranial Magnetic Stimulation
- Cerebral White Matter Mapping and Imaging, (eg. Diffusion Tensor Imaging)Neural Prosthesis &
- Robotics (Human Brain machine Interface technology)
- Minimally invasive therapy for traumatic brain injury (TBI)
  Imaging modalities for detecting mild/mod TBI,
- micro-TBI
  Socioeconomic, Ethical, and Healthcare issues related to
- the brain mapping and intra-operative surgical planning
- Healthcare Policy, Ethics and Regulatory affairs



#### **Student Chapters**

IBMISPS Student Chapters at the Universities are organized to promote and encourage multi-disciplinary research amongst future scientists, physicians, biotechnologists, and healthcare policy makers.

#### Fellowships

IBMISPS fellowships are focused on interdisciplinary training of neurosurgeons, neurologists, radiologists and rehabilitation physicians, neuroscientists and engineers on diseases that has major social impact such as Traumatic brain and spinal cord injuries, neuro-oncology and neurodegenerative diseases. The fellowships are design to apply state-of-the-art research through the study of biomedical science and cutting edge technologies to clinical problems. Theses scholarship are awarded to Masters Students, pre-doctoral, and post-doctoral fellows.

#### **Visiting Scholars Program**

Visiting scholars program facilitates exchange of scientific investigators and policy experts with other countries and institutions through participating IBMISPS centers. The goal of the visiting scholar program is to develop collaborations between physical and biological sciences and address major policy issues relevant to the society.

#### **Outreach Program**

Outreach programs including woman and minority in sciences and community awareness of new technology, science and medical advancements. This includes high school and college educational programs run through student chapters worldwide.

#### **Society Publications**

The society publishes the result of it scientific meetings in IBMISPS-NeuroImage Special Issue journal. This will also function as one of the outreach and educational programs of IBMISPS. We have successfully published our special issue of NeuroImage and disseminated our scientific publication to more than 50,000 subscribers, members and scientists on our email lists.

#### **Private Industry Support**

IBMISPS encourages support from private industry and provides industry with a forum to present their latest advances. The society recognizes the role of industry in translating cutting-edge research and technology into the market. IBMISPS is currently partnering with more than 100 multi-national corporations.

#### **Government Relationships**

The society works actively with the representatives of various governments to leverage its resources and focus attention on healthcare issues through interdisciplinary collaborations. In the past IBMISPS scientific activities have been supported by government institutions such as UCLA-CNSI, TATRC, DVBIC, INSERM (France), NINDS, NCI, NIBIB, and India's Engineering Research Council (SERC).

#### **Healthcare Policy**

IBMISPS has introduced formation of Science, Technology, Medicine and Law-Healthcare policy (STML-Hub) to the US Congress and house of representatives in 2008. IBMISPS will be holding scientific and healthcare policy forums for law makers and their staff to inform them about the cutting edge science and technology. This will enable the lawmakers to make informed policy decisions based their awareness of science and technology.

#### **Seed Grants**

IBMISPS in partnerships with Brain mapping Foundation and other foundations is planning to provide seed grants to encourage interdisciplinary research. The purpose of these grants is to bridge physical and biological sciences and encourage cross disciplinary collaboration.

#### **Global Physician and Scientist (GPS)**

GPS is a humanitarian program, which is focused on mobilizing physicians, scientist and surgeons to serve for few weeks in the poor and rural areas of the United States and abroad. This program will collaborate with industry and government officials and will use the national and international IBMISPS centers as bases of operations. The program is designed to not help alleviate healthcare disparities by bringing world class science, technology, medicine and policy to the poor and homeless while help improving individual and local economy through micro and neuroEconomics.



# Keynote Speaker 🌵

# The Honorable L. Tammy Duckworth



Assistant Secretary for Public and Intergovernmental Affairs

L. Tammy Duckworth was nominated by President Barack Obama to serve as the Department of Veterans Affairs (VA) Assistant Secretary for Public and Intergovernmental Affairs. She was confirmed by the Senate on April 22, 2009 and sworn in by the Secretary of Veterans Affairs, Eric Shinseki, on April 24, 2009.

As Assistant Secretary, Duckworth represents and advises the Secretary of Veterans Affairs on matters relating to media and public affairs. She directs departmental communications and oversees programs relating to intergovernmental relations, homeless Veterans, consumer affairs, and the Department's six national rehabilitative special event programs.

Duckworth served as the Director of Illinois Department of Veterans' Affairs from 2006-2008. As director, she implemented many first-in-the-nation, cutting-edge programs for Veterans, especially in the areas of health care, mental health, housing and employment. She also initiated a public-private partnership program giving grants to non-profits working on Veterans disability, homelessness, long-term medical care and Post Traumatic Stress Disorder (PTSD).

A Major in the Illinois Army National Guard, Duckworth served in Iraq as an Assistant Operations Officer and also flew combat missions as a Black Hawk helicopter pilot. During a mission north of Baghdad in 2004, her aircraft was ambushed and a rocketpropelled grenade struck the helicopter she was co-piloting. She continued to attempt to pilot the aircraft until passing out from blood loss. As a result of the attack, Duckworth lost both of her legs and partial use of one arm. She received many decorations for her actions, including the Purple Heart, the Air Medal, and the Combat Action Badge.

Since her recovery at Walter Reed, Duckworth has dedicated her life to public service, advocating on behalf of disability rights and Veterans. In 2006, Duckworth was the Democratic Candidate for Illinois' 6th Congressional District. In 2007, she received the Hubert H. Humphrey Civil Rights Award and was named the 2008 Disabled Veteran of the Year by the Disabled American Veterans. In 2008, she was selected by Candidate Obama to deliver the presidential campaign's key address on Veterans' rights at the Democratic National Convention. In 2009, she was named as an American Veterans (AMVETS) Silver Helmet award recipient as well as The George Washington University's Colin Powell Public Service Award Recipient.

Duckworth served as a manager for Rotary International's Asia Pacific Region. She speaks fluent Thai and Indonesian and is a published author on the health risks of environmental radon and lung cancer. She has declined her Army medical retirement to continue her service in the National Guard. In 2008 and 2009, she completed the Chicago Marathon, fulfilling a promise made at Walter Reed. She has also resumed flying as a civilian pilot. Keynote Speaker



# **MONDAY** May 24, 2010

# Keynote Speaker 🌵

# Charles F. Bolden, Jr.

Major General, USMC Ret. NASA Administrator



Nominated by President Barack Obama and confirmed by the U.S. Senate, retired Marine Corps Major General Charles Frank Bolden, Jr., began his duties as the twelfth Administrator of the National Aeronautics and Space Administration on July 17, 2009. As Administrator, he leads the NASA team and manages its resources to advance the agency's missions and goals.

Bolden's confirmation marks the beginning of his second stint with the nation's space agency. His 34-year career with the Marine Corps included 14 years as a member of NASA's Astronaut Office. After joining the office in 1980, he traveled to orbit four times aboard the space shuttle between 1986 and 1994, commanding two of the missions. His flights included deployment of the Hubble Space Telescope and the first joint U.S.-Russian shuttle mission, which featured a cosmonaut as a member of his crew. Prior to Bolden's nomination for the NASA Administrator's job, he was employed as the Chief Executive Officer of JACKandPANTHER LLC, a small business enterprise providing leadership, military and aerospace consulting, and motivational speaking.

A resident of Houston, Bolden was born Aug. 19, 1946, in Columbia, S.C. He graduated from C. A. Johnson High School in 1964 and received an appointment to the U.S. Naval Academy. Bolden earned a bachelor of science degree in electrical science in 1968 and was commissioned as a second lieutenant in the Marine Corps. After completing flight training in 1970, he became a naval aviator. Bolden flew more than 100 combat missions in North and South Vietnam, Laos, and Cambodia, while stationed in Namphong, Thailand, from 1972-1973.

After returning to the U.S., Bolden served in a variety of positions in the Marine Corps in California and earned a master of science degree in systems management from the University of Southern California in 1977. Following graduation, he was assigned to the Naval Test Pilot School at Patuxent River, Md., and completed his training in 1979. While working at the Naval Air Test Center's Systems Engineering and Strike Aircraft Test Directorates, he tested a variety of ground attack aircraft until his selection as an astronaut candidate in 1980.

Bolden's NASA astronaut career included technical assignments as the Astronaut Office Safety Officer; Technical Assistant to the Director of Flight Crew Operations; Special Assistant to the Director of the Johnson Space Center; Chief of the Safety Division at Johnson (overseeing safety efforts for the return to flight after the 1986 Challenger accident); lead astronaut for vehicle test and checkout at the Kennedy Space Center; and Assistant Deputy Administrator at NASA Headquarters. After his final space shuttle flight in 1994, he left the agency to return to active duty the operating forces in the Marine Corps as the Deputy Commandant of Midshipmen at the U.S. Naval Academy.

Bolden was assigned as the Deputy Commanding General of the 1st Marine Expeditionary Force in the Pacific in 1997. During the first half of 1998, he served as Commanding General of the 1st Marine Expeditionary Force Forward in support of Operation Desert Thunder in Kuwait. Bolden was promoted to his final rank of major general in July 1998 and named Deputy Commander of U.S. Forces in Japan. He later served as the Commanding General of the 3rd Marine Aircraft Wing at Marine Corps Air Station Miramar in San Diego, Calif., from 2000 until 2002, before retiring from the Marine Corps in 2003. Bolden's many military decorations include the Defense Superior Service Medal and the Distinguished Flying Cross. He was inducted into the U.S. Astronaut Hall of Fame in May 2006.

Bolden is married to the former Alexis (Jackie) Walker of Columbia, S.C. The couple has two children: Anthony Che, a lieutenant colonel in the Marine Corps who is married to the former Penelope McDougal of Sydney, Australia, and Kelly Michelle, a medical doctor now serving a fellowship in plastic surgery.



# **MONDAY** May 24, 2010

# Keynote Speaker 🌵

# Susan B. Roberts

Principal Deputy for Care Coordination Office of Wounded Warrior Care and Transition Policy Office Secretary of Defense

Susan Roberts is the Principal Deputy for Care Coordination in the Office of Wounded Warrior Care and Transition Policy under the Under Secretary of Defense for Personnel and Readiness. The newly established office institutionalizes the work of the Senior Oversight committee efforts to include the Disability Evaluation System, the Transition Assistance Program and the Recovery Coordination Program serving wounded, ill and injured Service Members, Veterans and their families. Ms. Roberts directs the Recovery Coordination Program providing oversight of the Recovery Care Coordinators for recovering service members, as mandated by the National Defense Authorization Act for FY 2008.

From May 2007 to January 2008, Susan Roberts served as Staff Director to the DOD Co-Lead for Care Management Reform under eh DOD/VA Senor Oversight Committee. The case/care management of wounded, ill and injured Service Members, Veterans and their families includes services provided across the continuum of care from recovery, rehabilitation to return to duty or reintegration into the community.

Susan Roberts served as the Lead Senior Policy Analyst for Quality of Life programs for Personnel Readiness and Community Support, Office of the Assistant Secretary of the Navy for Manpower and Reserve Affairs (ASN (M&RA). In this position, Ms. Roberts provided policy oversight for the Department of the Navy Quality of Life programs, specifically, all programs provided by the Fleet and Family Support Centers, as well as child care and youth programs, POW/MIA programs, casualty assistance, support to families of severely injured service members, and Exceptional Family Member programs. She served as the Secretariat representative on sexual assault and harassment policy and programs for the Navy, Marine Corps and United States Naval Academy. Prior to this position, Ms. Roberts served as the Special Assistant to the ASN (M&RA), from October 1998 to January 2001. In this role Ms. Roberts, working directly for the Assistant Secretary of the Navy, was responsible for conducting and managing a wide range of studies and reviews pertaining to Department of the Navy programs overseen by the ASN (M&RA). She served as the Assistant Secretary's point of contact for Presidential and White House initiatives on education, child care and youth programs.

From 1994 to 1998, Ms. Roberts served as the Special Assistant to the Deputy Assistant Secretary of Defense for Personnel Support, Families and Education (DASD (PSF&E)) now known as the Office of the Deputy Under Secretary of Defense for Military Community and Family Policy. In that position, Ms. Roberts worked a broad range of quality of life issues for the DASD, including the NATO Partnership for Peace/DoD Overseas Schools initiative. She served as the liaison between the DASD and the White House on education programs, support for troops in Bosnia and issues addressing women in the military.

Ms. Roberts is the recipient of the Office of the Secretary of Defense Exceptional Civilian Service Award and the Department of the Navy Civilian Meritorious Service Award.

Born in Denver, Colorado, Ms. Roberts holds a Bachelor of Science degree in Sociology from California State University at Sacramento.

# **MONDAY** May 24, 2010

### EXHIBIT HALL 8:00 AM-5:00 PM

08:10 - 08:30	Official Welcome by:	
	<b>Michael J. Roy</b> Colonel, Medical Corps, U.S. Army Director, Di Professor of Medicine Uniformed Services Univer Executive board member of IBMISPS Local Chairman and Co-Chairman of the IBMI	ivision of Military Internal Medicine rsity of the Health Sciences (USUHS) ISPS World Congress
	<b>Charles L. Rice</b> President of Uniformed Services University of the Health Sciences (USUHS)	
	<b>Babak Kateb</b> Founding Chairman of the Board of Directors Founding Chairman of the Board and Scientifi Managing Editor of IBMISPS-NeuroImage Chief Editor of NeuroMapping & Therapeutics Research Scientist, Department of Neurosurgery Chairman of the IBMISPS World Congress	and CEO, IBMISPS ic Director, Brain Mapping Foundation ; , Cedars Sinai Medical Center
08:30 – 09:00	<b>KEYNOTE SPEAKER</b> <b>Tammy Duckworth</b> Assistant Secretary for Public and Intergovern	nental Affairs
	2010 RECIPIENT OF IBMISPS BEACO DEDICATION AWARD	N OF COURAGE AND
09:00 – 09:20	KEYNOTE SPEAKER Charles F. Bolden, Jr. Major General, USMC Ret. National Aeronautics and Space Administration NASA Overview	on (NASA) Administrator
09:20 – 09:40	<b>KEYNOTE SPEAKER</b> <b>Susan B. Roberts</b> Principal Deputy for Care Coordination Office of Wounded Warrior Care and Transition	on Policy
	Wounded Warrior Care and Transi	tion Policy Overview
09:40 – 10:00	Coffee Break	
10.00 – 10.10	President-Elect of IBMISPS (2010-2011): Michael S. Okun, M.D.	<b>:</b>



# **MONDAY** May 24, 2010

		Scientific Session 1: The use of Advanced Imaging Technologies for Solving Clinical and Research Challenges in TBI and SCI
		Chair: Kenneth Curley Co-Chair: Ali R. Rezai
	10:10 – 10:30	Kenneth Curley, M.D. Neurotrauma Research Coordinator Combat Casualty Care Directorate (RAD2) and JTCG-6 U.S. Army Medical Research and Materiel Command (USAMRMC) Fort Detrick, MD Assistant Professor of Military & Emergency Medicine, Surgery and Biomedical Informatics, Uniformed Services University of the Health Sciences (USUHS) Bethesda, MD The use of Advanced Imaging Technologies for Solving Clinical and Research Challenges in TBI and SCI
	10:30 – 10:50	Ali R. Rezai M.D. Julius F. Stone Endowed Chair Professor of Neurosurgery Director, OSU Center for Neuromodulation Director, Functional Neurosurgery Vice Chair, Clinical Research, Department of Neurological Surgery, The Ohio State University Image Guidance in Brain Pacemaker Placement
	10:50 – 11:10	<b>Deborah M. Little, Ph.D.</b> Associate Professor of Neurology & Rehabilitation and Anatomy & Cell Biology Director of MR Research, Department of Neurology & Rehabilitation, University of Illinois at Chicago
-	11 10 11 20	Magnetic Resonance Diffusion Tensor Imaging for the Assessment of Diffuse Axonal Injury in TBI
	11:10 – 11:30	Gerard Kledy, M.D., Ph.D. Director National Capital Neuroimaging Consortium Department of Radiology Walter Reed Army Medical Center, Washington, DC Development of a Comprehensive MRI Protocol for TBI in the Military
	11:30 – 12:00	Discussion and Q&A Session
	12:00 - 13:00	Lunch Break



# **MONDAY** May 24, 2010

		Scientific Session 2: TBI-state-of-the art
a.		Chair: <mark>Jamshid Ghajar</mark> Co-Chair: <b>John W. McDonald</b>
	13:00 – 13:20	Jamshid Ghajar, M.D., Ph.D. Founder of Brain Trauma Foundation Professor of Neurosurgery Weill Cornell Medical College The Anatomical and Behavioral Quantification of Attention in mTBI- Linking MRI-DTI Lesions to Eye Tracking Synchronization
	13:20 – 13:40	John W. McDonald, M.D., Ph.D. Director, Hugo W. Moser Research Institute at Kennedy Krieger, International Center for Spinal Cord Injury and Johns Hopkins University School of Medicine Baltimore, MD Advanced Imaging in SCI Clinical and Research Applications
	13:40 – 14:00	Steven Robicsek, M.D., Ph.D. Department of Anesthesiology University of Florida Neuronal Biomarkers in Severe Traumatic Brain Injury; Implications for Medical Management
2	14:00 – 14:20	Paul Rigby, Ph.D. Project Manager, L3-Jaycor Validating a Mathematical Model of TBI Injury
	14:20 – 14:40	Discussion and Q&A Session
	14:40 - 15:00	Break



# **MONDAY** May 24, 2010

	SPECIAL PIONEER IN MEDICINE AWARD Scientific Session 3: Brain Machine Interface
	Chair: Leigh Hochberg Co-Chair: Justin Sanchez
15:00 – 15:20	Sydney Samuel Cash, M.D., Ph.D. Assistant Professor, Department of Neurology, MGH, Harvard Medical School, MA Extracranial and Intracranial Signals in BCIs and Clinical Neurophysiology
15:20 – 15:40	Jonathan R. Wolpaw, M.D. Chief, Laboratory of Neural Injury and Repair Wadsworth Center New York State Department of Health and State University of New York, Albany, New York 2010 RECIPIENT OF IBMISPS PIONEER IN MEDICINE AWARD Brain-Computer Interfaces: Moving from the Lab to the Home
15:40 – 16:00	Andrew Schwartz, Ph.D. Professor of Neurobiology, University of Pittsburgh 2010 RECIPIENT OF IBMISPS PIONEER IN MEDICINE AWARD Useful Signals from Motor Cortex
16:00 – 16:20	John P. Donoghue.Ph.D., M.S. the Henry Merritt Wriston Professor and Director of the Brown Institute for Brain Science Brown University 2010 RECIPIENT OF IBMISPS PIONEER IN MEDICINE AWARD Turning Thought into Action: Neurotechnology to Restore Movement
16:20 – 16:40	Discussion and Q&A Session
16:40 – 17:00	Poster Session with Wine and Cheese
	END OF DAY 1

# TUESDAY May 25, 2010

# Keynote Speaker 🌵

# **Colonel David Sutherland**

Director of Wounded Warriors Special Aid to the Chairman of the Joint Chief of Staff, US Armed Services, Pentagon, Washington DC, USA



**Keynote Speaker** 

Colonel David W. Sutherland was commissioned an Infantry Officer in 1983 and holds a Bachelor's degree in History and Economics and a Masters in Strategic Studies. Colonel Sutherland attended all levels of military education including Airborne, Ranger, Jumpmaster, the U. S. Army Command and General Staff College, and School of Advanced Military Studies (SAMS) as both a student and instructor.

He has served in staff positions at Battalion through Division. While assigned as a Brigade staff officer he deployed to Kuwait as part of Operation Vigilant Warrior in 1994. Colonel Sutherland has also commanded at all levels from Platoon through Brigade. As a Company Commander he deployed to South West Asia as part of Operation Desert Shield and Desert Storm. While commanding 3rd Heavy Brigade Combat Team "Greywolf," 1st Cavalry Division Sutherland deployed to Iraq as part of Operation Iraqi Freedom. Colonel Sutherland served as the Coalition Force Commander in Diyala Province from October 2006 – December 2007 which included surge operations. In July 2008, Colonel Sutherland was assigned to the Joint Staff as the Division Chief in J5 (Plans, Policy, and Strategy), Middle East Region. Colonel Sutherland is currently serving as the Special Assistant to the Chairman of the Joint Chiefs of Staff with principle focus on Warrior and Family Programs.

Awards and decorations include, among others, the Legion of Merit with oak leaf cluster, the Bronze Star Medal with oak leaf cluster, the Purple Heart, the Meritorious Service Medal with six oak leaf clusters, the Joint Commendation Medal, the Ranger Tab, Combat Infantryman's Badge Second Award, and Senior Parachutist Badge. He is also the 2008 Freedom Award Recipient presented by the No Greater Sacrifice Foundation for his efforts focused on Wounded Warriors and Gold Star Families.

Team Sutherland's roster includes Colonel Sutherland, his wife Bonnie and their two sons, Andrew and Patrick.



# **TUESDAY** May 25, 2010

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### EXHIBIT HALL 8:00 AM-5:00 PM

08:00 - 08:30	Official Welcome & Introduction		
	KEYNOTE SPEAKER Colonel David Sutherland Director of Wounded Warriors Inspired by Courage		
	Scientific Session 3(A): Computational Models of Non-Impact Blast Induced Traumatic Brain Injury		
8	Chair: Mike Leggieri Co-Chair: Raj Gupta		
08:30 - 08:45	Andrew Merkle, Ph.D. Program Manager, Biomechanics & Injury Mitigation Systems, National Security Technology Department, The Johns Hopkins University Applied Physics Laboratory The Development of Human Head Models to Investigate Multiple Mechanisms of Blast Induced Traumatic Brain Injury		
08:45 – 09:00	Andrzej Przekwas, Ph.D. CFD Research Corporation, Huntsville AL, USA A Multiscale Model of Primary and Secondary Traumatic Brain Injury Mechanisms		
09:00 – 09.15	Liying Zhang, Ph.D. Associate Research Professor, Biomedical Engineering Department, Wayne State University Computational Modeling of Blast Induced Neurotrauma - Biomechanical Responses and Injury Localization		
09:15 - 09.30	Harvey Levin, Ph.D. Professor of Departments of Physical Medicine & Rehabilitation and Neurosurgery, Baylor College of Medicine and Director, Center of Excellence for Traumatic Brain Injury, Michael E. DeBakey Veterans Affairs Medical Center, Houston Diffusion Tensor Imaging of Veterans Sustaining Mild to Moderate Blast-Related Traumatic Brain Injury		
09:30 - 09.50	Coffee Break		



# **TUESDAY** May 25, 2010

		Scientific Session 3(B): Computational Models of Non-Impact Blast Induced Traumatic Brain Injury
	09:50 – 10.05	Ghodrat Karami, Ph.D. Principal Investigator and Professor Department of Mechanical Engineering, North Dakota State University, Fargo, ND Biomechanics and Interactive Computation of Human Brian Under Blast Loading Scenarios
	10:05 – 10.20	<b>B. Balachandran, Ph.D.</b> Professor and Associate Chair, Director of Graduate Studies, Department of Mechanical Engineering, University of Maryland, College Park, MD <b>Blast Wave Interactions with Soft Tissue Matter</b>
*	10:20 – 10.30	Raul Radovitzky, Ph.D. Charles Stark Draper Associate Professor of Aeronautics and Astronautics, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge, MA Current Progress and Limitations in Computational Modeling of Blast Induced Traumatic Brain Injury
K	10:30 – 10:50	Discussion and Q&A Session



# **TUESDAY** May 25, 2010

		Scientific Session 4: Nano-Bio-Electronics
68		Chair: Babak Kateb Co-Chair: David Moore
	10:50 – 11:05	R.G. Ellis-Behnke, Ph.D. Department of Anatomy and State Key Lab of Brain & Cognitive Sciences, University of Hong Kong Li Ka Shing Faculty of Medicine, Hong Kong, China; Brain and Cognitive Sciences, MIT, Cambridge, MA, USA; Electrical and Electronic Engineering, University of Hong Kong, Hong Kong, China The First Self-assembled Molecular Medical Device (MMD) for CNS Regeneration and Beyond: from Treatment to ADME
	11:05 – 11:15	Krystof Bankiewicz, M.D., Ph.D. Professor of Neurosurgery and Neurology, Kinetics Foundation Chair in Translational Research, Principal Investigator Brain Tumor Research Center, Neurological Surgery, University of California, San Francisco Brain Delivery of Drugs and Viral Vectors Under Real Time MRI
	11:15 – 11:30	Heather A. Clark, Ph.D. Biomedical Engineering Group The Charles Stark Draper Laboratory Cambridge, MA Nanosensors
k	11:30 – 11:45	Uttam K. Sinha, M.S., M.D., FACS Associate Professor, Chief and Residency Program Director Department of Otolaryngology-Head and Neck Surgery USC-Keck School of Medicine, Los Angeles, California USA Tumor Targeted Nanoparticle-based Gene Delivery to Potentiate Radiation Therapy and Evaluation of its Bio-distribution within Tumor: A Theragonostic Approach
	11:45 – 12:00	Justin Hanes, Ph.D. Professor of Chemical & Biomolecular Engineering Director of Therapeutics, The Institute for nano-Bio-Technology Johns Hopkins University Medical School Nano-Drug Delivery for Brain Disorders
	12:00 - 13:30	Lunch Break 24

CALLOSUM

# **TUESDAY** May 25, 2010

	Neurophysiology Session 5:
	Chair: Anthony J. Caputy Co-Chair: Mahmoud AlYamany
13:30 – 13:45	Anthony J. Caputy, M.D. Professor of Neurosurgery; Chairman, Department of Neurosurgery; Hugo V. Rizzoli Professor of Neurosurgery Neurophysiological Stimulation, Mapping in the Awake Craniotomy
13:45 – 14:00	Greg A Gerhardt, Ph.D. Professor of Anatomy and Neurobiology, Neurology, Psychiatry and Electrical Engineering Director, Morris K. Udall Parkinson's Disease Research Center of Excellence Director, Center for Microelectrode Technology Co-Editor-in-Chief, Journal of Neuroscience Methods Beyond Microdialysis: Second-by-Second Measures of Neurotransmitters in the CNS by Ceramic-based Microelectrode Arrays
14:00 – 14:15	Mahmoud Al Yamany M.D.Assistant Professor & Chairman Neurosurgery Department Medical DirectorNeuroscience Center, King Fahad Medical CityAwake Cortical Mapping & iMRI in Resection of Gliomasadjacent to Eloquent Cortex
14:15 – 14:30	James W. Leiphart, M.D., Ph.D. Assistant Professor Departments of Neurosurgery and Anatomy and Cell Biology The George Washington University Neuropathic Pain
14:30 – 14:45	John A. Butman, M.D., Ph.D. Staff Neuroradiologist Radiology and Imaging Sciences Clinical Center of the National Institutes of Health Washington DC Advanced Physiologic Neuroimaging of Brain Tumors

### 14:45 - 15:00 Q&A Session and Break

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# **TUESDAY** May 25, 2010

	Scientific Session 6: Human Brain Machine Interface (Session B)
	Chair: Justin Sanchez Co-Chair: Leigh Hochberg
15:00 – 15:20	<b>Geoffrey Ling, M.D., Ph.D.</b> Professor and Acting Chair of the Department of Neurology at the Uniformed Services University of the Health Sciences (USUHS), Maryland <b>Overview of DARPA research on TBI</b>
15:20 – 15:40	James A. Ecklund, M.D. Chairman, Department of Neurosciences Inova Fairfax Hospital, Falls Church, Virginia, USA (Former Professor and Chairman of the Neurosurgery Program of the National Capital Consortium, 1998-2007) The DARPA Program using Robotics to Enhance Functional Restoration by Leveraging the Brain-machine Interface
15:40 – 16:00	Justin C. Sanchez, Ph.D. Assistant Professor Departments of Pediatrics, Neuroscience, and Biomedical Engineering, University of Florida, School of Medicine, FL Neural Coding and Neuroprosthesis Design
16:00 – 16:20	<b>Nitish Thakor, Ph.D.</b> Principal Investigator for the Neuroengineering & Biomedical Instrumentation Lab at Johns Hopkins University, and Director of the Neuroengineering Training Grant <b>Human Brain Machine Interface</b>
16:20 – 16:40 AM	Leigh R. Hochberg, M.D., Ph.D. Investigator, Center for Restorative and Regenerative Medicine, Rehabilitation Research & Development Service, Dept. of Veterans Affairs, Providence RI. Associate Professor of Engineering, Laboratory for Restorative Neurotechnology, Brown University Stroke and Neurocritical Care Services, Departments of Neurology, Massachusetts General Hospital, Brigham & Women's Hospital, and Spaulding Rehabilitation Hospital Visiting Associate Professor of Neurology, Harvard Medical School Clinical Trials of the BrainGate Neural Interface System
16:40 – 17:00	Robert Kirsch, Ph.D. Professor of Biomedical EngineeringCleveland VA FES Center, Associate Director for Technology, Case Western Reserve University Intracortical Control of a Virtual Paralyzed Arm by a Human with Tetraplegia

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# WEDNESDAY May 26, 2010

:	EXHIBIT HALL 8:00 AM–5:00 PM
	Scientific Session 7: New Horizon (Session A)
	Chair: Warren Grundfest Co-Chair: Dan Farkas
08:20 – 08:40	Daniel L. Farkas, Ph.D. Professor of Surgery and Biomedical Sciences Director, Minimally Invasive Surgical Technologies Institute Cedars-Sinai Medical Center Research Professor, Biomedical Engineering, University of Southern California President, IMLAS
08:40 – 09:00	M. Samir Jafri, Ph.D. Assistant Professor of Neurology Baltimore VA Medical Center and University of Maryland School of Medicine Department of Neurology Baltimore, MD A Real-time Imaging System for Delivery of Therapeutics to the Brain
09:00 – 09:20	Rocco Armonda, M.D. Director of Cerebrovascular Surgery and Interventional Neuroradiology, National Capital Consortium, Walter Reed Army Medical Center, Staff Neurosurgeon/ Interventional Neuroradiologist at the National Naval Medical Center, Assistant Professor of Surgery and Assistant Professor of Radiology at USUHS, Assistant Professor of Neurosurgery at Thomas Jefferson University. Experience with Near-Infrared Indocyanine Green Angiography and Intraoperative Angiography in Neurovascular Surgery
09:20 – 09:40	Regina C. Armstrong, Ph.D. Director of Center for Neuroscience and Regenerative Medicine, USUHS, Maryland FGF Signaling Impacts Axon Pathology and Remyelination in a Model of Chronic Demyelination
<mark>09:40 – 10:10</mark>	Q&A Session and Break



# WEDNESDAY May 26, 2010

		Scientific Session 8: Multi-Modality Imaging
		Chair: A. Aria Tzika Co-Chair: A. Gregory Sorensen
	10:10 – 10:30	A. Aria Tzika, Ph.D. Director of the NMR Surgical Laboratory Department of Surgery Massachusetts General Hospital and Shriners Burns Institute Harvard Medical School Functional Imaging in Neurorehabilitation
	10:30 – 10:50	<b>A. Gregory Sorensen, MD</b> Professor of Radiology and Health Sciences & Technology, Harvard Medical School Massachusetts General Hospital <b>Mechanistic Neuroimaging of Glioblastoma</b>
	10:50 – 11:10	Sabrina M. Ronen, Ph.D. Associate Professor, Department of Radiology and Biomedical Imaging UCSF Mission Bay Campus Hyperpolarized C13 Magnetic Resonance Metabolic Imaging of the Brain
	11:10 – 11:30	<b>Isabelle Berry, M.D., Ph.D.</b> Departments of Nuclear Medicine and Stereotaxic Radiosurgery, University Hospital Toulouse-Rangueil, France <b>Multimodality Neuro-imaging in Target Planification</b>
	11:30 – 11:50	Oded Gonen, Ph.D. Professor Department of Radiology and Neuroscience, New York University School of Medicine Assessing Mild Traumatic Brain Injury With Quantitative Local, Regional and Global MR Spectroscopic Imaging
1	11:50 – 12:00	Q&A Session
	12:00 - 13:30	Lunch Break



# WEDNESDAY May 26, 2010

	Scientific Session 9: New Horizons Session (B)
	Chair: Roscoe O. Brady Co-Chair: Mike Chen
13:30 – 13:50	<b>Roscoe O. Brady, M.D.</b> Member of the National Academy of Sciences, USA and a member of the Institute of Medicine of the National Academy of Sciences, Senior Investigator, NINDS <b>Advances in Treatment of Lysosomal Storage Diseases</b>
13:50 – 14:10	Mike Chen, M.D., Ph.D. Assistant Professor Section head of the malignant brain tumor program, City of Hope Cancer Center, CA Member of the Executive Board, IBMISPS Cytotoxic T Lymphocyte Trafficking and Survival in Fibrin Matrices
14:10 – 14:20	Ronald Hayes, Ph.D.Clinical Programs DirectorCo-Founder & Chairman, Board of DirectorsDistinguished Research Fellow, Center of Innovative Research,BANYAN BIOMARKERS, INC.Discovery and Clinical Validation of Biomarkers of Brain Injury;Implications for Military and Civilian Medicine
14:20 - 14:40	Q&A Discussion and Break
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# WEDNESDAY May 26, 2010

	Scientific Session 10: New Horizons Session (C)
	Chair: Michael S. Okun Co-Chair: Clarck Chen
14:40 – 15:00	Michael S. Okun, M.D. Adelaide Lackner Associate Professor of Neurology Movement Disorders Center, McKnight Brain Institute National Medical Director, National Parkinson Foundation President-Elect of IBMISPS (2010-2011) Do DBS Patients Get Angrier After Operations?
15:00 – 15;20	Zachary Levine M.D. Associate Professor of Clinical Neurosurgery at Georgetown University Medical Center Director of Functional Neurosurgery at Washington Hospital Center Out of the Frame: a Vector Driven, Image Guided Approach
15:20 – 15:40	Volker A. Coenen, M.D. Stereotaxie und MR-basierte Operationsverfahren Klinik und Poliklinik für Neurochirurgie (Direktor: Prof. Dr. J. Schramm) Universitätsklinikum Bonn The medial forebrain bundle in man and its role in the circuitry of depression – an analysis with DTI fiber tracking
15:40 – 16:00	Clarck Chen, M.D., Ph.D. Director of Clinical Neuro-Oncology, Beth Israel Deaconess Medical Center. Image guided stereotactic third ventriculostomy
16:00 – 16:20	Q&A Discussion
16:20 – 18:00	ORAL POSTER PRESENTATION

## END OF DAY THREE



# WEDNESDAY May 26, 2010

16:20	Burt, Benjamin Ultrasonic Imaging of Traumatic Optic Neuropathy
16:30	<b>Prabhu, Sujit</b> Early experience using iMRI- guided tractography with integrated monopolar subcortical functional mapping for resection of brain tumors
16:40	Orz, Yasser Surgery for deeply located intracranial lesions under intraoperative MRI guidance
16:50	Kirsch, Mathias Thermographic imaging of the cortical surface identifies functional areas
17:00	Gayzik, F. Scott Quantification of posture-dependent CSF distribution via analysis of CT, MRI, and upright MRI
17:10	Entezarmahdi, Mohammad MR Morphological Feature Analysis for Predicting Final Extent of Ischemic Infarction in Patients with Stroke
17:20	Filler, Aaron Integration of High Field DTI Data with Real Time Intraoperative Low Field MRI for Millimeter Scale Guidance – When is High Field DTI Guidance Contra-Indicated?
17:30	Razumovsky, Alexander Microvascular Doppler Ultrasound Monitoring of the Anterior Spinal Artery Blood Flow Velocity in an Ovine Acute Spinal Cord Injury Model
17:40	Rozumenko, Artem Image-guided laser thermo-destruction in surgery of gliomas involving motor area



# THURSDAY May 27, 2010

### EXHIBIT HALL 8:00 AM-5:55 PM

	Scientific Session 11:
	Defense veteran Traumatic Brain Injury (DVBIC)
	Chair: Michael Jaffee Co-Chair: David Cifu
08:00 - 08:20	Michael S. Jaffee M.D., FS USAF National Director, Defense and Veterans Brain Injury Center Overview of DVBIC
08:20 – 08:40	<b>David X. Cifu, M.D.</b> Acting Director for Physical Medicine and Rehabilitation Services Veterans Health Administration, Chairman and Professor of Physical Medicine and Rehabilitation Virginia Commonwealth University, Chief of PM&R McGuire Veterans Affairs Medical Center, Medical Director of McGuire Veterans Affairs Medical Center. <b>Rehabilitation Medicine</b>
08:40 – 09:00	Henry L. Lew, M.D., Ph.D. Director of Polytrauma Fellowship Program, Boston VA, Associate Professor, Harvard Medical School Driving simulation of TBI patients
09:00 - 09:20	<b>Donald W. Marion M.D., MSc</b> Deputy Director, Clinical and Educational Affairs, Defense and Veterans Brain Injury Center
	Clinical Overview of Military TBI Care
09:20 – 09:40	<b>Ron K. Poropatich M.D.</b> Deputy Director, Telemedicine and Advanced Technology Research Center (TAT US Army Medical Research and Material Command; Telemedicine Consultant to the US Army <b>US Army and tele-TBI initiatives</b>
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09:40 - 10:00	Q&A Session and Break
10:00 - 10:20	Jon Pearlman, Ph.D. Associate Director of Engineering, Human Engineering Research Labs, VA Pittsburgh Healthcare Systems Assistive technology in rehabilitation
10.20 - 10.40	William Rouse Ph D
10:20 - 10:40	Exec Director and Professor, Tennebaum Institute, Georgia Institute of Technology
	Systems engineering to improve TBI care in the military
10.40 - 10.50	O&A Session and Break

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# THURSDAY May 27, 2010

	:		
		Scientific Session 12: Functional Imaging for Presurgical Mapping and Image-Guided Therapy of Brain Tumors	
	10:50 – 11:10	Chair: Jay J. Pillai, M.D. Director of Functional MRI Neuroradiology Division The Russell H. Morgan Department of Radiology and Radiological Science Johns Hopkins Univ. School of Medicine BOLD Imaging as Part of Integrated Multimodality Presurgical Language Mapping	
	11:10 – 11:30	<b>Timothy Roberts, Ph.D.</b> Univ. of Penn. Sch. Med./Oberkircher Family Chair in Pediatric Radiology Vice-Chair, Research Dept. of Radiology, CHOP <b>MEG/MSI for Presurgical Mapping</b>	
	11:30 – 11:50	Jeffrey Berman, Ph.D. Univ. of Pennsylvania School of Medicine Children's Hosp of Philadelphia HARDI/DTI for Presurgical Mapping	
	11:50 – 12:10	Tracy Richmond McKnight, Ph.D. Associate Professor of Radiology Univ. of California, San Francisco School of Medicine MRSI for Image - Guided Therapy of Brain Tumors	
	12:10 – 12:20	Q&A and Discussion	
•	12:20 – 14:00	Lunch Break Laboratory Tour from Simulation Center	
		Scientific Session 13: Simulation, Virtual Reality and	
	14:00 – 14:20	Mike Roy, M.D., MPH Colonel, Medical Corps, U.S. Army Director, Division of Military Internal Medicine Professor of Medicine Uniformed Services University of the Health Sciences, Executive board member of IBMISPS	
		Improving the Early Identification and Management of PTSD	
	14:20 - 14:30	Q&A Session and Break	
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# THURSDAY May 27, 2010

		Scientific Session 14: DTI for Neurosurgeons: Cases and Concepts Course
		Chair: John Ulmer Co-Chairs: Wade Mueller
	14:30 – 14:50	Andrew Klein, M.D. Department of Radiology, Neuroradiolgy Medical College of Wisconsin Functional and Dysfunctional Anatomy of the Superior Longitudinal Fasciculus
	14:50 – 15:10	Edgar DeYoe, Ph.D. Department of Radiology, Neuroradiolgy Medical College of Wisconsin Presurgical Mapping of the Visual System
	15:10 – 15:30	John Ulmer, M.D. Department of Radiology, Neuroradiolgy Medical College of Wisconsin DTI of the Temporal Stem: White Matter Anatomy
	15:30 – 15:50	<b>Sumit Singh, MD.</b> Department of Radiology, Neuroradiolgy Medical College of Wisconsin <b>DTI of the Temporal Stem: Functional Implications</b>
-	15:50 – 16:10	Wade Mueller, M.D. Department of Neurosurgery Medical College of Wisconsin Use of DTI for Operative Decision Making
1	16:10 - 16:30	Q&A and Discussion
K	16:30 – 18:00	ORAL POSTER PRESENTATION
		1.20



# THURSDAY May 27, 2010

16:30	Francis, Jennifer Interoceptive Therapy for PTSD and Comorbid Panic Disorder
16:40	Green, Kenneth The Operating Room of the future-Ensuring high Quality care through enhanced neuro-critical care team communication
16:50	Mendes Martins, Vivien Does a symmetric setting of right and left contacts around the subthalamic nuclei, influence the occurrence of dysarthria and falls, during chronic stimulation in Parkinson's disease?
17:00	Kirsch, Robert Intracortical control of a virtual paralyzed arm by a human with tetraplegia
17:10	Lalys, Florent Anatomo-clinical atlases in subthalamic Deep Brain Stimulation correlating clinical data and electrode contacts coordinates
17 <b>:20</b>	Sunokas, Raimundas Clinical study of innovative non-invasive method for absolute intracranial Pressure measurement without calibration problem
17:30	Widhalm, Georg 5-Aminolaevulinic Acid (5-ALA) is a Promising Marker for Guidance of Neurosurgical Biopsies in Diffusely Infiltrating Gliomas
17:40	Bunyan/Sinha Intraoperative Neurophysiologic Monitoring in Intraoperative M MRI Operating Suite
17:50	Lemaire, Jean-Jacques Toward a functional connectome of the brain: a medical perspective



# Cocktail Award Event & Gala

Sunday May 23rd Cocktail Event 5:00-7:00 PM Gala 7:00-9:00 PM DOUBLETREE HOTEL - BETHESDA

#### Beacon Award for Courage and Dedication:

The Beacon Award is presented to individuals who have demonstrated extraordinary courage and dedication for increasing awareness about neurological diseases, and for patients and their families who have exceeded expectations in fighting a neurological disorder with unprecedented courage. The Beacon Award identifies remarkable individuals who set the highest standards for increasing awareness of, and fighting, neurological diseases.

#### **Past Award Recipients:**

2009 SGM Colin R. Rich Bob Woodruff 2008 Dustin Hoffman 2007 Benham Badie

# Pioneer in Medicine:

The Pioneer in Medicine Award is presented to individuals who have significantly contributed to the scientific advancement in the fields of medicine and image guided therapy through a multidisciplinary approach. Their groundbreaking contribution has made development of state-of-the-art technology and scientific discovery a reality.

#### Past Award Recipients:

2009 Dr. Peter Mclaren Black Dr. Keith Black
2008 Dr. Ron Kikinis
2007 Richard Frakowiack
2007 Arthur W. Toga
2007 John Mazziotta
2006 Warren Grundfest
2006 Alim Louis Benabid

#### Pioneer in Healthcare Policy:

The Pioneer in Healthcare Policy Award is presented to lawmakers who have demonstrated visionary and crossdisciplinary approaches to introducing laws that have contributed to the advancement of science, technology, education, and medicine. They have paved the way to better integration of such advancements in other fields, like medicine and neuroscience. These lawmakers champion better healthcare for all.

### Past Award Recipients:

2009 Senator John Kerry 2008 Governor Schwarzenegger 2007 Speaker Nancy Pelosi 2007 Senator Edward Kennedy

#### Pioneer in Technology:

The Pioneer in Technology Award is presented to the trail blazing companies and their CEOs/presidents who have facilitated the development of pioneering technologies through interdisciplinary approaches that have impacted diagnostics, treatment, and healthcare delivery in unprecedented ways.

#### Past Award Recipients:

2009 William A. Hawkins Medtronic 2008 Mark L. Vachon, GE Healthcare 2007 Steve Rusckowski, Philips Healthcare 2006 Brainlab

### Golden Axon:

A new award category for 2009, the IBMISPS Golden Axon Award is presented to individuals outside of the medical community who inspire with good will and an enthusiastic interest inscience, technology and medicine. Named for the neuron cell fiber that carries outgoing messages to other target cells, the founding principle of the Axon Award is to recognize a highly regarded individual in the public sector who helps raise awareness and funding of IBMISPS and its mission in the community via fundraising event(s) and activities.

#### Young Investigator Award:

Past Award Recipients: 2009 Vicky Yamamoto

#### Student Research Award:

**Past Award Recipients:** 2009 Josh Neman Amir Goodarzi

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## **2010 Crystal Award Recipients**

PIONEER IN HEALTHCARE POLICY



The Honorable President Barack H. Obama

### PIONEER IN MEDICINE AWARD



Jonathan Wolpaw, M.D.

### GOLDEN AXON AWARD



Peter Gaily

PIONEER IN HEALTHCARE POLICY



The Honorable Senator Harry Reid

### PIONEER IN MEDICINE AWARD



John Donoghue, Ph.D., M.S.

**GOLDEN AXON** 

AWARD

BEACON AWARD FOR COURAGE AND DEDICATION



The Honorable L. Tammy Duckworth

### PIONEER IN MEDICINE AWARD



Andrew Schwartz, Ph.D.

STUDENT RESEARCH AWARD RECIPIENT Joseph Yetto





# **GALA** Reception

# 2010 IBMISPS PIONEER IN HEALTHCARE POLICY AWARD The Honorable President Barack H. Obama



*The 44th President of the United States* 2010 NOBEL LAUREATE

His story is the American story — values from the heartland, a middle-class upbringing in a strong family, hard work and education as the means of getting ahead, and the conviction that a life so blessed should be lived in service to others.

With a father from Kenya and a mother from Kansas, President Obama was born in Hawaii on August 4, 1961. He was raised with help from his grandfather, who served in Patton's army, and his grandmother, who worked her way up from the secretarial pool to middle management at a bank.

After working his way through college with the help of scholarships and student loans, President Obama moved to Chicago, where he worked with a group of churches to help rebuild communities devastated by the closure of local steel plants.

He went on to attend law school, where he became the first African—American president of the Harvard Law Review. Upon graduation, he returned to Chicago to help lead a voter registration drive, teach constitutional law at the University of Chicago, and remain active in his community.

President Obama's years of public service are based around his unwavering belief in the ability to unite people around a politics of purpose. In the Illinois State Senate, he passed the first major ethics reform in 25 years, cut taxes for working families, and expanded health care for children and their parents. As a United States Senator, he reached across the aisle to pass groundbreaking lobbying reform, lock up the world's most dangerous weapons, and bring transparency to government by putting federal spending online.

He was elected the 44th President of the United States on November 4, 2008, and sworn in on January 20, 2009. He and his wife, Michelle, are the proud parents of two daughters, Malia, 10, and Sasha, 7.

# **GALA** Reception

# 2010 IBMISPS PIONEER IN HEALTHCARE POLICY AWARD The Honorable Senator Harry Reid



U.S. Senator - Nevada

To understand Harry Reid, you must look to the small mining town of Searchlight, Nevada.

There in the desert, more than an hour away from the bright lights of Las Vegas, is where he was born and raised.

Searchlight is where Harry Reid watched his father work as a hardrock miner. It's where he attended a school with one teacher for eight grades. And it's where he learned Nevada values like hard work, opportunity and independence.

Today Harry Reid is the Majority Leader in the U.S. Senate, a man who commands the respect of colleagues from both parties, and a powerful advocate for Nevada's middle-class families. Every day Sen. Reid puts his leadership position to work to deliver meaningful results for Nevadans.

But he still lives in Searchlight ... and he is still guided by the lessons and values he learned there.

The Las Vegas Sun newspaper summarized Reid's story by saying that he "has gone from underdog to Senate's top dog."

Parade Magazine, the nation's largest weekly magazine, identified Senator Reid as one of a handful of leaders in Washington with "integrity and guts."

Since Nevadans elected him to the Senate in 1986, Harry Reid has developed a reputation as a consensus builder and a skillful legislator. Even his Republican colleagues praise his reasoned, balanced approach.

Senate Judiciary Chairman Orrin Hatch (R-Utah) has said, "We all respect Senator Reid. He is one of the moderate voices around here who tries to get things to work.

And former GOP Leader Trent Lott said, "Harry Reid is out there finding a solution. I enjoy working with him very much."

Reid will work with anyone and everyone to address the issues important to Nevada and enjoys a close working relationship with Nevada's junior U.S. Senator, Republican John Ensign. Despite belonging to different political parties, they share a commitment to Nevada families and businesses. In fact, Senators Reid and Ensign co-host a weekly breakfast in the U.S. Capitol every Thursday that the Senate is in session, and Nevadans visiting Washington D.C. are always welcome.

After Nevadans re-elected Reid to a third Senate term in 1998, he was chosen by his colleagues to serve as the Assistant Democratic Leader, also known as the "Whip." And after he won a fourth term in 2004 by a wide margin, he was unanimously elected Senate Democratic Leader.

Harry Reid isn't afraid to speak his mind - but he isn't afraid to listen, either.

Like the desert country that formed him, he doesn't cry out for attention. He's soft spoken - but when he talks, people listen.

He has earned the trust of both Democrats and Republicans, and his reputation for integrity and fairness has given the small state of Nevada a powerful voice in Congress.



# 2010 IBMISPS BEACON OF COURAGE AND DEDICATION AWARD

# The Honorable L. Tammy Duckworth



Assistant Secretary for Public and Intergovernmental Affairs

L. Tammy Duckworth was nominated by President Barack Obama to serve as the Department of Veterans Affairs (VA) Assistant Secretary for Public and Intergovernmental Affairs. She was confirmed by the Senate on April 22, 2009 and sworn in by the Secretary of Veterans Affairs, Eric Shinseki, on April 24, 2009.

As Assistant Secretary, Duckworth represents and advises the Secretary of Veterans Affairs on matters relating to media and public affairs. She directs departmental communications and oversees programs relating to intergovernmental relations, homeless Veterans, consumer affairs, and the Department's six national rehabilitative special event programs.

Duckworth served as the Director of Illinois Department of Veterans' Affairs from 2006-2008. As director, she implemented many first-in-the-nation, cutting-edge programs for Veterans, especially in the areas of health care, mental health, housing and employment. She also initiated a public-private partnership program giving grants to non-profits working on Veterans disability, homelessness, long-term medical care and Post Traumatic Stress Disorder (PTSD).

A Major in the Illinois Army National Guard, Duckworth served in Iraq as an Assistant Operations Officer and also flew combat missions as a Black Hawk helicopter pilot. During a mission north of Baghdad in 2004, her aircraft was ambushed and a rocket-propelled grenade struck the helicopter she was co-piloting. She continued to attempt to pilot the aircraft until passing out from blood loss. As a result of the attack, Duckworth lost both of her legs and partial use of one arm. She received many decorations for her actions, including the Purple Heart, the Air Medal, and the Combat Action Badge.

Since her recovery at Walter Reed, Duckworth has dedicated her life to public service, advocating on behalf of disability rights and Veterans. In 2006, Duckworth was the Democratic Candidate for Illinois' 6th Congressional District. In 2007, she received the Hubert H. Humphrey Civil Rights Award and was named the 2008 Disabled Veteran of the Year by the Disabled American Veterans. In 2008, she was selected by Candidate Obama to deliver the presidential campaign's key address on Veterans' rights at the Democratic National Convention. In 2009, she was named as an American Veterans (AMVETS) Silver Helmet award recipient as well as The George Washington University's Colin Powell Public Service Award Recipient.

Duckworth served as a manager for Rotary International's Asia Pacific Region. She speaks fluent Thai and Indonesian and is a published author on the health risks of environmental radon and lung cancer. She has declined her Army medical retirement to continue her service in the National Guard. In 2008 and 2009, she completed the Chicago Marathon, fulfilling a promise made at Walter Reed. She has also resumed flying as a civilian pilot.



# 2010 IBMISPS PIONEER IN MEDICINE AWARD

# Jonathan Wolpaw, м.D.

Chief, Laboratory of Neural Injury and Repair Wadsworth Center New York State Department of Health and State University of New York, Albany, New York



Dr. Jonathan Wolpaw, a board-certified neurologist, is Chief of the Laboratory of Neural Injury and Repair at the Wadsworth Center, New York State Department of Health in Albany, New York. His pioneering work in two distinct areas of biomedical research has been widely recognized as breaking important new ground and is leading directly to the rehabilitation and enhancement of the quality of life of people with severe disabilities.

Dr. Wolpaw has led development of EEG-based brain-computer interface (BCI) technology to restore communication and control to people who are paralyzed. Over the past 20 years, his group has shown that non-invasive EEG-based BCI technology can, without need for surgery, give control and communication capability similar to that achieved by electrodes placed in the brain; his laboratory has recently begun to provide BCI systems to severely disabled people for daily use in their homes. His group's innovative BCI software platform BCI2000 has been provided free of charge to over 500 research groups worldwide and is now the most widely used BCI software platform in the world. Dr. Wolpaw has also led the formation of the non-profit Brain Communication Foundation (www.braincommunication.org) which is intended to support the wider dissemination of BCI technology to severely disabled people throughout the world. Dr. Wolpaw's achievements in BCI research and development have received wide recognition and have garnered numerous national and international awards.

A longer history of Dr. Wolpaw's work lies in the field of operant conditioning of spinal reflexes, which he has used to define the complex patterns of plasticity underlying vertebrate learning and memory. Over the past 30 years, this unique work has demonstrated that reflex conditioning changes the spinal cord and it has begun to reveal the complex mechanisms of change at the neuronal and synaptic levels. Ongoing studies are currently showing that spinal-cord reflex conditioning can guide spinal cord plasticity to improve walking after spinal cord injuries. This method offers a completely new approach to rehabilitation of people with spinal cord injuries.

Dr. Wolpaw received his undergraduate education at Amherst College, his M.D. degree at Case Western Reserve University, and his clinical training in internal medicine and neurology at Mount Sinai Hospital in Cleveland and the University of Vermont. He trained in basic and clinical neurophysiological research at the National Institutes of Health, and was elected to the American Neurological Association in 1987. In addition to his position as lab chief at the Wadsworth Center, Dr. Wolpaw is Professor of Biomedical Sciences at the State University of New York at Albany, and is also on the faculties of Albany Medical College and Ohio State University.



# 2010 IBMISPS PIONEER IN MEDICINE AWARD

# John Donoghue, Ph.D., M.S.



The Henry Merritt Wriston Professor and Director of the Brown Institute for Brain Science Brown University

John P. Donoghue, Ph.D. is the Henry Merritt Wriston Professor at Brown University. From 1991 through 2006, Dr. Donoghue was chairman of the Department of Neuroscience, and since 1998 he has served as director of the Brain Science Program at Brown University, which brings together more than 10 departments and 100 faculty into a unique research and education program. Dr. Donoghue has performed over 20 years of research on brain computer interfaces and his laboratory is internationally recognized as a leader in this field. His research has been funded by the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Defense Advanced Research Projects Agency (DARPA), as well as private foundations.

Dr. Donoghue has over 50 publications, including a number in leading journals such as Nature, Science and The Journal of Neuroscience, and he has served on many external advisory panels, including those for the NIH's Neurology and Mental Health institutes and the space medicine panel of the National Aeronautics and Space Administration (NASA). In addition, he is co-founder, chief scientific officer and director of Cyberkinetics, Inc., a biotech startup that is developing brain implants to restore movements to paralyzed individuals.Dr. Donoghue received an A.B. from Boston University in 1971, an M.S. in Anatomy from the University of Vermont in 1976, and a Ph.D. in Neuroscience from Brown University in 1979.



# 2010 IBMISPS PIONEER IN MEDICINE AWARD

Andrew Schwartz, Ph.D.

Professor Neurobiology University of Pittsburgh



Dr. Schwartz received his Ph.D. from the University of Minnesota in 1984 with a thesis entitled "Activity in the Deep Cerebellar Nuclei During Normal and Perturbed Locomotion". He then went on to a postdoctoral fellowship at the Johns Hopkins School of Medicine where he worked with Dr. Apostolos Georgopoulos, who was developing the concept of directional tuning and population-based movement representation in the motor cortex. While there, Schwartz was instrumental in developing the basis for three-dimensional trajectory representation in the motor cortex.

In 1988, Dr. Schwartz began his independent research career at the Barrow Neurological Institute in Phoenix. There, he developed a paradigm to explore the continuous cortical signals generated throughout volitional arm movements. This was done using monkeys trained to draw shapes while recording single-cell activity from their motor cortices. After developing the ability to capture a high fidelity representation of movement intention from the motor cortex, Schwartz teamed up with engineering colleagues at Arizona State University to develop cortical neural prosthetics. The work has progressed to the point that monkeys can now use these recorded signals to control motorized arm prostheses to reach out grasp a piece of food and return it to the mouth.

Schwartz moved from the Barrow Neurological Institute to the Neurosciences Institute in San Diego in 1995 and then to the University of Pittsburgh in 2002. In addition to the prosthetics work, he has continued to utilize the neural trajectory representation to better understand the transformation from intended to actual movement using motor illusions in a virtual reality environment.



**GALA** Reception

# 2010 IBMISPS GOLDEN AXON AWARD

**Ross Joel** 

CEO – Co-founder OR-Live



Since co-founding the company in 1994, Ross has worked to instill a culture of continuous growth and innovation, and was instrumental in the transformation of a traditional broadcast production company into the medically focused internet broadcasting company OR-Live is today. Before co-founding Story Line Pictures in 1994, Joel spent nine years as a television anchor/reporter for NBC-affiliated TV stations in Vermont and Hartford, Connecticut. He was nominated for a News Emmy Award in 1994 for his work on an investigative series on lead poisoning in children. He is also a published magazine writer, with his work appearing in national publications such as Bon Appetit. Additionally, Ross is a former gubernatorial appointee to the Connecticut Film Commission.

Ross holds a B.A. in Political Science from Union College and a Master's degree in Journalism from New York University. He is also a graduate of the Kursverksamheten School of Language at the University of Lund, Sweden. He currently resides in West Hartford, CT. with his wife and two children.



# 2010 IBMISPS GOLDEN AXON AWARD

**Peter Gaily** 

President – Co-founder OR-Live



Since co-founding the company in 1994, Peter's focus has been on driving excellence into our operations and has worked to assure the quality in our systems and products during our rapid growth and evolution into a premier internet destination. Peter honed his 25 year understanding of mission critical video production during his time at the ABC Television Network, where he oversaw and managed Network Distribution to ABC's 171 affiliates.

His experience at ABC included administration of satellite back-haul and reception for live news, sports, and entertainment productions, including the 1989 New York City Marathon. Following his time at ABC, Peter joined the Hartford NBC affiliate as the special projects producer and received a News Emmy award for a series on repeat DUI offenders, which led to more accountable record keeping in Connecticut.

Peter holds a B.A. in Mass Communications from American University and an M.A. in Cinema from Ohio State University, where he also served on the faculty of the College of the Arts. Peter now lives in Simsbury, CT with his wife and two children.



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