

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

# 6th Annual World Congress of IBMISPS



# **On Brain Mapping and Image Guided Therapy**

# August 26-29, 2009 Theme: Breaking Boundaries to Prepare for the Future

Held at Joseph B. Martin Conference Center Harvard Medical School, Boston, USA.





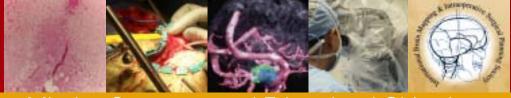
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# Info:

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Mission Statement and Educational Objectives

# **MISSION STATEMENT**

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 to improve the diagnosis, treatment and rehabilitation of patients afflicted with neurological disorders (i.e. PTSD, TBI, Neurodegenerative Diseases,...).

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 multi-disciplinary collaborations with government agencies, patient advocacy groups, educational institutes and private sector (industry) as well as philanthropic organization.

# **EDUCATIONAL OBJECTIVES**

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

- Identify new findings in brain mapping (BM) & intraoperative surgical planning (ISP) most relevant to their own sub field (i.e. molecular imaging and or biophotonics).
- Describe the effect of the newly developed methods in BM and ISP.
- Discuss and design the possible future research and developments in BM & ISP and assess the possible impact of such research and development on their own clinical and scientific work in the future.
- Describe and assess the latest cuttingedge technological advancement in BM & ISP.
- Explain ways to build a bridge between the two field, BM & ISP.
- Discuss and describe governmental agencies roles in research and development of BM & ISP.
- Identify and address educational gaps amongst scientific disciplines and medicines.



# Society Board of Directors

#### **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

#### **Babak Kateb**

Founding Chairman of the Board of Directors IBMISPS Founding Chairman of the Board of Directors Brain Mapping Foundation Scientific Director of IBMISPS and Brain Mapping Foundation Managing Editor of IBMISPS-NeuroImage Special Issue, University of Southern California (USC), 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 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

#### Farzad Massoudi

Assistant Clinical Professor of Neurosurgery University of California Los Angeles (UCLA), USA

#### Ferenc A. Jolesz

Vice Chairman for Research B. Leonard Holman Professor of Radiology Director of MRI and Image Guided Therapy Brigham & Women's Hospital Harvard Medical School Member of Institute of Medicine of National Academy of Science, 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

#### Louis Lemieux

Professor of Physics Applied to Medical Imaging Chair, UCL-Centre for Neuroimaging Techniques Vice-Chair, UCL Institute of Neurology Academic Board Department of Clinical and Experimental Epilepsy UCL Institute of Neurology, UK

#### 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

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**

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, Kaiser Permanente 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

#### 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



# **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, and government officials to the 6th Annual World Congress of IBMISPS.

This year's theme is 'Breaking boundaries to prepare for the future'. We conduct this meeting at Harvard Medical School to build a broad-based multidisciplinary collaborative society focused on image

guided therapy and intervention.

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, Italy and the UK.

IBMISPS will achieve 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.

IBMISPS is also a grass roots 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 honored to have Admiral Michael Mullen, the Chairman of the Joint Chiefs of Staff at this meeting as an Honorary Keynote Speaker. His vision and remarkable leadership qualities could help IBMISPS leadership to also better focus its efforts in helping address healthcare issues confronting our men and women in uniform.

I thank Colonel Christian Macedonia, Colonel Michael Jaffee, Colonel Karl Friedl, Captain Melissa Kaime, Colonel Ken, and Colonel David Moore for their support of this program.



I congratulate IBMISPS award recipients of this year:

The Honorable Senator John Kerry of Massachusetts for receiving the Pioneer and Healthcare award for his continues support of medical research and his tireless effort in healthcare reform. Healthcare reform is also a great area of focused for IBMISPS and its multidisciplinary members.

Mr. Bob Woodruff and SGM Colin Rich for receiving the Beacon Award for their courage in fighting against Traumatic Brain Injury while increasing awareness about this and other neurological diseases.

Mr. Bill Hawkins (President and CEO of Medtronic) for receiving the Pioneer and Technology Crystal Award; we are aware that under his leadership Medtronic has lead the way on innovation and technology development.

Drs Keith Black and Peter Black for receiving the Pioneer and Medicine Crystal award; they are truly pioneer in the field of neurosurgery and image guided therapy.

We appreciate Mr. Sam Nazarian's presence at this meeting as a keynote speaker who is a remarkable entrepreneur and great friend of IBMISPS. 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.

My special thanks goes to hard working, professional and exceptionally talented Elsevier staff and colleagues who made this program a world class event. This program may not have been possible without the generous contributions from US Army-TATRC, DVBIC, BrainLab, Codman, NordicNeuroLab, Xoran, Medtronic, Ad-Tech Medical and Elekta.

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 University of Southern California (USC) Visiting Researcher California Institute of Technology Managing Editor IBMISPS-NeuroImage Special Issue



# IBMISPS President's Address



Dear Participants,

2009 is an exciting and challenging year for modern neurological science. World economic changes, and legislative changes in the US health care system may restrict the implementation of new or expensive technologies. At the same time, numerous innovations in nanotechnology, structural and functional imaging, and neurotherapeutics have arrived, or are on the horizon.

This year, the 6th Congress for Brain Mapping and Image Guided Therapy theme is "crossing disciplines to prepare for the future." We are excited to have so many excellent speakers, vendors, presentations, and abstracts. In this conference we will discuss ways of integrate not only branches of neuromedicine, but also integrate different public, and private institutions, as well as branches of the government. A cross-disciplinary approach across medical specialties is crucial for innovative medicine, but a crossdisciplinary approach across institutional and government levels is also crucial for costeffective medicine.

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 special issue of NeuroImage (peer-reviewed). On behalf of the board of the IBMISPS, welcome to Harvard in Boston Massachusetts!

Neal Prakash MD, PhD President IBMISPS 2009-2010 Assistant Clinical Professor, JABSOM, UH, Honolulu HI, USA Neurologist, Kaiser Permanente and Veterans Affairs Pacific Island Health Care System





# **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:

**Special Focus Sessions** 

Government Education

• Funding Opportunities

• Patient Advocacy

· Healthcare Policy

• Governmental Regulation

#### 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

# World Congresses

The following are lists of previous Annual World Congresses organized in the last five years: 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 Funding Opportunities** Graduate and Post Graduate
- Interdisciplinary Fellowships
- Student Travel awards
- University Student chapters mentorship programs
- Scholarships for undergraduate students studying neurological disorders



#### **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**

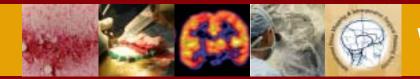
IBMISPS has introduced formation of Science, Technology, Medicine and Law-Healthcare policy (STML-Hub) to the US Congress and house of representatives in 2008. IBMISPS will be holding scientific and healthcare policy forums for law makers and their staff to inform them about the cutting edge science and technology. This will enable the law-makers 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 only help alleviate healthcare disparities by bringing world class physicians to the poor areas but also help improve local economy through micro and neuroEconomics.



# WEDNESDAY August 26

# Keynote Speaker 🌵

# **Admiral Mike Mullen**

Chairman of the Joint Chiefs of Staff Principal military advisor to the President, the Secretary of Defense, the National Security Council, and the Homeland Security Council



Admiral Mullen was sworn in as the 17th Chairman of the Joint Chiefs of Staff on October 1, 2007. He serves as the principal military advisor to the President, the Secretary of Defense, the National Security Council, and the Homeland Security Council. Prior to becoming Chairman, Admiral Mullen served as the 28th Chief of Naval Operations.

A native of Los Angeles, he graduated from the U.S. Naval Academy in 1968. He commanded three ships: the gasoline tanker USS Noxubee (AOG 56), the guided missile destroyer USS Goldsborough (DDG 20), and the guided missile cruiser USS Yorktown (CG 48). As a Flag Officer, Admiral Mullen commanded Cruiser-Destroyer Group 2, the George Washington Battle Group, and the U.S. 2nd Fleet/NATO Striking Fleet Atlantic.

Ashore he has served in leadership positions at the Naval Academy, in the Navy's Bureau of Personnel, in the Office of the Secretary of Defense and on the Navy Staff. He was the 32nd Vice Chief of Naval Operations from August 2003 to October 2004. His last operational assignment was as Commander, NATO Joint Force Command Naples/Commander, U.S. Naval Forces Europe.

Admiral Mullen is a graduate of the Advanced Management Program at the Harvard Business School and earned a Master of Science degree in Operations Research from the Naval Postgraduate School.

VERTEBEAL

# WEDNESDAY August 26

# Keynote Speaker 🌵

# **Jim Cloar**

Vice President & General Manager, Medtronic Navigation, USA



Jim Cloar was named Vice President and General Manager of Medtronic Navigation in May 2007. He leads the Navigation division located in Louisville, Colorado. Medtronic's Navigation division is the leading provider of integrated navigation and intra-operative imaging solutions in the world.

Cloar joined Medtronic in 1997 and held a series of increasingly important and complex roles in the Spinal and Biologics business, most recently as Vice President and General Manager of the Thoracolumbar Spine division.

Prior to joining Medtronic, Cloar served 12 years in a variety of leadership positions in the medical device industry at DePuy, Inc., Smith and Nephew and C.R. Bard.

Cloar holds a bachelor of science in economics degree from Georgetown College.



# Keynote Speaker 🌵

# Sam Nazarian

Founding President and CEO of SBE



Raised in Los Angeles, Sam Nazarian brings entrepreneurial instinct, immeasurable drive and considerable business experience to his role as founder and CEO of SBE. Nazarian balances and directs SBE's operating groups - which include its hotel, restaurant, nightlife, and real estate divisions; as well as Bolthouse Productions and Element Films - in all phases of acquisition, development and management.

From SBE's first nightclub, Shelter, in 2003 which helped spur the rebirth of the Sunset Strip, to today's collection of over 10 hotels, restaurants, nightclubs and lounges which have reshaped the landscape of Los Angeles and beyond, Nazarian has consistently sought to raise the bar in hospitality, design and innovation.

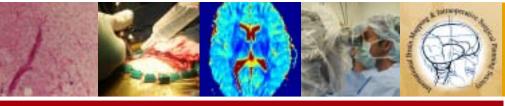
His singular vision and drive have attracted an experienced corporate team of executives to SBE from the country's most acclaimed brands and corporations, accepting the exciting challenge of redefining their industries for a new generation. In just five years, the company has grown from an initial handful of like-minded people to its current roster of over 2,000 employees.

Nazarian's handprint is equally evident in his role as a film producer, via SBE's Element Films, a fully integrated film company with the rare ability to develop, finance, produce, distribute and market its own innovative film titles. Nazarian has executive produced such celebrated projects as Down in the Valley (Edward Norton, Evan Rachel Wood, David Morse); Five Fingers (Laurence Fishburne, Ryan Phillippe); Waiting (Ryan Reynolds, Ana Faris, Luis Guzman; and Mr. Brooks (Kevin Costner, Demi Moore, William Hurt).

In 2006, Nazarian was the youngest executive to be named one of the "Top 100 Most Powerful People in Southern California" by West, the Los Angeles Times' Magazine and was named among "The Influentials" in Los Angeles magazine. He has also been featured and quoted in the Los Angeles Times, The New York Times, The Wall Street Journal, Newsweek, People, Fortune, W, Variety and The New Yorker. He is also a member of the Southern California Institute of Architecture's Board of Directors, and generous supporter of the Beverly Hills Education Foundation.

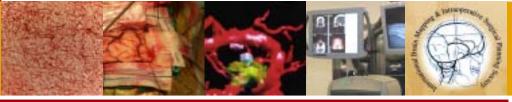
# WEDNESDAY August 26

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# WEDNESDAY August 26

	10.40 – 11.00	Oral Poster Session 1 Chair: Elizabeth Bullitt
A.	11.00 – 11.50	Scientific Session 2: Operating Room of the Future
		<section-header><ul> <li>Chair:</li> <li>Director, MRI &amp; Image Guided Therapy Program, Director, National Center for Image Guided Therapy, Department of Radiology, Brigham &amp; Women's Hospital, Harvard Medical School, USA.</li> <li>AMIGO - The Advanced Technological Environment for Multi-Modality Image Guided Therapy.</li> <li>Marceth P. Green, D.M.D.</li> <li>Commander, US Navy, Senior Healthcare Analyst, US Navy Bureau of Medicine and Surgery, Washington, DC, USA.</li> <li>The OR as a Cockpit: The next phase of Aviation Safety Lessons Learned for Medicine.</li> <li>Department of Neurological Surgery, Washington University in St. Louis, USA.</li> <li>Intial One Year Experience with Movable Ceiling Mounted Magnetic Resonance Imaging for the Resection of Intrinsic Brain Lesions.</li> </ul></section-header>
	11.50 – 12.10	Break
	12.10 – 13.00	KEYNOTE SPEAKER Jim Cloar Vice President & General Manager, Medtronic Navigation, USA Enhancing the value of Therapies through Research and New Technology: The convergence of imaging, navigation and decision support KEYNOTE SPEAKER Sam Nazarian Founding President and CEO of SBE Applying Behavioral Science to the World of Hospitality and Design
	13.00 - 13.45	Lunch Break
	13.00 - 13.13	Lunch Dicax



# WEDNESDAY August 26

#### 13.45 – 14.45 Scientific Session 3: Traumatic Brain Injury

#### Chair:

**Anthony Pacifico, Ph.D.** Portfolio Manager, Medical Imaging Technologies, Telemedicine and Advanced Technology Research Center, USA

Medical Imaging Standards: A TATRC Perspective

#### Co-Chair:

Joel D. Stitzel, Ph.D.

Associate Professor, Department of Biomedical Engineering, Tech. Director, Center for Injury Biomechanics, Wake Forest University Health Sciences Medical Center, USA

Assessment of Strain patterns in the Brain from Real-World Acceleration Data from Collegiate Football Players

#### James C. Benneyan, Ph.D.

Assistant Professor, Mechanical, Industrial and Manufacturing Engineering, Director of Quality and Productivity Laboratory, Northeastern University, USA

System Engineering Approaches and Opportunities to Improve Traumatic Brain Injury Care in the Military Health System

#### Jeffrey D. Lewine, Ph.D.

*Illinois MEG Center and the Alexian Brothers Center for Brain Research, Alexian Brothers Medical Center, Chicago, USA* 

Making the invisible wounds of War Visible: Functional Brain Imaging of PTSD, Mild TBI, and Depression Using Magnetoencephalography

#### José León-Carrióen, Ph.D.

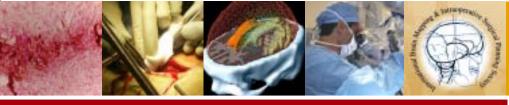
Professor of Neuropsychology and Director of the Human Neuropsychology Laboratory, University of Seville, Spain

The InfraScanner, a Portable Device which can Immediately Detect, in situ, the Presence of Brain Hematomas

Q & A Session

Break

14.45 – 15.05



# WEDNESDAY August 26

15.05 - 15.35	Oral Poster Session 2
	Chair:
	Clark Chen

#### **15.35 – 16.25** Scientific Session 4: Brain Mapping in Psychiatry

#### Chair:

#### Claudia M. Szobot, M.D.

Child and Adolescent Psychiatrist, ADHD Outpatient Clinic, Hospital de Clínicas de Porto Alegre (HCPA), Universidade Federal do Rio Grande do Sul (UFRGS), Brasil. Molecular Imaging Genetics of Methylphenidate Response in ADHD and Substance Use comorbidity

## Tejas Bhojraj, M.D.

Beth Israel Deaconess Medical Center, USA Structural Alteration in the Default Network and Cognitive Deficits in Offspring of Schizophrenics

## Elakkat Gireesh, M.D.

Post Doctoral Fellow, Section on Critical Brain Dynamics, MEG Core Facility, National Institute of Mental Health (NIMH), USA

Increased Local Fluctuations and Decreased Global Synchronization in Resting State Activity of Left Prefrontal Cortex from Patients with Schizophrenia

## Lyubomir Zagorchev, Ph.D.

Philips Research North America, USA Biomarkers for Rapid Volumetric Shape Analysis of Neuropsychiatric Disorders

## Akemi Tomoda, M.D., Ph.D.

Associate Professor, Department of Child Development, Faculty of Medical and Pharmaceutical Sciences, Kumamoto University, Japan

Neurobiological Behavior Consequences of Early Stress and Childhood Maltreatment

Q & A Session

16.35 – 16.55 Break

# WEDNESDAY August 26

#### 16.55 – 17.45 Scientific Session 5: New Horizons

Chair: Thilo Hoelscher M.D. Assistant Professor of Radiology, UCSD Department of Radiology and Neurosciences

## **Eyal Zadicario**

InSightec, Inc, USA Transcranial Clot Lysis Using High Intensity Focused Ultrasound

## Songbai Ji, Ph.D.

Assistant Professor of Engineering, Thayer School of Engineering, Dartmouth College,Norris Cotton Cancer Center Section of Neurosurgery, Dartmouth-Hitchcock Medical Center, USA

An Integrated Neurosurgical Guidance System Incorporateing Ultrasound, Stereovision, Computational Modeling, and Fluorescence Imaging

#### **Co-Chair:**

Mike Chen, M.D., Ph.D.

Assistant Professor of Neuosurgery, Brain Tumor Program, Department of Neurosurgery, City of Hope National Cancer Center, Duarte, CA, USA In-vitro Investigation of the use of Tissue-Specific Promotor Controlled Expression of Saporin for Selective Eradication of Metastatic Brain Tumors

## Q & A Session

End of Day 1



# Keynote Speaker 🌵

# Michael S. Jaffee, m.d., FS, USAF

National Director, Defense and Veterans Brain Injury Center (DVBIC) Walter Reed Army Medical Center US ARMY, USA

Col. Jaffee comes to DVBIC HQ after serving as the Neurology Program Director at Wilford Hall Medical Center at Lackland AFB, TX and as the DVBIC San Antonio Site Director. He currently serves as the USAF Surgeon General Neurology Consultant. He is board-certified in both Neurology and Psychiatry. He also serves as the DoD Liaison to two White House appointed panels of the Defense Health Board.

Col Jaffee has served as an Aerospace Neurology Consultant at the Aerospace Consultation Service/USAF School of Aerospace Medicine and has served as the USAF Psychiatry Consultant on security clearance issues. He has academic appointments as an Assistant Clinical Professor of Neurology and an Associate Clinical Professor of Psychiatry at the University of Texas Health Sciences Center in San Antonio, TX as well as holding the position of Assistant Professor of Neurology at the Uniformed Services University of the Health Sciences (USUHS) in Bethesda, MD.

Col Jaffee holds an M.D.degree from University of Virginia School of Medicine and a B.A from the University of Pennsylvania as well as B.S. in Economics from the Wharton School of Finance and Commerce. He completed residency training at Wilford Hall Medical Center where he was selected as chief resident for both the departments of Neurology and Psychiatry.

During his deployment in Balad AB, Iraq, Col. Jaffee was the Chief of Medical Staff (SGH) at the Air Force Theater Hospital with the 332nd Expeditionary Medical Group.

He has been the recipient of several honors and awards including the only DoD physician selected as a William Webb fellow by the Academy of Psychosomatic Medicine for excellence in advancing the understanding of the mind-body interface. He has been involved in extensive research in the area of Traumatic Brain Injury and is the author of many articles and papers. He serves on many selected federal panels and review boards. He has been an invited speaker of many national and international conferences as well as to the Institute of Medicine. He has received citations from the U.S. Surgeon General and the Iraqi Surgeon General. He has received commendations from four cabinet level departments as well as the Congressional Brain Injury Task Force. He was selected as the activeduty U.S. delegate to NATO for international coordination of TBI initiatives.



# Keynote Speaker 🌵

# Captain Melissa Kaime, м.D.

Captain, US Navy Medical Corps and Director, CDMRP, USA



Captain Kaime joined the CDMRP staff in June 2005 as Deputy Director, overseeing the day-to-day operations of the CDMRP. In her short time in this capacity she has infused energy into existing programs and streamlined processes to reduce duplication and conserve resources. She came to the CDMRP after 15 years of exceptional service at the Naval Medical Center, San Diego (NMCSD), where she was Director of the Breast Health Center and Staff Physician in the Division of Hematology/ Oncology. She served in Operation Iraqi Freedom II, providing trauma care for coalition forces, insurgents and civilians in Al Asad and Fallujah, Iraq from August 2004 to March 2005.

Captain Kaime completed a B.S. in Engineering from Vanderbilt University, graduating in three years with summa cum laude honors. She earned her M.D. from St. Louis University School of Medicine, and then completed internship and internal medicine residency at the Naval Hospital, Oakland, California, and a hematology/ oncology fellowship at the NMCSD.

Dr. Kaime served as General Medical Officer on the USS McKee AS-41 and Staff Internist at the Naval Hospital, Okinawa, Japan, before her assignment to NMCSD. Under her directorship of the Breast Health Center and as the NMCSD Principal Investigator of national clinical trials, she won several awards in research performance and customer service. She served as the TRICARE Region Nine Director for Breast Health Care Initiative, overseeing the efforts in breast care at seven different military treatment facilities in Southern California. Dr. Kaime served as Chairman of the Bureau of Medicine and Surgery Executive Steering Committee on Breast Care, directing the disbursement and utilization of funds for breast care to 35 Navy military treatment facilities. She has been the keynote speaker at national meetings and has lectured extensively on all aspects of cancer care.

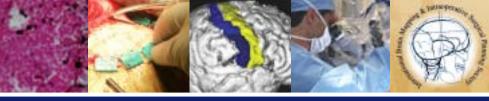
Her many professional honors and awards include the Meritorious Service Medal; the Navy Commendation Medal, the Navy Achievement Medal and the Outstanding Volunteer Service Medal. Captain Kaime is board certified in Medical Oncology, Hematology and Internal Medicine and is a Fellow of the American College of Physicians.



# THURSDAY August 27

	08.00 - 08.30	Official Welcome & Introduction
		KEYNOTE SPEAKER Michael S. Jaffee, M.D., FS, USAF National Director, Defense and Veterans Brain Injury Center (DVBIC) Walter Reed Army Medical Center US ARMY, USA Overview of Department of Defense Initiatives in Traumatic Brain Injury
	08.30 - 09.00	Scientific Session 6: Traumatic Brain Injury
þ	in.	Chair: David Moore, M.D., Ph.D. Deputy Director for Research, DVBIC, Interim Director, DVBIC/DCoE – AFIP Laboratory of Traumatic Brain Injury, TBI Scientific Advisor, DCoE, USA The Blast (+) Syndrome of Traumatic Head Injury
		Co-Chair: Neal Prakash M.D., Ph.D. President of IBMISPS, Assistant Professor of Neurology, University of Hawaii, USA Novel magnetic resonance diffusion tensor tractography methods: applications for mapping white matter damage in blast injury and TBI patients
		Ming-Xiong Huang, Ph.D. Research Radiology, Rehabilitation and Psychiatry Services, VA San Diego Healthcare System Department of Radiology, University of California, San Diego (UCSD), USA Integrated Imaging Approach with MEG and DTI to Detect Mild Traumatic Brain Injury in Military and Civilian Patients
		<b>Cheng Cao, Ph.D.</b> Department of Kinesiology, Pennsylvania State University, USA <b>Describing the Spectral Nonstationary Level of EEG Signals</b> based on Shannon Entropy of Dominant Frequency Shifting and Its Application as Index of Residual Functional Deficits after Mild Traumatic Brain Injury
		Jiangang Shen, Ph.D. Assistant Professor, School of Chinese Medicine, Research Centre of Heart, Brain, Hormone & Healthy Aging, The University of Hong Kong, China Development of 3-actoxymethoxycarbonyl-2,2,5,5-tetramethyl- 1-pyrrolidinyloxyl as an Electron Paramagnetic Resonance Imaging Reagent for In Vivo Mapping Brain Oxygen Distribution and Infarction in Ischemic Brain
		Q & A Session
	09:30 - 09.45	Coffee Break

09:30 - 09.45



# THURSDAY August 27

## 09.50 – 10.10 Oral Poster Session 3 Chair: Alex Golby

# **10.10 – 11.10** Scientific Session 7: Neuro-Physionology and Brain Mapping

## Chair:

## Aaron A. Cohen, M.D., M.Sc.

Assistant Professor of Neurosurgery, Department of Neurosurgery, University of Indiana School of Medicine, Indianapolis Neurosurgical Group, USA

Awake Craniotomy and Brain Mapping: Nuances of Technique

## Sarat Chandra, M.D

Associate Professor and Director of Epilepsy Surgery Program, Department of Neurosurgery, Neurosciences Centre, All India Institute of Medical Sciences, India Role of PET-MRI Fusion Based Neuronavigation Along with Simultaneous Electrocorticography for Resections in Neocortical Epilepsies: A Pilot Study

## Hosam Al-Jehani, M.D.

Department of Neurosurgery, Montreal Neurological Institute and Hospital, McGill University, Canada Revisiting the Lower Sensory Strip: Functional Results Depending on 500 Cases

## H. Hallez, M.D.

MEDISIP-IBBT-UGENT, IBITECH, Ghent University, Belgium

Feasibility of Incorporating a Priori Information in Ictal EEG Source Localization of Patients Suffering from Epilepsy

## Michele Aizenberg, M.D.

Assistant Professor of Neurosurgery, Section of Neurosurgery, University of Nebraska Medical Center, USA

Reliability of Non-Invasive Functional Mapping Techniques for Pre-Operative Planning

Q & A Session

## 11.10 – 11.30 Break



# THURSDAY August 27

# 11.30 – 12.20Scientific Session 8: Convection – Enhanced Delivery of<br/>Therapeutic Agents

#### Chair:

**John Heiss, M.D.** Head, Clinical Unit, Surgical Neurology Branch, NINDS, National Institutes of Health, USA

Convection-Enhanced Delivery of Therapeutic Agents into the Epileptic Focus: Preclinical and Clinical Research

#### Co-Chair:

Malisa Sarntinoranont, Ph.D. Assistant Professor, Department of Mechanical & Aerospace Engineering, University of Florida, USA

Diffusion Tensor Imaging-based Computational Models for Convection-Enhanced Delivery

## Bharat Guthikonda M.D.

Assistant Professor of Neurosurgery, Director of Skull Base Research, Department of Neurosurgery LSU, HSC, Shreveport, USA

Image Guided Placement of Ventricular Catheters: Does it affect Proximal Malfunction rate?

## Keyvan Farahani, Ph.D.

Acting Chief, Image-Guided Interventions Branch, Cancer Imaging Program, National Cancer Institute, USA Image Guided Drug Delivery in Cancer

#### Q & A Session

•		
12.20 - 12.40	Break	
12.40 – 13.20	<b>KEYNOTE SPEAKER</b> Captain Melissa Kaime, M.D. Director of Congressionally Directed Medical Research Program (CDMRP), Overview of Congressionally Directed Medical Research Program (CDMRP)	USA
13.20 - 14.05	Lunch Break	

# THURSDAY August 27

14.05 – 14.35	Oral Poster Session 4
	Chair:
	John Heiss

## 14.35 – 15.35 Scientific Session 9: Brain Implants & Human Brain Machine Interface

# Chair:

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

Sorting out Verbal Fluency/Cognitive Issues in Deep Brain Stimulation

## Jun Yao, Ph.D.

Department of Physical Therapy and Human Movement Sciences, Department of Biomedical Engineering, Northwestern University, USA

Can Brain Machine Interface be used for Controlling Hand Function in Moderately to Severely Affected Stroke Survivors?

## D. Fontaine, M.D.

CHU de Nice; CHU de Toulouse; CHU de Lyon; CHU de Lille; CHU de Saint-Étienne; Equipe de Recherche en Imagerie Médicale, Clermont-Ferrand, France

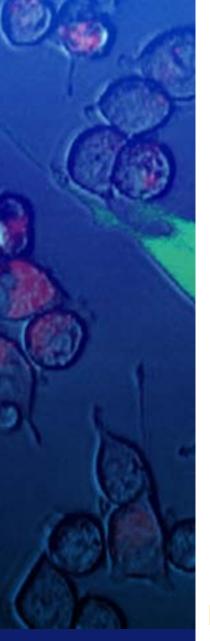
Anatomical Location of Effective Contacts in Patients with Chronic Cluster Headache Treated by Deep Brain Stimulation

#### Julia Kuss, M.Sc.

Institute of Biomedical Engineering, Faculty of Electrical Engineering and Information Technology, Dresden University of Technology, Germany Head Phantom for Verification of a Localization Tool of Subdural Implanted Electrodes in Epilepsy Surgery

Q & A Session

#### 15.35 – 15.55 Break





## 15.55 – 16.55 Scientific Session 10: Multi-Modality Imaging

## Ihtsham Ul Haq M.D.

Senior Fellow at the Movement. Disorders Center of the McKnight Brain Institute of the University of Florida Department of Neurology, USA

A Novel MRI sequence, the Fast Gray Matter Acquisition T1 Inversion Recovery (FGATIR), is Superior to Fluid Attenuated Inversion Recovery (FLAIR) for the Resolution of White Matter Lesions (WMLs)

#### Chair:

#### Georg Widhalm M.D.

Medical University of Vienna (MUW), Department for Neurosurgery, Austria Value of 1H-Magnetic Resonance Spectroscopy Chemical Shift Imaging (CSI) for Grading of Gliomas with Non-Significant Contrast Enhancement in Comparison to ??C-Methionine Positron Emission Tomography (MET-PET)

#### Wei-Chan Lin, Ph.D.

Department of Biomedical Imaging & Radiological Sciences, National Yang-Ming University, Taipei, Taiwan

Effects of Long-Term Addiction of Cocaine on Rat Dopaminergic and Serotonergic Systems Assays by Multimodalities of Molecular Imaging

## Co-Chair:

Chris Baeken, M.D. Department of Psychiatry, UZ Brussels, Belgium The Use of 3D-MRI to Localize the Dorsolateral Prefrontal Cortex in TMS Research

## David Coope, MRCS(Eng), MB.ChB, BSc(Hons)

Ogelsby Clinic Research Fellow, Wolfson Molecular Imaging Centre, University of Manchester, UK

Co-Registration of High Resolution Multi-Modality Imaging for Tumor Evaluation and Treatment Planning in Gliomas

Q & A Session

16.55 – 17.15

Tea Recess

# THURSDAY August 27

## 17.15 – 18.15 Scientific Session 11: New Horizons

#### Chair:

Arminas Ragauskas, D.Sc.

Professor, Head of Telematics Sc. Lab., Kaunas University of Technology, Lithuania Non-invasive Absolute ICP Value Measurement Technology: Healthy Volunteers' and Neurological Patients' Studies

## Christoph Zehendner, Graduate Medical Student

Institute of Physiology and Pathophysiology, University Medical Center of the Johannes Gutenberg University Mainz, Germany

Cortical Tissue Is Involved In Altering ZO-1 Distribution and Enhanced Caspase-3 Activation in Brain Endothelial Cells Under Hypoxia

## AI Samara, Ph.D.

Biomedical Research Foundation of the Academy of Athens, Department of Clinical Research, Laboratory Of Endocrinology, Athens Medical School, Greece **Proteomics Revealing Rat Hippocampal Lateral Asymmetry** 

## Co-Chair:

## Johan Montagnat, Ph.D.

CNRS Researcher, I3S laboratory, Sofia Antipolis, France Building collaborative Multi-centric federations of Neurological Resources with Grid Technologies

## L. Shi, M.D.

Prince of Wales Hospital, Hong Kong, China Statistical Morphometry of the Vestibular System in Adolescent Idiopathic Scoliosis

Q & A Session

End of Day 2



# Keynote Speaker 🌵

# Keith L. Black, M.D.



Chairman, Dept. of Neurosurgery, Director, Maxine Dunitz Neurosurgery Institute, Cedars-Sinai Medical Center, USA

Dr. Keith Black is Chairman and Professor of the Department of Neurosurgery and Director of Maxine Dunitz Neurosurgical Institute at Cedars-Sinai Medical Center. He holds the Ruth and Lawrence Harvey Chair in Neurosciences.

An internationally renowned neurosurgeon and researcher, Dr. Black's groundbreaking research includes pioneering work to open the blood-brain barrier; enabling chemotherapeutic drugs to be delivered directly into the tumor, developing a vaccine to enhance the body's immune response to brain tumors, use of gene arrays to develop molecular profiles of tumors, and the use of focused microwave energy to non-invasively destroy brain tumors. His work has been featured in numerous television programs and written media; most notably on the Fall 1997 cover of "Time" Magazine in a special edition of "Heroes in Medicine".

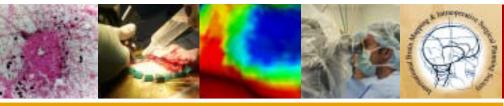
Dr. Black has a unique ability to combine cutting-edge research and an extremely busy surgical practice. Since 1987, he has performed more than 5,000 operations for resection of brain tumors.

Dr. Black completed an accelerated college program at the University of Michigan, earning both his undergraduate and medical degrees in six years.

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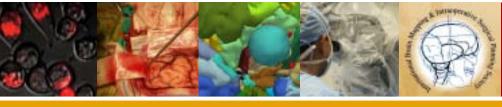
# FRIDAY August 28

08.30 – 09.10	<ul> <li>KEYNOTE SPEAKER</li> <li>2009 IBMISPS PIONEER IN MEDICINE AWARD:</li> <li>For excellence in research, discovery and education, and pioneering work on Selective Opening of Blood Brain Barrier and Immunotherapy of Brain Cancers</li> <li>Keith Black, M.D.</li> <li>Chairman, Dept. of Neurosurgery at Cedars-Sinai Medical Center Director of Maxine Dunitz Neurosurgery Institute, USA</li> <li>Outsmarting Brain Tumors – from Nanodrugs to Optical Imaging</li> </ul>
	Q & A Session
09.10 – 10.10	Chair: Warren Grundfest, M.D., FACS Professor of Bioengineering & Electrical Engineering, The Henry Samueli School of Engineering & Applied Science, Professor of Surgery, David Geffen School of Medicine at UCLA, Past President of IBMISPS, USA The Application of Nanotechnologies to Brain Mapping and Image-Guided Therapy William Olbricht, Ph.D.
	Professor, School of Chemical and Biomolecular Engineering, Cornell University, USA Nanoparticle Transport in Convection-enhanced Drug Delivery Co-Chair: Rutledge G. Ellis-Behnke, Ph.D. Associate Director, Technology Transfer Office, University of Hong Kong, Associate Professor, University of Hong Kong Faculty of Medicine Dept of Anatomy & State Key Lab of Brain & Cognitive Sciences & Research Centre for Heart, Brain and Healthy Aging Hong Kong SAR, China, Research Affiliate, Massachusetts Institute of Technology, Dept of Brain & Cognitive Sciences, Cambridge, MA USA Associate Editor, Nanomedicine: Nanotechnology, Biology & Medicine Redefining Tissue Engineering for Nanomedicine: Visualizing the Progress of Regenerating Axons in the Mammalian Visual System after Complete Transection and Treatment with Self-Assembling Nanomaterial
	H. Bagher-Ebadian, Ph.D. Department of Neurology, Henry Ford Hospital & Department of Physics, Oakland University, USA MRI Estimation of Gadolinium and Albumin Effects on Water-Proton
	Paul Borm, Ph.D. Director of Centre of Expertise in Life Sciences, Hogeschool Zuyd, The Netherlands Director of Centre of Expertise in Life Sciences, Hogeschool Zuyd, The Netherlands Q & A Session
10.10 - 10.30	Coffee Break
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# FRIDAY August 28

	10.30 – 11.20	Scientific Session 13: Rehabilitation Medicine: Stem Cell
		Chair: Louis Yuge Dr.Med.Sc., PhD Professor & Main Director, Hiroshima University, Faculty of Medicine, Graduate School of Health Sciences, Division of Bio-Environmental Adaptation Sciences & Space Bio-Laboratories, Hiroshima, Japan; Visiting Professor, University of California, Los Angeles Microgravity Facilitates Stem Cell Proliferation and Neural Differentiation after Transplantation
1.2.2		Vicky Yamamoto (Ph.D. Candidate) USC-Keck School of Medicine, USA
		Cleavage of the Wnt receptor Ryk regulates neuronal differentiation during cortical neurogenesis.
		Josh Neman (M.D., Ph.D. Candidate) Dept of Neurobiology, David Geffen School of Medicine, University of California at Los Angeles Mental Retardation Research Center, USA Specification of Oligodendrocytes from Embryonic Stem Cells: Implications for White Matter Repair
a starte		Q & A Session
	1.20 – 11.40	Oral Poster Session 5 Chair: Shouleh Nikzod
	<b>11.40 – 12.40</b>	Lunch Break



# FRIDAY August 28

#### 12.40 - 13.50 Scientific Session 14: New Horizons

#### Chair:

#### Michael J. Roy, M.D., MPH

Colonel, Medical Corps, US Army Director, Division of Military Internal Medicine, Professor of Medicine, Uniformed Services University of the Health Sciences, USA An Update on the ViRTICo (Virtual Reality Therapy and Imaging in Combat Veterans) Trial

#### Yau-Zen Chang, Ph.D.

Department of Mechanical Engineering, Chang Gung University, Tao-Yuan, Taiwan Robust and Fast Face Registration Using a Three Dimensional Spatial Filter and Evolutionary Optimization Algorithm

#### Zahra Moussavi, Ph.D.

Department of Electrical and Computer Engineering, University of Manitoba, Canada **Objective Measures of Human Brain Spatiotemporal Perception** using Computer Games with Manipulandum

#### Stefan Wolfsberger M.D.

Medical University Vienna (MUW), Department of Neurosurgery, Austria The Value of 5-Aminolevulinic Acid (5-ALA) for Intraoperative Detection of Anaplastic Foci in Diffusely Infiltrating Gliomas with Non-Significant Contrast-Enhancement

#### Pratik Y. Chhatbar, M.B.B.S.

Program in Biomedical Engineering, Department of Physiology & Pharmacology, SUNY Downstate Medical Center, USA

Ethical Needs for Tomorrow's Neural Prostheses: Where to Draw the Line?

#### Juan C Fernandez-Miranda, M.D.

Clinical Instructor, Department of Neurosurgery, University of Pittsburgh Medical Centre, USA Advanced MRI Techniques for Presurgical Planning in Minimially Invasive Brain Surgery

Q & A Session

13.50 - 14.10 **Tea Recess** 



# FRIDAY August 28

#### 14.10 – 14.50 Scientific Session 15: Spine

#### Chair:

#### Patrick Johnson, M.D.

Cedars-Sinai Institute for Spinal Disorders, Director, Neurological and Orthopedic Spine-Fellowship Program, Co-Director, Spine Stem Cell Program, Director, California Association of Neurological Surgeons, USA

State-of-the-art in Spinal Instrumentation

#### Co-Chair: Rahul Jandial, M.D., Ph.D.

Assistant Professor, Division of Neurosurgery, Section Head Spine Program, City of Hope, National Cancer Centre; Adjunct Professor, The Scripps Research Institute, USA **Biologics and Bone Grafting in Spine Surgery** 

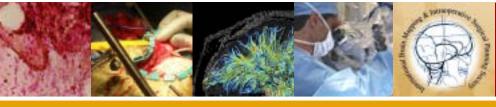
## Steven A. Toms, M.D., M.P.H., F.A.C.S.

Director, Department of Neurosurgery, Surgical Director, Neuroscience Services Geisinger Health System; Neuroscience Administration M.C., USA Nanotechnology in Spinal Surgery: Nanoscale Imaging and Scaffolding

Q & A Session

#### 14.50-15.10 Tea Recess





# FRIDAY August 28

#### 15.10 – 16.10 Scientific Session 16: Multi-modality Mapping

#### Chair:

## Aria A. Tzika Ph.D.

Director of NMR Surgical Laboratory, Massachusetts General Hospital and Shriners Burns Institute, Athinoula A. Martinos Center for Biomedical Imaging, Harvard Medical School, USA

Brain Mapping in Stroke Patients by Combining fMRI and MR Compatible Rehabilitation

## Co-Chair:

## Peter Bandettini, Ph.D.

Section Head, Functional Imaging Methods FMRI Core Facility, National Institute of Mental Health, USA

Functional MRI Dynamics, Fluctuations, and Patterns

## Louis Lemieux, Ph.D.

Professor, Dept of Clinical & Experimental Epilepsy (DCEE), UCL Institute of Neurology The National Hospital for Neurology & Neurosurgery, UK Multi-Modal Synchronous Imaging

## B. Kim, M.D.

Department of Radiology, University of Michigan Medical Center, USA Accurate Localization of Subdural Grid Electrodes in Epilepsy Patients Undergoing Presurgical Evaluation With Electrocortical Stimulation Mapping

## Nathalie Y.R. Agar, Ph.D.

Instructor in Surgery, Department of Neurosurgery, Brigham and Women's Hospital, Harvard Medical School, USA

Mass Spectrometry Approaches to Intraoperative Surgical Planning

Q & A Session

End of Day 3



# Keynote Speaker 🌵

# Peter Black, M.D. C.M., Ph.D., FACS

Franc D. Ingraham Professor of Neurosurgery, Department of neurosurgery, Brigham and Women's Hospital Harvard Medical School, USA



**Keynote Speaker** 

POSTERSOR SPINAL

Dr. Peter Black was born and raised in Canada attended Harvard College and McGill University. He did surgical and then neurosurgical residency at the Massachusetts General Hospital. He earned a Ph.D. in philosophy from Georgetown University. In 1987 he moved to Brigham and Women's and Children's Hospitals as Neurosurgeon-in-Chief and Professor of Neurosurgery at Harvard Medical School. He is presently Founding Chair of the Departments of Neurosurgery at Brigham and Women's Hospital, Chair Emeritus of the Department of Neurosurgery at Children's Hospital Boston and Franc D. Ingraham Professor of Neurosurgery at Harvard Medical School.

Dr. Black has devoted most of his professional life to treating patients of all ages with brain tumors. He is a committed clinical neurosurgeon with a busy neurosurgical oncology practice. He is consistently listed in Best Doctors in America and Top Doctors with special interest in surgery for meningiomas, pituitary adenomas, and low-grade gliomas; image-guided minimally invasive neurosurgery; skull base surgery; and brain mapping. He helped to develop the world's first intraoperative MRI with Ferenc Jolesz and has used this device extensively to improve brain tumor treatment. He was instrumental in developing the first linac radiosurgery unit in North America with Jay Loeffler at Brigham and Women's Hospital. He sits on many foundations and editorial boards and is Chair of the Editorial Board of Neurosurgery. He also directs a molecular biology laboratory that investigates growth and invasion in brain tumors, especially innovative methods of blocking these with emphasis on local delivery systems. His bibliography includes 13 books and five hundred papers, most involving brain tumors, brain imaging and image-guided surgery, medical ethics, and molecular neurosurgery. He has lectured around the world on these

Dr. Black is deeply committed to neurosurgical education and development around the world and is President-Elect of the World Federation of Neurosurgical Societies. He has mentored over a hundred students, residents, young faculty, and graduate neurosurgeons from more than thirty countries. He is especially proud of his former trainees, many holding prominent academic positions.



# SATURDAY August 29

	09.00 – 09.40	<ul> <li>KEYNOTE SPEAKER</li> <li>2009 IBMISPS PIONEER IN MEDICINE AWARD:</li> <li>For excellence in research, discovery, education, and pioneering work in the field of Image Guided Surgery</li> <li>Peter M. Black, M.D., Ph.D.</li> <li>Franc D. Ingraham Professor of Neurosurgery, Founding Chair, Dept. of Neurology, Brigham and Women's Hospital, Harvard Medical School, USA</li> <li>New Developments in Image-Guided Brain Tumor Therapy</li> </ul>
	09.40 - 10.40	Scientific Session 17: State-of-the Art in Brain Mapping
		Chair: Shahram Sherkat, M.D. Department of Neurosurgery, San Filippo Neri Hospital of Rome, Italy Three Dimensional Rendering Software of Brain MR Images and Their Application for Planning Surgical Procedures: Clinical Experience on a Series of 90 Patients
		<ul> <li>Aaron Filler, M.D., Ph.D., FRCS</li> <li>Medical Director Institute for Nerve Medicine, Neurosurgical Staff, Cedars Sinai Medical Center</li> <li>The Anti-symmetric Dyadic Tensor Model, the Arctangent Tractographic Function and their Role in the Past &amp; Intra-Operative Future Of Diffusion Tensor Imaging</li> </ul>
		Co-Chair: Liliana Goumnerova, M.D. FRCSC Director, Clinical Pediatric Neurosurgical Oncology Children's Hospital/Dana Farber Cancer Institute, Associate Professor of Surgery (Neurosurgery) Harvard Medical School, USA Experience with Intraoperative MRI at Children's Hospital Boston
1 42		Hamid Soltanian-Zadeh, Ph.D. Control and Intelligent Processing Center of Excellence, School of Electrical and Computer Engineering, University of Tehran, Iran & Image Analysis Laboratory, Radiology Department, Henry Ford Hospital, USA Atlas-based Fiber Bundle Segmentation Using Principal Diffusion Directions and Spherical Harmonic Coefficients
		<b>Benjamin Burt M.D.</b> Orbito-Facial Department, Jules Stein Eye Institute, University of California at Los Angeles, & Oculoplastics Department, Texas Tech University, Paul. L. Foster School of Medicine, USA Diffusion Tensor Imaging (DTI) of the Human Orbit
		Q & A Session
	10 40 - 11 00	Coffee Break



# SATURDAY August 29

11.00 – 11.30	Oral Poster Session 6 <sup>Chair:</sup> <mark>Keyvan Farahani</mark>
11.30 – 12.10	Scientific Session 18: Vascular Blood Flow and Stroke
	Chair: Walter J. Koroshetz, M.D. Deputy Director, National Institute of Neurologic Disorders and Stroke, USA Promise of Imaging in the Management of Cerebro-Vascular Diseases
	Co-Chair: Elizabeth Bullitt, M.D. Van Weatherspoon Jr. Professor of Surgery, Director of CASILab, University of North Carolina, USA
	The Effect of Exercise on Cerebral Vascular Morphology of Healthy Aged Subjects as Visualized by Magnetic Resonance Angiography
	Aneesh Singhal, M.D. Associate Professor of Neurology, Kistler Stroke Center, Massachusetts General Hospital, Harvard Medical School, USA Effects of Oxygen Therapy in Stroke - Insights from Brain MRI
	Studies
	<b>Clark C. Chen, M.D., Ph.D.</b> Instructor, Division of Neurosurgery, Beth Israel Deaconess Medical Center, Instructor, Department of Genetics, Instructor, Radiation Oncology, Dana-Farber Cancer Institute, Harvard Medical School, USA
	Functional Mapping for Detection of Tumor Recurrence after Anti-angiogenic Therapy
	<b>Tania Correa de Toledo Ferraz Alves, M.D., PhD</b> Colaborator Medical Assistant Professor, Department of Psychiatry, Clinical Hospital, University of São Paulo Medical School, Brazil.
	Evidence of Subtle Gray Matter Reduction in the Parieto Occipital Cortex in Association to the Presence of Cardiovascular Risk Factors: A Possible Link Between Vascular
	Dementia And Alzheimer Disease Q & A Session
	11.00 - 11.30

12.30 – 13.15 Lunch



# **SATURDAY** August 29

## 13.15 – 14.15 Scientific Session 19: Brain Mapping in Radiosurgery and Radiation Oncology

#### Chair:

Antonio A. F. De Salles, M.D., Ph.D. Professor of Neurosurgery, Head of Stereotactic Radiosurgey, David Geffen-UCLA School of Medicine, USA

Importance of Fibertracking Maps for Functional Neurosurgery

#### **Co-Chair:**

## Reinhard Schulte, M.D., M.S.

Associate Professor of Radiation Medicine, Translational Research, Loma Linda University School of Medicine, USA New Directions in Treatment Planning, Image Guidance and

**Delivery of Focused Proton Radiation Therapy** 

#### Ken'ichi Morooka, M.D.

Digital Medicine Initiative, Kyushu University, Fukuoka, Japan Digital Brain Atlas for Safe and Accurate Stereotactic Neurosugery

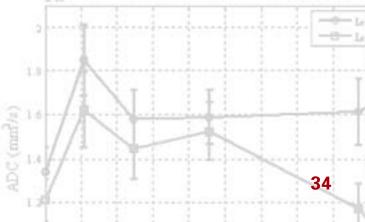
#### Lars Ewell, PhD

Assistant Professor, Department of Radiation Oncology, University of Arizona, USA Difficulties in Glioma Diagnosis/Monitoring: Apparent Diffusion Coefficients, Magnetic Resonance Spectroscopy and the Role of Uncertainty

#### Q & A Session

14.15 – 14.35 Tea

Tea Recess



ADC vs. Tune for a Patient With 2 Lesio



# **SATURDAY** August 29

## 14.35 – 15.15 Scientific Session 20: Brain mapping in Social Sciences: NeuroEconomics and NeuroMarketing

#### Chair:

**Bernd Weber, M.D., PhD** Head - NeuroCognition | Imaging, Department of Epileptology, University of Bonn, Germany Social Preferences of the Brain

## David Laibson, Ph.D.

Professor of Economics, FAS, Harvard University, USA Neuroeconomics, Instantaneous Gratification, and the Multiple Systems Hypothesis

## Co-Chair:

## Daniel Houser, PhD

Director of Interdisciplinary Center for Economic Science (ICES), Professor of Economics, Department of Economics, George Mason University, USA A Functional Imaging Study of Reciprocity in Personal and Anonymous Exchange: The Role of Faces

## Q & A Session

## 15.15 Close of Conference



# Gala Reception

## **Cocktail Award Event**

6:00 - 9:15 pm FAIRMONT HOTEL - BOSTON

### Keynote Speaker: Professor Venkatesh Narayanamurti

### **2009 Crystal Award Recipients**

BEACON AWARD FOR COURAGE AND DEDICATION



**Bob Woodruff** 

BEACON AWARD FOR COURAGE AND DEDICATION



Colin R. Rich

PIONEER IN HEALTHCARE POLICY



Senator John Kerry

PIONEER IN TECHNOLOGY



William A. Hawkins

#### PIONEER IN MEDICINE AWARD



Dr. Keith Black

#### PIONEER IN MEDICINE AWARD



Dr. Peter M. Black



### **Gala Reception Schedule of Events**

### 6:00pm Cocktail Event

#### 7:00pm Introductions:

#### **Babak Kateb**

Founding Chairman of the Board of Directors IBMISPS; Founding Chairman of the Board, Brain Mapping Foundation; Scientific Director of Brain Mapping Foundation; Managing Editor of IBMISPS-NeuroImage

#### 7:10pm Keynote Speaker: $\Psi$

#### **Professor Venkatesh Narayanamurti**

Benjamin Pierce Professor of Technology and Public Policy in School of Engineering and Applied Sciences (SEAS) and the Harvard Kennedy School, Harvard University, Boston, USA

#### 7:30pm Dinner

8:15pm David Moore

Deputy Director of DVBIC

- 8:20pm Jim Lorraine Special Assistant to the Chairman, Joint Chiefs of Staff for Warrior and Family Support
   8:30pm Admiral Mullen
  - Chairman of the Joint Chiefs of Staff; Principal military advisor to the President,the Secretary of Defense, the National Security Council, and the Homeland Security Council

#### 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:** 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:**

2008 Dr. Ron Kikinis 2007 Richard Frakowiack 2007 Arthur W. Toga 2007 John Mazziotta 2006 Warren Grundfest 2006 Alim Louis Benabid 8:40pm Beacon of Courage and Dedication Crystal Award: SMG Colin R. Rich Bob Woodruff

- 8:50pm Pioneer in Healthcare Policy Crystal Award: The Honorable Senator Kerry
- 9:00pm Pioneer in Medicine Crystal Award: Keith L. Black M.D. Peter Black, M.D., Ph.D.
- 9:05pm Pioneer in Technology Crystal Award: William Hawkins Medtronic
- 9:10pm Young Investigator Award: Vicky Yamamoto

USC-Keck School of Medicine For her ground breaking research in Stem Cell

9:10pm Student Research Award: Josh Neman and Amir Goodarzi UCLA David Geffen School of Medicine For establishing IBMISPS-UCLA Chapter

#### 9:15pm Closing Remarks

#### Pioneer in Healthcare Policy:

The Pioneer in Healthcare Policy Award is presented to lawmakers who have demonstrated visionary and cross-disciplinary 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:**

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.

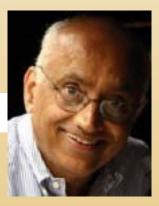
Past Award Recipients: 2008 Mark L. Vachon, GE Healthcare 2007 Steve Rusckowski, Philips Healthcare 2006 Brainlab



# Keynote Speaker 🎙

## Venkatesh Narayanamurti

Benjamin Pierce Professor of Technology and Public Policy in School of Engineering and Applied Sciences (SEAS) and the Harvard Kennedy School, Harvard University, Boston, USA



Professor Venkatesh Narayanamurti is the Benjamin Pierce Professor of Technology and Public Policy in School of Engineering and Applied Sciences (SEAS) and the Harvard Kennedy School where he is concurrently the Director of the Science, Technology and Public Policy program. He was the John A. and Elizabeth S. Armstrong Professor of Engineering and Applied Sciences, Professor of Physics, and the immediate past Dean of the School of Engineering and Applied Sciences at Harvard University (1998-2008) and concurrent past Dean of Physical Sciences (2003-2006).

He has published widely in the areas of low temperature physics, superconductivity, semiconductor electronics, and ballistic electron emission microscopy (BEEM) and photonics. He is credited with developing the field of phonon optics: the manipulation of monoenergetic acoustic beams at terahertz frequencies. He is an elected member of National Academy of Engineering and The American Academy of Arts and Sciences, a Fellow of the American Physical Society, the American Association for the Advancement of Science, the IEEE, and the Indian Academy of Sciences. He has previously been a member of the Science Advisory Board for the NASA JPL CSMT (Center for Space Microelectronic Technology). He is currently a member of the NASA JPL MircoDevices Laboratory Visiting Committee. He was recently awarded an honorary doctorate from the Tohuku University.

He received his Ph.D. from Cornell University in 1965. He joined Bell Laboratories in 1968 as a member of the technical staff and became director of solid state electronics research in 1981. He was Vice President of Research and Exploratory Technology at Sandia National Laboratories, Albuquerque, N.M., from 1987 to 1992. From 1992 to 1998 he served as the Richard A. Auhll Professor and Dean of Engineering at the University of California at Santa Barbara.

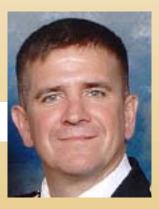


**GALA** Reception

### 2009 IBMISPS BEACON OF COURAGE AND DEDICATION AWARD

# Colin R. Rich

Sergeant Major, US Army (retired)



SGM (ret) Colin Rich is a person who can never be forgotten- for his resilience, courage, humor, and humility. He was injured in Afghanistan in 2002. His injury was severe (penetrating brain injury) and he could easily have been medically discharged from the Army. Colin is a highly decorated and trained senior enlisted soldier (Special Forces/ Ranger) with multiple deployments to "hot" spots throughout his career. He did not want to leave the Army as he strongly believed he had not finished his mission, his "boys" /unit needed him and he could contribute. He recovered sufficiently [although he does have a significant visual field loss due to the injury] and was able to REDEPLOY when his unit went to Iraq (for about 9 months) then AGAIN when his unit was sent back to Afghanistan. Since his injury, he has received numerous awards to include a Purple Heart, Legion of Merit, 3 bronze stars, meritorious service medal and the global war on terrorism award.

After 22+ years in the Army, he decided to retire and received a medical retirement (full disability) in 2007 - 4 years after his injury. Since his injury there have been multiple challenges for Colin (and his family) but he has always tried to be positive, to compensate for his disability, and "to do his job". It is an honor and privilege to know and work with him. He is an inspiration for many- if you Google his name you will find some articles that have been written about him over the past few years. He has been active both formally and informally in the Wounded Warrior Program being a mentor, the guide dog foundation [he has a guide dog primarily for visual impairment], and involved in some working groups with AW2/VA. He is in training for a 300 mile walk of the Appalachian Trail [by himself] this summer.

SGM Rich's combat deployments include Panama, the Gulf War, three tours the Balkans, two tours in Afghanistan and one tour in Iraq. (OEF-II and OEF-VI) to name a few. SGM Rich has received copious awards and decorations:

LOM, 3 BSM, 1 PH, 2 MSM, 2 JSCM, 2 ARCOM, 1 JSAM, 2 AAM, 6 AGCM, 2 NDSM, 2 AFEM, 2 SWABS, 1 AFSM, 3 NOPDR, 1 ASR, 1 KULIBM, 1 NATOMDL, 1 GWOTEM, 1 GWOTSM, Ranger Tab, CIB 2nd AWARD, EIB, PATHFINDER BADGE, MASTER PARACHUTIST BADGE, MASTER FREE FALL PARACHUTIST BADGE, and the PARACHUTIST BADGE.



### 2009 IBMISPS BEACON OF COURAGE AND DEDICATION AWARD

## **Bob Woodruff**

ABC News Anchorman and Founder of Remind Foundation, USA



Bob Woodruff joined ABC News in 1996 and has covered major stories throughout the country and around the world for the network. He was named co-anchor of ABC's "World News Tonight" in December 2005. On January 29, 2006, while reporting on U.S. and Iraqi security forces, Mr. Woodruff was seriously injured by a roadside bomb that struck his vehicle near Taji, Iraq.

In February 2007, just thirteen months after being wounded in Iraq, Mr. Woodruff returned to ABC News with his first on-air report, "To Iraq and Back: Bob Woodruff Reports." The hour-long, primetime documentary chronicled his traumatic brain injury (TBI), his painstaking recovery, and the plight of thousands of service members returning from Iraq and Afghanistan with similar injuries. Mr. Woodruff continues to cover traumatic brain injuries for all ABC News broadcasts and platforms and was honored with a Peabody Award in 2008 for his reporting on the subject.

Mr. Woodruff has covered major stories both in the United States and overseas. His reports from New Orleans in the aftermath of Hurricane Katrina helped focus the nation's attention on the building tragedy there. He was ABC's lead correspondent on the Asian Tsunami, reporting from Banda Aceh, Indonesia and Sri Lanka. Mr. Woodruff has covered the entire so-called "axis of evil," the nuclear showdown in Iran, and in June 2005 he got unprecedented access to the secretive country of North Korea. He was among the first Western reporters into Pakistan and was one of ABC's lead foreign correspondents during the war in Afghanistan, reporting from Kabul and Kandahar on the fall of the Taliban. His overseas reporting of the fallout from September 11 was part of ABC News' coverage recognized with the Alfred I. duPont Award and the George Foster Peabody Award, the two highest honors in broadcast journalism.

Before becoming a journalist, Mr. Woodruff was an attorney. But in 1989, while teaching law in Beijing, he was hired by CBS News to work as a translator during the Tiananmen Square uprising, and a short time later he changed careers. As ABC's Justice Department correspondent in Washington in the late 1990's, Mr. Woodruff covered the office of Attorney General Janet Reno, the FBI and ATF. In 1999 he reported from Belgrade and Kosovo during the NATO bombing of Yugoslavia. Since then he has reported extensively on Europe and the Middle East.

In February 2007, Mr. Woodruff and his wife Lee co-wrote a best selling memoir "In an Instant," chronicling his injuries in Iraq and how their family persevered through a time of intense trauma and uncertainty. The Woodruff family also established the Bob Woodruff Family Fund for Traumatic Brain Injury (BWFF) to raise money to assist members of the military with cognitive rehabilitation and care following a traumatic brain injury suffered in service to their country.



# 2009 IBMISPS PIONEER IN HEALTHCARE POLICY AWARD Senator John Kerry

U.S. Senator - Massachusetts



John Kerry was born on December 11, 1943 at Fitzsimons Army Hospital in Aurora, Colorado. His father, Richard, volunteered in the Army Air Corps and flew DC-3's and B-29's as a test pilot during World War II. His mother, Rosemary, was a lifelong community activist and devoted parent.

Not long after John Kerry was born, the family settled in Massachusetts. Because his father was a Foreign Service Officer in the Eisenhower administration, John Kerry traveled a lot when he was young. On these trips, he learned firsthand what makes America a leader in the world - our optimism and our democratic values.

After graduating from Yale University, John Kerry volunteered to serve in Vietnam, because, as he later said, "it was the right thing to do." He believed that "to whom much is given, much is required." And he felt he had an obligation to give something back to his country. John Kerry served two tours of duty. On his second tour, he volunteered to serve on a Swift Boat in the river deltas, one of the most dangerous assignments of the war. For his leadership, courage, and sacrifice under fire, he was decorated with a Silver Star, a Bronze Star with Combat V, and three Purple Hearts.

Later, John Kerry accepted another tour of duty - to serve in America's communities. After graduating from Boston College Law School in 1976, John Kerry went to work as a top prosecutor in Middlesex County, Massachusetts. He took on organized crime and put behind bars "one of the state's most notorious gangsters, the number two organized crime figure in New England." He fought for victims' rights and created programs for rape counseling.

John Kerry was elected Lieutenant Governor in 1982. In that office, he organized the nation's Governors to combat the acid rain that was polluting lakes, rivers, and the nation's water supply. Two years later, he was elected to the United States Senate and he has won reelection three-times since. He is now serving his fourth term, after winning again in 2002 by the largest margin in Massachusetts history.

John Kerry entered the Senate with a reputation as a man of conviction. He confirmed that reputation by taking bold decisions on important issues. He helped provide health insurance for millions of low-income children. He has fought to improve public education, protect our natural environment, and strengthen our economy.

In 2003, John Kerry announced that he would be a candidate for president of the United States -- and he went on to mount a come from behind campaign that won the Democratic nomination. The American people reminded him once again that people are the same wherever you go, and he continues in the United States Senate fighting for what motivated him to enter public life in the first place: love of country and the call of duty.



## 2009 IBMISPS PIONEER IN MEDICINE AWARD

# Keith L. Black, M.D.



Chairman, Dept. of Neurosurgery, Director, Maxine Dunitz Neurosurgery Institute, Cedars-Sinai Medical Center, USA

Dr. Keith Black is Chairman and Professor of the Department of Neurosurgery and Director of Maxine Dunitz Neurosurgical Institute at Cedars-Sinai Medical Center. He holds the Ruth and Lawrence Harvey Chair in Neurosciences.

An internationally renowned neurosurgeon and researcher, Dr. Black's groundbreaking research includes pioneering work to open the blood-brain barrier; enabling chemotherapeutic drugs to be delivered directly into the tumor, developing a vaccine to enhance the body's immune response to brain tumors, use of gene arrays to develop molecular profiles of tumors, and the use of focused microwave energy to non-invasively destroy brain tumors. His work has been featured in numerous television programs and written media; most notably on the Fall 1997 cover of "Time" Magazine in a special edition of "Heroes in Medicine".

Dr. Black has a unique ability to combine cutting-edge research and an extremely busy surgical practice. Since 1987, he has performed more than 5,000 operations for resection of brain tumors.

Dr. Black completed an accelerated college program at the University of Michigan, earning both his undergraduate and medical degrees in six years.

# **GALA** Reception

## 2009 IBMISPS PIONEER IN MEDICINE AWARD

## Peter Black, M.D. C.M., Ph.D., FACS



Franc D. Ingraham Professor of Neurosurgery, Department of neurosurgery, Brigham and Women's Hospital Harvard Medical School, USA

Dr. Peter Black was born and raised in Canada attended Harvard College and McGill University. He did surgical and then neurosurgical residency at the Massachusetts General Hospital. He earned a Ph.D. in philosophy from Georgetown University. In 1987 he moved to Brigham and Women's and Children's Hospitals as Neurosurgeon-in-Chief and Professor of Neurosurgery at Harvard Medical School. He is presently Founding Chair of the Departments of Neurosurgery at Brigham and Women's Hospital, Chair Emeritus of the Department of Neurosurgery at Children's Hospital Boston and Franc D. Ingraham Professor of Neurosurgery at Harvard Medical School.

Dr. Black has devoted most of his professional life to treating patients of all ages with brain tumors. He is a committed clinical neurosurgeon with a busy neurosurgical oncology practice. He is consistently listed in Best Doctors in America and Top Doctors with special interest in surgery for meningiomas, pituitary adenomas, and low-grade gliomas; image-guided minimally invasive neurosurgery; skull base surgery; and brain mapping. He helped to develop the world's first intraoperative MRI with Ferenc Jolesz and has used this device extensively to improve brain tumor treatment. He was instrumental in developing the first linac radiosurgery unit in North America with Jay Loeffler at Brigham and Women's Hospital. He sits on many foundations and editorial boards and is Chair of the Editorial Board of Neurosurgery. He also directs a molecular biology laboratory that investigates growth and invasion in brain tumors, especially innovative methods of blocking these with emphasis on local delivery systems. His bibliography includes 13 books and five hundred papers, most involving brain tumors, brain imaging and image-guided surgery, medical ethics, and molecular neurosurgery. He has lectured around the world on these topics.

Dr. Black is deeply committed to neurosurgical education and development around the world and is President-Elect of the World Federation of Neurosurgical Societies. He has mentored over a hundred students, residents, young faculty, and graduate neurosurgeons from more than thirty countries. He is especially proud of his former trainees, many holding prominent academic positions.

# **GALA** Reception

## 2009 IBMISPS PIONEER IN TECHNOLOGY AWARD William A. Hawkins

Chairman and Chief Executive Officer Medtronic, USA



Bill Hawkins assumed the role of Chief Executive Officer of Medtronic, Inc. in August 2007 and became Chairman of the Board in August 2008. He was named President and Chief Operating Officer in May 2004 after joining Medtronic as Senior Vice President and President of Medtronic's Vascular business in January 2002.

Bill joined Medtronic from Novoste Corp., where he had been President and Chief Executive Officer since 1998. Previous positions included Corporate Vice President and President of the Sherwood Davis and Geck organization of American Home Products; President of the Ethicon Endo-Surgery organization of Johnson & Johnson; President, Devices for Vascular Intervention and U.S. Operations, for Guidant Corp.; and several increasingly responsible executive positions culminating in the presidency of the Ivac organization for Eli Lilly & Co. He began his medical technology career with Carolina Medical Electronics in 1977.

He received his bachelor's of science degree in electrical and biomedical engineering from Duke University in 1976 where he also conducted medical research in pathology. Bill also earned a master's degree in business administration from the Darden School of Business, University of Virginia, in 1982.

Bill is a member of the Board of Visitors of the Engineering School of Duke University and the Guthrie Theatre Board.



**ORAL POSTER SESSIONS** 

### Wednesday 26th August Oral Poster Session 1 Chair: Elizabeth Bullitt

OP1.01 MR Estimation of Longitudinal Relaxation Time (T1) in Rat Brain Using Gauss-Newton Method

Cousar Nassiry Hanis<sup>1</sup>, Hassan Bagher-Ebadian<sup>\* 2.3</sup>, Reza Faghihi<sup>1</sup>, Ramesh Paudyal<sup>3</sup> <sup>1</sup>Department of Nuclear Engineering, Shiraz University, Iran, Islamic Republic of, <sup>2</sup>Department of Physics, Oakland University, United States, <sup>3</sup>Department of Neurology, Henry Ford Hospital, United States

- **OP1.02** Expressions of interferon- $\gamma$ , interleukin-12, -4, -10 in hypothalamus of ulcerative colitis rats Ma Xiao-Peng<sup>\*</sup>, Zhou En-Hua, Wang Xiao-Mei, Wu Huan-Gan, Liu Hui-Rong, Zhang Li-Heng Shanghai University of Traditional Chinese Medicine, China
- **OP1.03** Suspended moxibustion relieves chronic visceral sensitivity and serotonin content in spinal cord in a rat model of irritable bowel syndrome Zhou En-Hua\*, Ma Xiao-Peng, Wang Xiao-Mei, Liu Hui-Rong, Wu Huan-Gan, Qi Li Shanghai University of Traditional Chinese Medicine, China
- **OP1.04 Quantitative EEG (qEEG) characteristics in depression and schizophrenia** Drazen Begic\* University Hospital Centre Zagreb, Croatia
- **OP1.05** Evaluation of specific fiber bundles using brain mapping and registration of diffusion tensor data D. Pai<sup>\*1</sup>, J. Hua1, H. Soltanian-Zadeh<sup>2,3</sup> <sup>1</sup>Wayne State University, United States, <sup>2</sup>Henry Ford Hospital, United States, <sup>3</sup>University of Tehran, Iran, Islamic Republic of
- **OP1.06** Role of posterior Broca area in gesture recognition Esteban Fridman<sup>\*</sup><sup>2</sup>, Andrés Cervio<sup>1</sup>, Santiago Condomí<sup>1</sup>, Rubén Mormandi<sup>1</sup>, Jorge Salvat<sup>1</sup> <sup>1</sup>Neurosurgical Department-Fleni Institute, Argentina, <sup>2</sup>Neurological department-Fleni Institute, Argentina
- **OP1.07** Increased fractional anisotropy in patients with Friedreich ataxia (FRDA) after treatment with recombinant human erythropoietin (rhuEPO): a diffusion tensor imaging study K Egger\*, G Rosenberger, MF Schocke, W Santner, S Boesch Medical University Innsbruck, Austria



### Thursday 27th August Oral Poster Session 2 Chair: Clark Chen

- **OP2.01** Image guided lumbar decompression for Canal stenosis *P* Gunasena\* Teaching Hospital Anuradhapura, Sri Lanka
- OP2.02 Arterial Spin Labeling (ASL) Perfusion Imaging for Anti-Angiogenic Drug Treatment of Malignant Gliomas ET Wong<sup>\*</sup>, L Barron, J Bloom, D Hackney, D Alsop Beth Israel Deaconess Medical Center, United States
- **OP2.03** Sport expert's motor imagery: functional imaging of professional motor skills and simple motor skills Gaoxia Wei\*, Jing Luo Institute of Psychology, Chinese Academy of Sciences, China
- OP2.04 Relative effectiveness of different clinical fMRI language activation paradigms for hemipsheric lateralization in brain tumor patients D Zaca\*, J J Pillai Johns Hopkins University School of Medicine, United States
- OP2.05 Comprehensive Computed Tomography-Based Virtual Anthropometry for Morphologic Evaluation of Craniosynostosis LF Domeshek\*', G Grant', S Mukundan<sup>2</sup>, JR Marcus<sup>1</sup> 'Duke University Medical Center, United States, <sup>2</sup>Brigham and Women's Hospital, United States

### Thursday 27th August Oral Poster Session 3 Chair: Alex Golby

- **OP3.01** Detection of Morphological and Functional Neuro-Changes in Chinese Children with Dyslexia L Shi\*, D Wang, WCW Chu, SSH Luk, DKW Yeung, M Waye The Chinese University of Hong Kong, Hong Kong
- **OP3.02** The Construction of a Chinese Brain Template Using an Incremental Approach D Wang\*, L Shi, WCW Chu, JCY Cheng, PA Heng The Chinese University of Hong Kong, Hong Kong
- OP3.03 Different Patterns of Cortical Thickness Distribution in Patients with Right-Sided Adolescent Idiopathic Scoliosis and Normal Controls D Wang\*, L Shi, WCW Chu, JCY Cheng, PA Heng The Chinese University of Hong Kong, Hong Kong
- **OP3.04** Neural prediction of the individual vulnerability to real-life stressful events Roee Admon<sup>1,2</sup>, Gad Lubin<sup>3</sup>, Orit Stern<sup>1,2</sup>, Keren Rosenberg<sup>1,2</sup>, Haim Ben Ami<sup>\*1</sup>, Talma Hendler<sup>1,2</sup> <sup>1</sup>Tel Aviv University, Israel, <sup>2</sup>Tel Aviv Sourasky Medical Center, Israel, <sup>3</sup>Mental Health Department, Medical Corps, Israeli Defense Forces, Israel
- OP3.05 Cortical overlap of joint representations from the preparation to execution of isometric single joint shoulder/elbow motor tasks J Yao\*, J Dewald Northwestern University, United States
- **OP3.06** Development of Proton CT as a Tool for Precision Image-Guided Brain Radiosurgery *R Schulte\**<sup>1</sup>, *V Bashkirov*<sup>1</sup>, *F Hurley*<sup>1</sup>, *S Penfold*<sup>2</sup>, *B Colby*<sup>3</sup>, *V Rykalin*<sup>4</sup> <sup>1</sup>Loma Linda University Medical Center, United States, <sup>2</sup>University of Wollongong, Australia, <sup>3</sup>University of California Santa Cruz, United States, <sup>4</sup>Northern Illinois University, United States



### Thursday 27th August Oral Poster Session 4 Chair: John Heiss

- **OP4.01** Interaction of Caveolin-1, Nitric Oxide and Nitric Oxide Synthases in hypoxic human SK-N-MC Neuroblastoma Cells and Rat Ischemic Brains Jiangang Shen\*, Waisin Lee, Yue Li, Chi Fai Lau, Kwong Man Ng, Man Lung Fung 'University of Hong Kong, Hong Kong, <sup>2</sup>University of New Mexico, United States
- **OP4.02** Mapping the Neurophysiollogy of Self: Constructs, Optimism, Gender Differences and Hypercriticality RL Cannon\*, DR Baldwin University of Tennessee, United States
- OP4.03 The brain's response to food cues and emotional images: Understanding late positive ERPs as indices of cortical arousal A Heenan\*, A D'Angiulli Carleton University, Canada
- **OP4.04** Recurrence of supplementary motor area (SMA) syndrome in brain tumor patients undergoing repeat surgical resection *P* Gabikian\*, TJ Abel, DL Silbergeld University of Washington School of Medicine, United States

### Friday 29th August Oral Poster Session 5 Chair: Shouleh Nikzad

- **OP5.01** New Trephine with adjustable dura guard and new scalp retractor for brain surgery Karam Chand\*, Karanjit Singh, Anshul Gupta Vardhman Mahavir Medical College and Safdarjang Hospital, India
- **OP5.02** Evaluation of Multi-viewport based visualization for Electrode Navigation during Stereotactic Image Guided Neurosurgery A Joshi\*, D Scheinost, M Spann, X Papademetris Yale University, United States
- OP5.03 Understanding Surgical Motion Degradation is Crucial to the Development of Surgical Robotic/Augmentation Systems GA Zimmerman\*, KI Lipow Bridgeport Hospital/Yale-New Haven Health, United States
- **OP5.04** Behavioral Health Family Readiness System Research Study MJ Roy<sup>\* 1</sup>, J Francis1, P Taylor<sup>1</sup>, T Bowers<sup>2</sup>, E Nakhonthap<sup>1</sup> <sup>1</sup>Uniformed Services University, United States, <sup>2</sup>DefenseWeb Technologies, United States
- **OP5.05** Diffusion Tensor Imaging Characteristic of Parahippocampal gyrus in Temporal Lobe Epilepsy Alireza Akhondi-Asl<sup>1,2</sup>, Amit Ray<sup>1</sup>, Kost Elisevich<sup>1</sup>, Hamid Soltanian-Zadeh<sup>\* 1,2</sup> <sup>1</sup>Henry for health system, United States, <sup>2</sup>University of Tehran, Iran, Islamic Republic of
- **OP5.06** Automatic Segmentation of Hippocampus for lateralization in Temporal Lobe Epilepsy Alireza Akhondi-Asl<sup>1,2</sup>, Koroush Jafari-khouzani<sup>1</sup>, Kost Elisevich<sup>1</sup>, Hamid Soltanian-Zadeh<sup>\* 1,2</sup> <sup>1</sup>Henry Ford Health System, United States, <sup>2</sup>University of Tehran, Iran, Islamic Republic of



### **ORAL POSTER SESSIONS**

### Saturday 30th August Oral Poster Session 6 Chair: Keyvan Farahani

- **OP6.01** Anatomical parcellation of the human cerebellum in relation to intrinsically connected networks: a functional connectivity study c Habas<sup>\* 1</sup>, N Kemdar<sup>1,2</sup>, C Keller<sup>1,2</sup>, C Beckmann<sup>1,3</sup>, V Menon<sup>1,2</sup>, MD Greicius<sup>1,2</sup> <sup>1</sup>CHNO des 15/20, France, <sup>2</sup>Stanford University, United States, <sup>3</sup>Oxford University, United States
- OP6.02 Application Of Dynamic Susceptibility Contrast MRI Intraoperatively (iDSCMRI) In Brain Tumor Surgery Demonstrates Identical Perfusion Ratios As Preoperatively Acquired Mapping S Ulmer\*<sup>1</sup>, G Hartwigsen<sup>2</sup>, M Helle<sup>1</sup>, O Jansen<sup>1</sup>, HM Mehdorn<sup>3</sup>, A Nabavi<sup>3</sup> <sup>1</sup>Institute of Neuroradiology, University Hospital of Schleswig-Holstein, Germany, <sup>2</sup>Department of Neurology, University Hospital of Schleswig-Holstein, Germany, <sup>3</sup>Department of Neurosurgery, University Hospital of Schleswig-Holstein, Germany
- **OP6.03 Tissue conductivity estimation with combined EEG/MEG modalities**  *S Lew*<sup>\* 1,2</sup>, *C Wolters* <sup>3</sup>, *R MacLeod* <sup>2</sup>, *M Hämäläinen* <sup>1</sup> <sup>1</sup>*Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, United States,* <sup>2</sup>*Scientific Computing and Imaging Institute, University of Utah, United States,* <sup>3</sup>*Institut für Biomagnetismus und Biosignalanalyse, Universität Münste, Germany*
- OP6.04 Atlas-Based Segmentation of White Matter Fiber Bundles Using Reduced Position Orientation Space (RPOS)

Esmaeil Davoodi-Bojd<sup>1</sup>, Mohammad-Reza Nazem-Zadeh<sup>1</sup>, Hamid Soltanian-Zadeh<sup>\*1,2</sup> <sup>1</sup>University of Tehran, Iran, Islamic Republic of, <sup>2</sup>Henry Ford Hospital, United States

- **OP6.05** Effective Cannula Placement for AAV-based Gene Therapy in Putamen of Nonhuman Primates DL Yin\*, F Gimenez, J Forsayeth, K Bankiewicz UCSF, United States
- **OP6.06 Cone beam computerized tomography for portable intracranial imaging** *RJ Singer\**<sup>1</sup>, *EW Holcombe*<sup>1</sup>, *W van Kampen*<sup>2</sup>, *V Zbijewski*<sup>2</sup> *IVanderbilt University Medical Center, United States, 2Xoran Technologies, United States*
- **OP6.07** Using fNIRS to Investigate the Representation of Pleasant and Unpleasant, Potentially Dangerous, Taste Stimuli in the Human Frontal Cortex. L Romoli\* <sup>1,3</sup>, S Bembich <sup>1</sup>, F Suggi Liverani <sup>3</sup>, S Demarini <sup>1</sup>, PP Battaglini <sup>1</sup> <sup>1</sup>University of Trieste, Italy, <sup>2</sup>IRCCS Burlo Garofolo Trieste, Italy, <sup>3</sup>Illycaffe S.P.A. Trieste, Italy
- OP6.08 Cognitive and brain functioning in PTSD and mild TBI: Neuroimaging, neuropsychological and neuroendocrinological data J Leon-Carrion<sup>\* 1,2</sup> <sup>1</sup>University of Seville, Spain, <sup>2</sup>Center for Brain Injury Rehabilitation (CRECER), Spain



## **Supporters:**

## **BRAIN MAPPING FOUNDATION**







This event is being held in collabortive partnership with the Telemedicine & Advanced Technology Research Center (TATRC), and is made possible by a conference support grant administered by the U.S. Army Medical Research & Materiel Command (USAMRMC): Conference Support Grant #:Grant Number W81XWH-09-1-0466. The views, opinions and findings presented at this event are those of the organizers and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.











AD-TECH





Medtronic Codman



. Johnson-Johnson





