5th Annual
World Congress of IBMISPS
August 26-29, 2008
Held at
The University of California, Los Angeles
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MISSION STATEMENT

IBMISPS is a non-profit organization designed to encourage all scientists who are interested or currently active in areas of Brain Mapping (BM) and Intraoperative Surgical Planning (ISP) to share their findings with other physicians and scientists across the disciplines.

The Society also promotes public welfare through the advancement of ISP and BM, its commitment to excellence in education, and by dedication to research and scientific discovery.

The mission of IBMISPS will be achieved through a multidisciplinary collaboration of government agencies, patient advocacy groups, educational institutions, and the private sector. Together, issues related to Brain Mapping and Intraoperative Planning can be addressed and new technologies implemented to benefit patient care.

EDUCATIONAL OBJECTIVES

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

- Identify new findings in brain mapping and Intraoperative surgical planning most relevant to their own field, such as molecular imaging or biophotonics.

- Describe the effect of newly developed methods in Brain Mapping and Intraoperative Surgical Planning.

- Discuss and design the possible future research and developments in Brain Mapping and Intraoperative Surgical Planning, and assess the possible impact of such research and development on their own clinical and scientific work.

- Describe and assess the latest technology in Brain Mapping and Intraoperative surgical planning.

- Explain ways to build a bridge between the fields of BM and ISP.

- Discuss and describe governmental agencies roles in research and development of BM & ISP.
Board of Directors

BEHNM BADIE  
Associate Professor, Vice Chair, Academic Affairs  
Director, Comprehensive Brain Tumor Program  
Department of Neurological Surgery  
University of Wisconsin Hospital & Clinic  
Madison, USA

ELAINE L. BEARER  
Associate Professor of Medical Science,  
Brown University School of Medicine  
Moore Distinguished Scholar  
California Institute of Technology, USA

ELIZABETH BULLITT  
Professor of Neurosurgery  
University of North Carolina, Chapel Hill, USA

P. SARAT CHANDRA  
Associate Professor of Neurosurgery  
All India institute of Medical Science  
New Delhi, India

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

STEPHAN G. ERBERICH  
Guest Editor of IBMISPS - NeuroImage  
Assistant Professor of Radiology & Biomedical Engineering  
Childrens Hospital, Los Angeles, USA

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

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

WARREN GRUNDFEST  
IBMISPS President 2006-2007  
Professor of Bioengineering & Electrical Engineering  
The Henry Samueli School of Engineering & Applied Science  
Professor of Surgery, David Geffen School of Medicine, UCLA, USA

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

FERENC A. JOLESZ  
IBMISPS President 2005-2006  
B. Leonard Holman Professor of Radiology  
Vice Chairman for Research  
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

BABAK KATEB  
Founding Executive Director, IBMISPS  
Managing Editor of IBMISPS - NeuroImage  
Visiting Scientist at California Institute of NeuroImage, USA

MARY KRATZ  
Information Services Consultant  
University of Michigan Medical School, USA

JEAN-JACQUES LEMAIRE  
Director European Division - IBMISPS  
University Hospital of Clermont-Ferrand  
Professor of Neurosurgery  
Auvergne University, France  
IBMISPS President 2008-2009

LOUIS LEMIEUX  
PhD, CSci, MInstP  
The Institute of Neurology’s Academic Board, UK

SHOULEH NIKZAD  
Supervisor of Nanoscience and UV Array at NASA/JPL  
Research Associate Professor of Neurosurgery  
University of Southern California, USC  
Keck School of Medicine, USA
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 5th annual World Congress of IBMISPS. This year’s theme is ‘Breaking Boundaries to Shape the Future.’ We conduct this meeting at UCLA-California Nano-System Institute (CNSI) 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 5 years, Japan, India, France, China, and the UK have joined the society and IBMISPS actively seeks the participation of other countries. 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 for each country.

We also encourage the formation of student chapters in the universities around the world to cultivate and train future generations of scientists, physicians, surgeons, and policy makers who take a multidisciplinary approach in solving difficult issues. This could facilitate a true interaction and partnership can then take place among academia, government, and IBMISPS. This allows the exchange of ideas across the world, bridges cultural boundaries, and contributes to better global and regional healthcare, health policies, and scientific progress.

I would like to thank the IBMISPS board of directors and organizing committee members for their hard work and dedication in making this congress a success. I also thank Dr. Patrick Soon-Shiong, Chairman and CEO of Abraxis BioScience for his visionary and generous support of this program. This program may not have been possible without the generous contributions from US Army-TATRC, DVBIC, Abraxis BioScience, BrainLab, Codman, Carl Zeiss, Integra-Radionics, Optivus, NordicNeuroLab, and Siemens Japan.

I would like to thank Dr. Walter Koroshetz of NINDS, Dr. Keyvan Farahani of NCI, and Dr. Shouleh Nikzad of NASA/JPL for their scientific contributions to this program. I also want to thank Associate Dean of Research at UCLA David Geffen School of Medicine Dr. Lenny Rome and his staff for making this program possible at UCLA-CNSI.

I congratulate IBMISPS award recipients of this year:
- The Honorable Governor Arnold Schwarzenegger for receiving the Pioneer and Healthcare award for his support of the stem cell research initiative in California and his visionary approach to scientific advancement and discovery.
- Two-time Oscar winner Actor Dustin Hoffman for receiving the Beacon Award for his role of an Autistic Savant in the movie The Rain Man. He increased awareness of autism and neurological diseases and stem cell research.
- Mark L. Vachon (President and CEO of GE Healthcare) for receiving the Pioneer and Technology Crystal award.
- Dr. Ron Kikinis for receiving the Pioneer and Medicine Crystal award. He is a leader in his field.

We welcome His Majesty Reza Pahlavi and Senator Mark Ridley Thomas and thank them for sharing their interdisciplinary vision with the members of IBMISPS. Finally, I thank all members of IBMISPS for their participation in this meeting and hope to see you next year at Harvard Medical School.

Respectfully,

Babak Kateb
Chairman of the Board of Directors, IBMISPS-Foundation
Founding Executive Director, IBMISPS
Managing Editor IBMISPS-NeuroImage
Visiting Researcher California Institute of Technology
Dear Fellows, Colleagues, Friends,

The Congress for Brain Mapping and Image Guided Therapy is organized for the 5th time. This year we go back to the source in Los Angeles where, in 2004, a group of passionate people from different horizons thought it was possible to speed the technological translational research in clinical neurosciences. To pursue this quest is more challenging than ever because the progresses in clinical neurotechnologies are major and exponential. They let foresee important spin-offs in health care, some of which being already available in the most advanced teams. The board of the IBMISPS is proud to encourage a cutting-edge research and meanwhile to spread smart technologies ready for clinical practice. The trans disciplinary approach is always in the core of the process, leading fascinating opportunities for those who want to follow this unconventional stream. The annual meeting is the best opportunity to meet colleagues and share stimulating data through highly scientific discussions, within a friendly organization. At last, the IBMISPS also gives the chance to publish works of excellence in a special issue of NeuroImage, and facilitates exchanges of researchers between clinic and laboratory.

On behalf of the board of the IBMISPS, welcome in Los Angles, in August 26 -29, 2008, we are happy to meet you and share our passion, aiming to give the best for people suffering of neurological diseases and handicaps.

Sincerely,

Jean-Jacques Lemaire
Director European Division - IBMISPS
University Hospital of Clermont-Ferrand
Professor of Neurosurgery
Auvergne University, France
IBMISPS President 2008-2009
I am pleased to welcome members of our Society, scientists, physicians, engineers, and members of industry, academia, and government to the 5th Annual Meeting of IBMISPS. This year’s meeting, held in collaboration with the UCLA Nanosystems Institute, highlights an important and rapidly growing area of research and scientific investigation. We hope that this meeting will promote collaboration between scientists and engineers developing nanotechnology, and neuroscientists, neuro-radiologists, clinicians, and industry working on brain mapping, intraoperative neurosurgical techniques, and related fields.

Our Society was founded to bring together diverse scientific and engineering communities to focus on topics related to brain imaging and brain mapping for improved diagnosis and treatment of neurologic diseases. The application of nanotechnologies to neuroscience requires interdisciplinary efforts and collaboration across the spectrum of scientific investigators. We hope that this meeting will be one of many that reports significant advances in the neurosciences as nanotechnologies are incorporated into neuroscience research.

As a Society we recognize that advances in the laboratory must be translated by industry, with the assistance of government, into practical clinical methods. The goal of this symposium is to enhance communication between subspecialty physicians, scientists, and clinicians and their collaborators in industry and government. While many applications of nanotechnology to neuroscience are in early stages, we hope that this symposium will increase awareness among the participants to the potential benefits these emerging technologies. At the same time we believe that this meeting will serve as a forum to update participants on recent advances in other equally important brain mapping technologies and intraoperative surgical techniques.

Our educational mission extends beyond the scientific community to policy makers and the public. We believe that education is the key to the understanding of healthcare needs for those with brain diseases. Public support for brain mapping and related research and improved surgical techniques is essential for continued progress in the treatment of brain-related diseases. Recent events have focused public attention on the need for improved diagnosis and therapy of traumatic brain injury and post-traumatic stress disorder. Application of brain mapping techniques and advanced brain imaging modalities may help to improve the diagnosis, characterization, and therapy of these devastating diseases.

I am most appreciative of the Society’s willingness to hold this meeting at my institution, UCLA, which has been in the forefront of nanotechnologies and neuroscience research. Once again, I welcome you all to UCLA, and I hope that you all find this a productive and enjoyable meeting.

Warren S. 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
UCLA
Portfolio Manager, Nanomedicine and Biomaterials
Senior Scientist
TATRC (The Telemedicine and Advanced Technology Research Center)
U.S. Army Research and Materiel Command
Dear Colleagues,

Welcome to the fifth annual IBMISPS Congress, an opportunity to explore ground-breaking science with elite basic and clinical scientists. The discovery of innovative means to diagnose and deliver therapeutics to an ever-growing and diversifying population of CNS patients requires pioneering and cooperative science, the likes of which this congregation of technologists promises to deliver.

With our partners at the California NanoSystems Institute at UCLA, we at Abraxis BioScience are proud to participate in this important scientific event. Abraxis BioScience is a fully integrated biotechnology company dedicated to meeting clinical needs through paradigm-shifting innovations. The discovery, development, and clinical application of our proprietary receptor-mediated tumor-targeting technology has been a boon to treating cancer and established a new paradigm of targeted nanoparticle cytotoxic chemotherapeutic agents. This innovation has inspired us to further support interdisciplinary collaborative research that aims to discover clinically-applicable next-generation technologies.

Improved neurosurgical techniques and tools for neuroimaging and brain mapping are required for treating medical impossibilities such as neurodegenerative diseases and inoperable brain cancer. The discovery process towards break-through therapies will be significantly accelerated through multidisciplinary research and innovation. Thus it is my sincere hope that the eclectic group of scientists gathered at this congress will expand the realm of possibilities for each researcher and promote cross-disciplinary collaboration.

California NanoSystems Institute at UCLA has been built entirely on the spirit of multidisciplinary cooperation amongst elite engineers, clinicians, and basic scientists. Charged with continuing UCLA’s tradition for making life-improving discoveries, CNSI leverages its intellectual capital to make outside-the-box discoveries that are readily translated into commercial product by its industry partners: Abraxis BioScience, Hewlett-Packard, Intel, and BASF. For us at Abraxis BioScience, CNSI has thus become the hub for interdisciplinary exchange of information.

I hope you share in my excitement for exploring revolutionary medicine at the fifth annual IBMISPS congress.

Sincerely,

Patrick Soon-Shiong, M.D.
Chairman and Chief Executive Officer
Abraxis BioScience
Dear Colleagues,

The California NanoSystems Institute is pleased to serve as the host venue of the 5th World Congress of the International Brain Mapping and Intraoperative Surgical Society (IBMISPS).

Over the next few days, selected scientists, educators and technology leaders who are at the vanguard of new treatments for brain and spinal cord injuries and diseases will converge to share innovations and advances. Their work underscores the benefits of multi-disciplinary collaboration which serve to bridge science and technology to accelerate medical breakthroughs.

This multi-disciplinary approach closely parallels the work conducted at CNSI. At the nanoscale, materials exhibit strikingly different properties. A multidisciplinary approach is required to fully understand and manipulate these qualities. CNSI members are drawn from faculty in engineering, medicine, and physical and life sciences. These scientists benefit from an integrated laboratory culture enabling them to conduct dynamic research at the nanoscale which will lead to breakthroughs in medicine, as well as information technology, environmental protection, and new sources of energy.

The CNSI is an integrated research center whose mission is to foster interdisciplinary collaborations for discoveries in nanosystems and nanotechnology; train the next generation of scientists, educators and technology leaders; and facilitate partnerships with industry, fueling economic development and promoting social well being. Working in a dynamic, collaborative environment, supported by the physical and human resources of UCLA, CNSI members are investigating nanoscale phenomena in new and innovative ways.

The IBMISPS meeting will provide an exciting opportunity to learn about the newest innovations from those leaders who are driving the discoveries of new medical therapies and diagnostic tools which will transform technologies aimed at treating brain trauma and spinal cord injuries and diseases.

Sincerely,

Leonard H. Rome

Director, California NanoSystems Institute
Senior Associate Dean for Research, David Geffen School of Medicine, UCLA
Leonard Rome

BIOGRAPHY

Leonard H. Rome, Ph.D.
Interim Director, California NanoSystems Institute
Senior Associate Dean for Research
David Geffen School of Medicine at UCLA

Leonard H. Rome is a cell biologist and biochemist who has served on the UCLA School of Medicine faculty since he joined the Department of Biological Chemistry in 1979. He became a full professor in 1988 and has been Senior Associate Dean for Research in the School of Medicine since 1997. Dr. Rome earned his B.S. in Chemistry and M.S. and Ph.D. in Biological Chemistry at the University of Michigan, Ann Arbor. He was a postdoctoral fellow at the National Institutes of Health, where he worked on lysosome biogenesis. Dr. Rome has chaired the School of Medicine Faculty Executive Committee and is actively involved in graduate and medical education. He is a recipient of the School of Medicine Award for Excellence in Education. Since becoming Senior Associate Dean for Research, he has organized a strategic plan for research in the School and spearheaded campus-wide efforts in genomics, proteomics, and computational biology. His laboratory research centers on a novel cellular organelle called a "vault" which was discovered in his laboratory. Dr. Rome is presently organizing a Nanoscience Interdisciplinary Research Team, a collaboration of disciplines including cell biologists, engineers, chemists, and structural biologists who will engineer vaults so that they may one day be used in drug delivery and as components of nano-electrical machines.
Welcome and Introduction

7:30 - 8:00am
OFFICIAL WELCOME AND INTRODUCTION
By Congress Chairman:

Babak KATEB
Founding Executive Director & Chairman of the Board of Directors IBMISPS

Jean Jacques LEMAIRE
President of IBMISPS (2008-2009)

8:00 - 8:45am
KEYNOTE SPEAKER
Leonard ROME, PH.D.
Interim Director, California NanoSystems Institute
Professor, Biological Chemistry
Senior Associate Dean of Research, David Geffen School of Medicine at UCLA

Nanoparticles for Therapeutic Drug Delivery: An Introduction to the CNSI

8:45 - 9:15am
TWO TIME ACADEMY AWARD WINNER ACTOR
Dustin HOFFMAN

RECIPIENT OF THE 2008 IBMISPS BEACON AWARD:
Dedication and Courage to increase awareness about Autism

Rain Man and Autism

9:15 - 9:35am
THE HONORABLE STATE SENATOR
Mark Ridley THOMAS
Chair of the Committee on Business, Professions and Economic Development
Chair of the Senate Select Committee on L.A. County Health Care Crisis
Chair of the California Legislative Black Caucus

Research and Healthcare in California

Scientific Session 1: Image Guided Therapy

9:35 - 9:50am
CHAIR:
Warren S. GRUNDFEST, M.D. FACS
Professor of Bioengineering & Electrical Engineering
The Henry Samueli School of Engineering & Applied Science
Professor of Surgery, UCLA - David Geffen School of Medicine

Nanotechnologies Applied to Brain Mapping: New Opportunities for Interdisciplinary Research
Scientific Session 1: **Image Guided Therapy (Cont.)**

9:50 - 10:05am  
**CO-CHAIR:**  
**John D. HEISS, M.D.**  
Head of Clinical Unit  
Surgical Neurology Branch,  
National Institute of Neurological Disorder and Stroke,  
National Institute of Health

*Real-time Guidance of Brain Tumor Surgery using Intraoperative MRI and Bipolar Cortical Mapping*

10:05 - 10:20am  
**Keyvan FARAHANI, Ph.D.**  
Acting Branch Chief  
Cancer Imaging Program National Cancer Institute

*Funding Opportunities in Image-Guided Oncological Interventions*

9:50 - 10:05am  
**Sujit S. PRABHU, M.D., FRCS**  
Assistant Professor  
Department of Neurosurgery  
MD Anderson Cancer Center

*Use of Intraoperative High-field MRI (iMRI) and Brain Mapping in the Resection of Subcortical (Deep) Brain Tumors*

10:35 - 10:45am  
**Q & A**

10:45 - 11:00am  
**COFFEE BREAK**

Scientific Session 2: **Imaging and Intraoperative Surgical Planning**

11:00 - 11:15am  
**KEYNOTE SPEAKER**  
**CO-CHAIR:**  
**Ron KIKINIS, M.D.**

*2008 IBMISPS PIONEER IN MEDICINE AWARD:*  
Excellence in Research, Discovery and Education

Founding Director of Surgical Planning Laboratory  
Director of The National Center for Image Guided Therapy  
Professor of Radiology Department of Radiology  
Brigham & Women’s Hospital,  
Harvard Medical School, Boston, USA

*The Role of Software in Image Guided Therapy*
11:15 - 11:30am
CHAIR:
Jean Jacques LEMAIRE, M.D., Ph.D.
University Hospital of Clermont-Ferrand
Professor of Neurosurgery (ESPRI/INSERM),
Auvergne University, France

DTI and Tractography for DBS: Image-Guided Anatomic Approach

11:30 - 11:45am
Shoichiro ISHIHARA, M.D., Ph.D.
Associate Professor, Department of Neurosurgery
Chief of Division of Endovascular Neurosurgery, Stroke Center,
International Medical Center, Saitama Medical University, Japan

Combined Approach for Cerebrovascular Surgery in a Hybrid Operating Room

11:45 - 12:00pm
Col. Ken CURLEY, M.D.
Neuroscience Portfolio Manager, Telemedicine and Advanced Technology Research Center (TATRC),
U.S. Army Medical Research and Materiel Command (MRMC),
Special Consultant to the Director, Center for Disaster and Humanitarian Assistance Medicine (CDHAM),
Assistant Professor of Military and Emergency Medicine, Surgery and Biomedical Informatics,
Uniformed Services University of the Health Sciences (USUHS)

Neuroscience Research at the U.S. Army Telemedicine and Advanced Technology Research Center: Opportunities for Engaging the Brain Mapping and Intraoperative Surgical Planning Communities

12:00 - 12:15pm
Michael R. CHICOINE, M.D.
Associate Professor
Department of Neurosurgery
Washington University School of Medicine

Implementation and Preliminary Clinical Experience with the Use of Ceiling Mounted Mobile High Field Intraoperative Magnetic Resonance Imaging

12:15 - 2:00pm
LUNCH BREAK

Scientific Session 3:
Vascular and Blood Flow Imaging and Stroke

2:00 - 2:15pm
CHAIR:
Elizabeth BULLITT, M.D.
Van Weatherspoon Jr. Professor of Surgery,
Director of CASILab, University of North Carolina,
Chapel Hill, NC

Glioma and Vessel Shape as Monitored by Magnetic Resonance Angiography (MRA)
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<th>Speakers</th>
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| 2:15 - 2:30pm | **Scientific Session 3:** Vascular and Blood Flow Imaging and Stroke (Cont.) | **CO-CHAIR:** S. Thomas CARMICHAEL, M.D., Ph.D.  
Associate Professor  
Department of Neurology  
David Geffen School of Medicine at UCLA  
*Neural Connections After Stroke As One Of The Mechanisms of Brain Repair In This Disease* |
| 2:30 - 2:45pm |                                                    | **Don M. TUCKER, Ph.D.**  
Electrical Geodesics, Inc.  
Department of Psychology and NeuroInformatics Center, University of Oregon  
*MR-Constrained Dense Array EEG for Estimating Neural Sources of Epileptic Seizures in Neurosurgical Planning* |
| 2:45 - 3:00pm |                                                    | **Wang ZHAN, Ph.D.**  
Assistant Professor  
Center for Imaging of Neurodegenerative Diseases  
Department of Radiology  
University of California, San Francisco (UCSF)  
VA Medical Center  
*Capture White Matter Degeneration with Diffusion MRI and Multimodal Analysis* |
| 3:00 - 3:15pm |                                                    | **Aaron FILLER, M.D., Ph.D.**  
Medical Director of Neurography Institute  
*Image guided systems Impact of Image Cycle Time in Minimal Access Nerve Surgery and Interventional MRI* |
| 3:15 - 3:30pm |                                                    | **Q & A**                                                                |
| 3:30 - 4:00pm |                                                    | **TEA RECESS**                                                          |

### Scientific Session 4: **NEW HORIZON**

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<th>Speakers</th>
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| 4:00 - 4:15pm |                                                    | **CHAIR:** Farzad MASSOUDI, M.D.  
Assistant Clinical Professor of Neurological Surgery, UCLA School of Medicine  
*Future of Neurosurgery* |
Scientific Session 4: NEW HORIZON (Cont.)

4:15 - 4:30pm  
**CO-CHAIR:**  
Elaine L. BEARER, M.D., Ph.D.  
Professor,  
Department of Pathology and Laboratory Medicine  
Warren Alpert Medical School of Brown University  

*Emerging Concepts in Neuroimaging: Animal Models, Plasticity and Circuitry*

4:30 - 4:45pm  
Jonathan NISSANOV, Ph.D.  
Associate Professor,  
Department of Neurobiology & Anatomy  
Drexel University College of Medicine  

*Brain Spatial Normalization: Indexing the Mouse Brain Library*

4:45 - 5:00pm  
Margret Amy RYAN, Ph.D.  
Principal Investigator  
NASA/Jet propulsion Laboratory (JPL)  

*Electronic Nose*

5:00 - 5:15pm  
**SPECIAL TOPIC: BIOETHICS**  
Andrea A. SCOTT, J.D.  
President and CEO of Bioethics USA, Inc  

*Post Traumatic Stress Disorder in the 21st Century: Deconstructing the Historic Scarlet Letter*

5:15pm  
**TEA RECESS**
His Majesty Reza Pahlavi

BIOGRAPHY

Since the establishment of the clerical regime in Iran and the passing of his father, the late Shah of Iran, Reza Pahlavi has been a leading and vocal advocate of the principles of freedom, democracy and human rights for his compatriots. He is an international speaker and the author of “Past and the Future” published in June 2000 in Persian, and “Winds of Change: The future of Democracy in Iran” published in 2002.

Reza Pahlavi has lectured in many respected academic institutions, including the Washington Institute of Foreign Affairs, Yale University, Harvard Business School, Cornell, George Town University, Hudson Institute, University of Nebraska, and Management Centre Innsbruck of Austria. His topics included, Iran and the future of the Middle East and Peace and Stability in the Middle East and Beyond.

His articles have been published in various reputable newspapers and magazines, including the Washington Post, Newsweek International, Le Figaro, The Wall Street Journal, and the New Republic.

In 1978, Reza Pahlavi, then Crown Prince of Iran, left his homeland to complete his higher education in the United States. An accomplished jet fighter pilot, Reza Pahlavi completed the United States Air Force Training Program at the former Reese Air Force Base in Lubbock, Texas. He is a Political Science graduate of the University of Southern California.

Soon-Shiong, M.D.

BIOGRAPHY

Dr. Soon-Shiong became chairman and chief executive officer of Abraxis BioScience in April 2006. Dr. Soon-Shiong previously served APP as president since July 2001 and chief executive officer and chairman of the board of directors from its inception in March 1996. Since June 1994, Dr. Soon-Shiong also served as president, chief financial officer and a director of American BioScience, Inc. From June 1994 to June 1998, he served as chief executive officer and chairman of the board of directors of VivoRX, Inc., a biotechnology company. Dr. Soon-Shiong is named as a co-inventor on over 40 issued U.S. and foreign patents and is a fellow of the American College of Surgeons and the Royal College of Physicians and Surgeons of Canada. Dr. Soon-Shiong holds a degree in medicine from the University of the Witwatersrand and a M.Sc. in science from the University of British Columbia.
8:00am - 5:00pm | Sponsor Exhibitions in CNSI Lobby Poster Sessions
9:00am - 12:30pm | Board of Director’s Meeting

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**Introduction**

**12:40 - 1:00pm**

**Warren S. GRUNDFEST, M.D. FACS**
Professor of Bioengineering & Electrical Engineering
The Henry Samueli School of Engineering & Applied Science
Professor of Surgery, UCLA- David Geffen School of Medicine

**12:50 - 1:00pm**

**KEYNOTE SPEAKER:**
His Majesty Reza PAHLAVI

*Interdisciplinary Medicine: The Way of the Future*

**1:00 - 1:40pm**

**KEYNOTE SPEAKER:**
Patrick Soon-SHIONG, M.D.
Chairman of the Board of Directors and
Chief Executive Officer of
ABRAXIS BIOSCIENCE

*The Need for Interdisciplinary Science to Effect Meaningful Clinical Change*

**1:40 - 1:45pm**

Q & A

**1:45 - 2:00pm**

COFFEE BREAK

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**Scientific Session 5: New Frontiers in Medicine (I) Technology and Nanomedicine**

**2:00 - 2:15pm**

**CHAIR:**
Babak KATEB
Founding Executive Director
Chairman of the Board of Directors IBMISPS

*Internalization of MWCNTs by Microglia: Possible Application in Immunotherapy of Brain Tumors*

**2:15 - 2:30pm**

**CO-CHAIR:**
Shouleh NIKZAD, Ph.D.
Head of Nanoscience and
Advanced Detector Arrays Group,
Jet Propulsion Laboratory (JPL)

*UV Technology Imaging*
### Scientific Session 5: New Frontiers in Medicine (I) Technology and Nanomedicine (Cont.)

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<td>2:30 - 2:45pm</td>
<td>Behnam BADIE, M.D.</td>
<td>Nanotechnology and Immunotherapy of Brain Cancers</td>
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<td></td>
<td>Director of Brain Tumor Program and</td>
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<td>Director of Neurosurgery Department</td>
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<td>City of Hope National Cancer Center</td>
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<td>2:45 - 3:00pm</td>
<td>T. K. HSIAI, M.D., Ph.D.</td>
<td>Shear Stress and Vascular Oxidative Stress from Micro to Nanotechnologies</td>
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<td>Director of Cardiovascular Engineering Research Core</td>
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<td>University of Southern California</td>
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<td>3:00 - 3:15pm</td>
<td>Michael E. HONEK, Ph.D.</td>
<td>From Brain Mapping to Space Exploration - What can NASA engineers learn from neurobiologists about building spacecraft?</td>
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<td>California Institute of Technology</td>
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<td>3:15 - 3:30pm</td>
<td>Q &amp; A</td>
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<td>3:30 - 4:00pm</td>
<td>TEA RECESS</td>
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### Scientific Session 6: New Frontiers in Medicine (II) Genetic Imaging and Drug Delivery

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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tr>
<td>4:00 - 4:15pm</td>
<td>CHAIR: Mike CHEN, M.D., Ph.D.</td>
<td>Immunological Synapses: the Anatomical Substrate Mediating Anti-Viral and Anti-Tumor Responses in the Brain</td>
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<tr>
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<td>Assistant Professor,</td>
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<td>Department of Neurosurgery</td>
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<td>City of Hope National Cancer Center</td>
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<td>CO-CHAIR: Pedro R. LOWENSTEIN, M.D., Ph.D.</td>
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<td>Gene Therapeutics Research Institute</td>
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<td>Bram and Elaine Goldsmith</td>
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<td>Chair in Gene Therapeutics</td>
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<td>Cedars-Sinai Medical Center</td>
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<td></td>
<td>Professor of Medicine, and Pharmacology</td>
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<td>Departments of Medicine, and Molecular and Medical Pharmacology</td>
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<td>David Geffen School of Medicine UCLA</td>
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</table>
Scientific Session 6: New Frontiers in Medicine (II)
Genetic Imaging and Drug Delivery (Cont.)

4:15 - 4:30pm
Bong Seop LEE, Ph.D.
Research Scientist,
Maxine Dunitz Neurosurgical Institute,
Department of Neurosurgery,
Cedars-Sinai Medical Center

Nanoprodugs: A New Paradigm in the Prodrug Strategy

4:30 - 4:45pm
Krystof BANKIEWICZ, M.D., Ph.D.
Professor of Neurosurgery and Neurology
UCSF School of Medicine

Presented by
Francisco VALLES, B.S. B.A., M.S. II
UCSF School of Medicine

Imaging of Gene Transfer in Parkinson's Disease

4:45 - 5:00pm
Mirjana MALETIC-SAVATIC, M.D., Ph.D.
Assistant Professor of Neurology
Baylor College of Medicine

Metabolomics and Magnetic Resonance Spectroscopy:
A New Approach for Biomarker Discovery

5:00pm
Q & A
TEA RECESS
Christian Macedonia, M.D.

BIOGRAPHY

LTC(P) Christian Macedonia M.D. is a US Army physician and surgeon, currently serving as the Chief of Research Operations at the Telemedicine and Advanced Technology Research Center (TATRC) at Fort Detrick, Maryland. Before assuming his current position, Dr. Macedonia served in a variety of roles throughout the military and civilian healthcare system. He led an ambulance platoon in Germany during the Cold War. He worked as an Army scientist and the medical primary investigator in the development of the 3D ultrasound for trauma care.

Dr. Macedonia provided medical and scientific support to two successful Everest climbing teams in 1998 and 1999 while doing a research fellowship at the National Institutes of Health. He dove 12,800 ft. in a Mir submersible to the RMS Titanic in 2000 and taught high altitude survival skills to special operating forces in 2001 and 2002.

Dr. Macedonia was the Medical Director for Women’s and Children’s Health at the National Naval Medical Center in Bethesda and served a year as the Chief of Clinical Staff of the 115th Combat Support Hospital in the Anbar Province of Iraq where he was awarded the Bronze Star.

In addition to his current duties, LTC Macedonia serves on the secretariat of the Defense Science Board. He assumes new duties at the Pentagon as the Medical Sciences Advisor to the Joint Chiefs of Staff in September. Dr Macedonia is the recipient of numerous military and civilian awards, including the Heroes of TRICARE award given to the Department of Defense’s most outstanding health professionals and he was co-recipient of the Discover Magazine Award in Science and Technology.
5th Annual
World Congress of IBMISPS

Thursday August 28

8:00am - 5:00pm
Sponsor Exhibitions in CNSI Lobby
Poster Sessions

Welcome and Introduction

8:00 - 8:30am
OFFICIAL WELCOME AND INTRODUCTION
By Chairmen:
Stephan ERBERICH &
Babak KATEB

8:30 - 9:00am
KEYNOTE SPEAKER
Christian MACEDONIA, M.D.
Lieutenant Colonel, Medical Corps, US Army
Chief of Research Operations
Telemedicine and Advanced Technology Research Center
U.S. Army Medical Research and Materiel Command (MRMC)
Associate Professor of Ob/GYN,
Military and Emergency Medicine Uniformed Services University

Brain Mapping and Systems Biology

Scientific Session 7: Multi-Modality Imaging

9:00 - 9:15am
CHAIR:
Alexandra GOLBY, M.D.
Assistant Professor of Neurosurgery,
Associate Surgeon, Brigham and Women’s Hospital
Director of Image Guided Neurosurgery,
Brigham and Women’s Hospital,
Harvard Medical School

Improving Pre-operative Language Lateralization and Localization Using Advanced fMRI Analysis

9:15 - 9:30am
Manbir SINGH, Ph.D.
Professor of Radiology and Biomedical Engineering,
Founding Director of Biomedical Imaging & Telemedicine Program,
Director of ADRC Neuroimaging Core
University of Southern California

Quantitative DTI with Applications to Traumatic Brain Injury and Alzheimer Disease

9:30 - 9:45am
CO-CHAIR:
Aaron COHEN, M.D. M.S.
Assistant professor of neurosurgery
Indiana University School of Medicine

Use of Diffuse Tensor Imaging in Surgical Planning and Resection of Insular Gliomas
### Scientific Session 7: Multi-Modality Imaging (Cont.)

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Topic</th>
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<tbody>
<tr>
<td>9:45 - 10:00am</td>
<td>Ramon DIAZ-ARRASTIA, M.D., Ph.D.</td>
<td>Multimodality Magnetic Resonance Imaging Biomarkers of Traumatic Axonal Injury</td>
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<tr>
<td>10:00 - 10:15am</td>
<td>Guido GERIG, Ph.D.</td>
<td>Analysis of Brain White Matter Properties and Fiber Tracts Via Diffusion-Weighted MRI: Challenges and Potential Benefits</td>
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<tr>
<td>10:15 - 10:30am</td>
<td>Q &amp; A</td>
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<td>10:30 - 11:00am</td>
<td>LUNCH BREAK</td>
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### Scientific Session 8: Global Health Grid: Toward Electronic Medical Records and Advanced Telemedicine

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<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Topic</th>
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<tbody>
<tr>
<td>11:00 - 11:20am</td>
<td>Johan MONTAGNAT, Ph.D.</td>
<td>Neuroscience Discovery with Grid Computing</td>
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<td>11:20 - 11:40am</td>
<td>Michael WILDE, B.Sc.</td>
<td>Swift Supercomputing Analysis in CNARI: Computational Neuroscience and Aphasia Research Infrastructure</td>
</tr>
<tr>
<td>11:40 - 12:00pm</td>
<td>James PHILBIN, Ph.D.</td>
<td>The Design of a DICOM Compatible Storage Grid with ILM</td>
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<tr>
<td>12:00 - 12:15pm</td>
<td>Q &amp; A</td>
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<td>12:15 - 2:00pm</td>
<td>LUNCH BREAK</td>
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### Scientific Session 9: Traumatic Brain and Spinal Cord Injury and PTSD

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<thead>
<tr>
<th>Time</th>
<th>Chair/Co-Chair</th>
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| 2:00 - 2:15pm | **Chair:** David Moore, M.D.  
Deputy Director for Research,  
Defense and Veterans Brain Injury Center,  
Walter Reed Army Medical Center  
*Computational Biology, Primary Blast Injury and the Central Nervous System* |
| 2:15 - 2:30pm | **Co-Chair:** Amir Vokshoor, M.D.  
Co-founder of Neurosurgical & Spine Institute  
Diagnostic and International Spine Center Institute  
St. John's Medical Center  
West Hills Medical Center  
*Neurosurgical Repair in Cervical Trauma* |
| 2:30 - 2:45pm | **Elaine Alexander, M.D., Ph.D.**  
Cenomed BioSciences, LLC  
Vice President Clinical Development  
Chief Medical Officer (CMO)  
*The Development of Multi-Function Therapeutics for PTSD and PTE in War Fighters Injuries (TBI)* |
| 2:45 - 3:00pm | **Michael J. Roy, M.D., M.P.H.**  
Colonel, Medical Corps, U.S. Army  
Director, Division of Military Internal Medicine Professor of Medicine Uniformed Services University of the Health Sciences  
*ViRTICO: Virtual Reality Therapy and Imaging in Combat Veterans with PTSD and Mild TBI* |
| 3:00 - 3:15pm | **Akemi Tomoda, M.D., Ph.D.**  
Department of Psychiatry, Harvard Medical School  
Developmental Biopsychiatry Research Program,  
McLean Hospital, Belmont,  
Child Developmental Sociology,  
Faculty of Medical and Pharmaceutical Sciences  
Kumamoto University, Kumamoto, Japan  
*Prefrontal Cortex Involvement as Adverse Effects of Harsh Corporal Punishment in Childhood on Brain Gray Matter Volume* |
| 3:15 - 3:30pm | **Q & A** |
| 3:30 - 4:00pm | **Tea Recess** |
### Scientific Session 10: Biophotonic and Image Guided Therapy

#### 4:00 - 4:15pm
**CHAIR:**
**E. Duco Jansen, Ph.D.**
Associate Professor of Biomedical Engineering
Department of Biomedical Engineering
Vanderbilt University School of Engineering

*Optical Stimulation in the CNS*

#### 4:15 - 4:30pm
**Jonathan Nissanov, Ph.D.**
Associate Professor,
Department of Neurobiology & Anatomy
Drexel University College of Medicine

*Cryoplane Fluorescence Microscopy*

#### 4:30 - 4:45pm
**CO-CHAIR:**
**Nathalie Y.R. Agar, Ph.D.**
Instructor in Surgery, Department of Neurosurgery
Brigham and Women’s Hospital, Harvard Medical School

*Mass Spectrometry Approaches to Intraoperative Surgical Planning*

#### 4:45 - 5:00pm
**Mark Bendett, Ph.D.**
Director of Medical Products
Aculight Corporation

and

**Jonathon Wells, Ph.D.**
Aculight Corp
Senior Scientist

*Infrared Nerve Stimulation: A Selective Stimulus for Neural Mapping, Surgical Guidance, and Therapy*

#### 5:00pm
**Q & A**

**TEA RECESS**

#### 6:00-9:00pm
**COCKTAIL AWARD EVENT**
Cocktail Award Event
6:00 - 9:00 pm
UCLA California Nanosystem Institute
(UCLA-CNSI)

Keynote Speaker: HERB SCHULTZ
Special Assistant to Governor Schwarzenegger

2008 AWARD RECIPIENTS

BEACON AWARD FOR COURAGE AND DEDICATION

Dustin Hoffman

PIONEER IN MEDICINE AWARD

Dr. Ron Kikinis

PIONEER IN HEALTHCARE POLICY

Governor Schwarzenegger

PIONEER IN TECHNOLOGY

Mark L. Vachon

ABOUT CNSI

The California NanoSystems Institute (CNSI) is an integrated research center — operating jointly at UCLA and UC Santa Barbara — whose mission is to foster interdisciplinary collaborations for discoveries in nanosystems and nanotechnology, to train the next generation of scientists, educators and technology leaders, and to facilitate partnerships with industry that will fuel economic development and the social well-being of California, the United States and the world.

The CNSI was established in 2000 with $100 million in funding from the state of California and an additional $250 million in federal research grants and industry funding. Scientists in the areas of biology, chemistry, biochemistry, physics, mathematics, computational science, and engineering are measuring, modifying and manipulating the building blocks of our world — atoms and molecules. These scientists benefit from an integrated laboratory culture enabling them to conduct dynamic research at the nanoscale, leading to significant breakthroughs in the areas of health, energy, environment and information technology. For additional information, visit www.cnsi.ucla.edu.
Cocktail Award Schedule of Events:

6:00 - 6:10pm  INTRODUCTION: Babak KATEB
Chairman of the Board of Directors, IBMISPS-Foundation
Founding Executive Director, IBMISPS
Managing Editor IBMISPS-NeuroImage
Visiting Researcher California Institute of Technology

6:10 - 6:30pm  KEYNOTE SPEECH: Herb SCHULTZ
Herb Schultz, of West Hollywood, has been appointed Senior Health Policy Advisor for the Office of the Governor in the state of California. Most recently, he has served as Vice President of Government Programs for McKesson Health Solutions, where he oversaw disease management and nurse advice government Medicaid and Medicare programs. Schultz previously was Acting Director of the California Employment Development Department and Acting Secretary and Undersecretary for the Labor and Workforce Development Agency. Prior to that, he was Deputy Director of External Affairs for the Department of Managed Health Care and served as Director of the Advisory Committee on Managed Health Care.

6:30 - 7:00pm  Award Presentation
7:30 - 8:00pm  Break
8:30 - 9:00pm  VIP Tour of UCLA's CNSI
9:00pm  Closing Remarks

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.

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 multi-disciplinary approach. Their groundbreaking contribution has made development of state-of-the-art technology and scientific discovery a reality.

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.

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:
2006: Warren Grundfest, Alim Louis Benabid
2007: Beacon Award, Benham Badie; Medicine, Richard Frakowiack, Arthur W. Toga, John Mazziotta; Technology, Steve Rusckowski; Healthcare Policy, Speaker Nancy Pelosi, Senator Edward Kennedy
Dustin Lee Hoffman, born August 8, 1937, is a two-time Academy Award, six-time Golden Globe, three-time BAFTA and Emmy Award actor. Born in Los Angeles of a jazz pianist mother and prop supervisor/set decorator father, he graduated from Los Angeles High School. He began acting at the Pasadena Playhouse with fellow actor, Gene Hackman after a brief college term at Santa Monica City college. Hoffman followed Hackman to New York and the two worked odd jobs as they continued to improve their craft. During these years, Hoffman shared a small apartment with actor Robert Duval.

He studied at the famous Actors Studio and became a method actor. Through the early sixties he made numerous appearances on television and appeared in commercials, and in theatrical performances. Between acting jobs he taught acting at community colleges and directed off-Broadway productions.

In 1966, director Mike Nichols was casting for ‘The Graduate’ and eventually auditioned and hired Mr. Hoffman, who received an Academy Award nomination for his role in the film. His next films brought critical success and another Academy nomination including Midnight Cowboy and Little Big Man. He continued his string of successes in the next decade with such films as Papillon, Straw Dogs and Lenny. Less than two years after the Watergate scandal, Hoffman appeared in ‘All the Presidents Men’ with Robert Redford.

His movie successes continued as he explored comedy in ‘Tootsie’, reprising his early real life in New York as a struggling actor/director, and drama with in evocative role of a caring, divorced father in Kramer vs. Kramer. He has been considered for a number of roles including Michael Coreleone in the Godfather and Richard Decker in Blade Runner. In Rain Man, he appeared as an autistic savant opposite Tom Cruise. The film was a huge success and brought him his second Oscar.

When a family friend was diagnosed with Type I diabetes, Mr. Hoffman and his wife, Lisa Gottsegen, became involved with the Juvenile Diabetes Research Foundation, hosting its first fund raising event. The foundation’s research efforts became embroiled in a larger controversy over the use of stem cells which Mr. Hoffman defended. "What this research has more to do with is not when life begins but when life ends," Mr. Hoffman is quoted as saying. "This research may one day eliminate these diseases from ending people’s lives prematurely.”

He is the father of six children and has two grandchildren. He is politically active and has long supported the Democratic Party.
Dr. Kikinis is the founding Director of the Surgical Planning Laboratory, Department of Radiology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, and a Professor of Radiology at Harvard Medical School. This laboratory was founded in 1990.

Dr. Kikinis is the Principal Investigator of the National Alliance for Medical Image Computing (NA-MIC, a National Center for Biomedical Computing, an effort which is part of the NIH Roadmap Initiative), and of the Neuroimage Analysis Center (NAC a National Resource Center funded by NCRR). He is also the Research Director of the National Center for Image Guided Therapy (NCIGT), which is jointly sponsored by NCRR, NCI, and NIBIB.

During the mid-80’s, Dr. Kikinis developed a scientific interest in image processing algorithms and their use for extracting relevant information from medical imaging data. Since then, this topic has matured from a fairly exotic topic to a field of science. This is due to the explosive increase of both the quantity and complexity of imaging data. Dr. Kikinis has led and has participated in research in different areas of science. His activities include technological research (segmentation, registration, visualization, high performance computing), software system development (most recently the 3D Slicer software package), and biomedical research in a variety of biomedical specialties. The majority of his research is interdisciplinary in nature and is conducted by multidisciplinary teams. The results of this research have been reported in a variety of peer-reviewed journal articles. He is the author and co-author of more than 260 peer-reviewed articles.

Before joining Brigham & Women’s Hospital in 1988, he trained as a resident in radiology at the University Hospital in Zurich, and as a researcher in computer vision at the ETH in Zurich, Switzerland. He received his M.D. degree from the University of Zurich, Switzerland, in 1982.
Arnold Schwarzenegger is currently the 38th Governor of California. He was born on July 30, 1947 in Thal, Austria just outside the Styrian capital of Graz. Son of a local police chief he was raised in a strict environment of rules and according to him “the rod was not spared” when he disobeyed his parents. Early childhood friends remember him as ‘cheerful, good-natured and exuberant’. He attend a Roman Catholic church every Sunday.

At age 14 he chose barbells over soccer and thus a career in body building began. He studied psychology at age 15 to develop his mind and its control over his body. While his father wanted a career for him in law enforcement and his mother favored a trade school, he spent much of teen years in Graz at the gymnasium or movie theatres. There he saw films with Johnny Weissmuller, Tarzan, and Steve Reeves, Hercules, and had an inclination of a career path from body building to acting. He remembers that the first film he saw with his father in a movie theatre starred John Wayne.

After a mandatory year’s service in the Austrian Army, he pursued titles and awards in the body building world. Successive wins of Mr. Olympia and Mr. Universe titles lead him to Hollywood where he sought to use his physique in films much like Weismuller and Reeves. In ‘Pumping Iron’, his breakout film, Mr. Schwarzenegger displays a winning smile and tremendous mental and physical strength. With ‘Conan the Destroyer’ he found a role in which he could develop a character where his strong European accent wouldn’t hinder him. The film’s success opened the doors for a series of films. In 1984 he starred in the Terminator, a science fiction thriller and the name and role have stuck with him since. He followed up with a rapid succession of box offices successes including in each of the following years with Commando, Predator, the Running Man and Red Heat

Mr. Schwarzenegger began to alternate between comedies and action films starring in Twins and Total Recall, Kindergarten Cop and Terminator 2: Judgement day. He continued this formula through the next decade with a string of box office successes.

Mr. Schwarzenegger is a supporter of the Republican Party and successfully ran for the office of Governor of California in a recall election in 2003. Mr. Schwarzenegger has been an advocate of exercise for children and was chairman of the President’s Council on Physical Fitness and Sports from 1990 to 1993. As governor he signed a bill creating the nation’s first cap on greenhouse gas emissions. The law set new regulations on the amount of emissions utilities, refineries and manufacturing plants are allowed to release into the atmosphere. Schwarzenegger also signed a second global warming bill that prohibits large utilities and corporations in California from making long-term contracts with suppliers who do not meet the state’s greenhouse gas emission standards.

He is married to TV journalist Maria Shriver and is the son-in-law to Eunice Kennedy Shriver. Together they have four children.
Mark L. Vachon is president and CEO of Global Diagnostic Imaging, a position he has held since January 2006.

Mr. Vachon began his GE career in 1982 as a member of the Financial Management Program in Schenectady, New York. After assignments at Corporate Research and Development, Large Motor and Generator, International Apparatus and Engineering Services, Mark joined the Corporate Audit Staff in 1985. Mr. Vachon served on the audit staff for five years, eventually becoming executive audit manager.

In 1990 he accepted the position of manager of International Finance at GE Appliances. Over the next several years, Mr. Vachon had assignments at Appliances as manager of the Process Improvement Group, general manager of Retail Sales and Market Development, and general manager of Consumer Satisfaction. In December 1995 he assumed the role of director of finance at GE Plastics Europe, based in Bergen op Zoom in the Netherlands. After a brief time as GE Plastic’s Global Quality Leader, Mr. Vachon was promoted to vice president of Investor Relations with GE Corporate in April 1998. In July 1999 he was appointed a GE company officer, and in January 2002 he was appointed executive vice president and chief financial officer of NBC. The following year he was appointed to executive vice president and chief financial officer at GE Healthcare.

Mr. Vachon graduated from Northeastern University in Boston with a bachelor’s degree in finance. He resides in the Waukesha, Wisconsin, area with his wife Karen and their two children.
Ron von Jako, M.D.

BIography

Before joining GE Healthcare - Surgery in 2002, Dr. von Jako had been Senior Product and Clinical Development Director with Visualization Technology, Inc. While at VTI and in collaboration with GEHC, Dr. von Jako was responsible for creating the product development and evidence-based strategies for orthopedic and neurosurgical applications.

He launched the first commercial electromagnetic navigation platform integrated with GE C-arm fluoroscopy targeting spinal degenerative disc disease, trauma, and deformity procedures. Prior to VTI, Dr. von Jako was co-founder of Atls, Inc where he co-invented a patented electrosurgical device used for the excision and removal of various lesions through mini-open and laparoscopic procedures. Previous to this, Dr. von Jako served as VP of Clinical Affairs for Atlantis Surgical where he created novel fiberoptic and integrated endoscopic-retractor technologies. Here he directed clinical research teams supporting multinational surgical projects that resulted in new trends and standards that enabled some of the first least invasive concepts and access approaches for cardio-vascular, orthopedic and spinal fusions. Dr. von Jako has consulted for a number of different companies including SpineTech, Boston Scientific, US Surgical, Kaiser Aerospace, Medtronic and Smith and Nephew for minimally invasive approaches to surgery. His experience has included designing products and running trials for numerous surgical indications.

Currently heserves as Medical Director for GEHC Surgery/OEC providing medical perspectives on risk assessments to further strengthen the focus on patient safety, drive benefits of surgical products thru evidence generation, and interacts between external experts and internal GE cross-functional areas to expand upon innovative technologies. Dr. Von Jako received his medical degree at 24 from the University of Pecs, School of Medicine and Health Sciences, Pecs Hungary and trained in surgery. He was awarded a Fellowship in Minimally Invasive Surgical Research from Dartmouth - Lahey Clinic Medical Center in Massachusetts.

He is currently a PhD Candidate in Experimental Surgery. Some professional affiliations and awards include the Mass Medical Society, Spine Arthroplasty Society, American Academy of Otorhinolaryngology- Head and Neck Surgery and American College of Surgeons Scientific Exhibition awards.
8:00am - 5:55pm  Sponsor Exhibitions in CNSI Lobby Poster Sessions

Welcome and Introduction

8:00 - 8:20am  OFFICIAL WELCOME AND INTRODUCTION
By Chairmen:

Jean Jacques LEMAIRE and Babak KATEB

8:20 - 8:55am  KEYNOTE SPEAKER
Ron VON JAKO, M.D.  
Chief Medical Officer
Surgical Development Leader
GE Healthcare Surgery

Application of Electromagnetic Image Guidance in Spine Surgery

Scientific Session 11: Deep Brain Stimulation and Human Brain Machine Interface - Session 1

9:00 - 9:15am  CHAIR:
Michael S. OKUN, M.D.
Adelaide Lackner Associate Professor of Neurology
Co-Director Movement Disorders Center
Department of Neurology, McKnight Brain Institute
Medical Director National Parkinson Foundation

Sorting out Verbal Fluency/Cognitive Issues in Deep Brain Stimulation

9:15 - 9:30am  Cameron MCINTYRE, Ph.D.
Assistant Staff, Cleveland Clinic Foundation,
Department of Biomedical Engineering,
Assistant Professor,
Department of Molecular Medicine
Cleveland Clinic Lerner College of Medicine - CWRU

Deep Brain Stimulation Surgical Navigation Using Neurostimulation Models

9:30 - 9:45am  William SHAIN, Ph.D.
Research Scientist,
Wadsworth Center, Nervous System Disorders
Associate Professor,
School of Public Health,
Biomedical Sciences and Environmental Health Sciences

What Can We Learn from Pathology and Imaging Post-Mortem DBS Tissue
Scientific Session 11: **Deep Brain Stimulation and Human Brain Machine Interface - Session 1 (Cont.)**

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<th>Time</th>
<th>Speaker Name, Title</th>
<th>Presentation Title</th>
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<tr>
<td>9:45 - 10:00am</td>
<td>CO-CHAIR: Michele TAGLIATI, M.D.</td>
<td>The Safety of MRI in Deep Brain Stimulation: A Review of National Parkinson Foundation Centers of Excellence</td>
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<tr>
<td>10:00 - 10:15am</td>
<td>Felice SUN, Ph.D.</td>
<td>Responsive Neurostimulation for Epilepsy</td>
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<tr>
<td>10:15 - 10:30am</td>
<td>Q &amp; A</td>
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<td>10:30 - 11:00am</td>
<td>COFFEE BREAK</td>
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Scientific Session 12: **Robotics, Brain Implants and Human Brain Machine Interface - Session 2**

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<tr>
<th>Time</th>
<th>Chair: Geoffrey S. YOUNG M.D.</th>
<th>Presentation Title</th>
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<tbody>
<tr>
<td>11:00 - 11:15am</td>
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<td>Susceptibility Weighted Imaging Enhancement of Standard 3 Tesla T1-weighted SPGR Surgical Navigation Images for Improved Midbrain Nuclei Imaging and Guidance During Deep Brain Stimulation Implantation</td>
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<tr>
<td>11:15 - 11:30am</td>
<td>CO-CHAIR: Mesut SAHIN, Ph.D.</td>
<td>Brain-Computer Interfacing: Too Many Choices of Brain Sites for Recording Volitional Activity</td>
</tr>
<tr>
<td>11:30 - 11:45am</td>
<td>Herc NEVES, Ph.D.</td>
<td>Cerebral Implants: A Microsystem Perspective</td>
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### Scientific Session 12: Robotics, Brain Implants and Human Brain Machine Interface - Session 2 (Cont.)

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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tr>
<td>11:45 - 12:00pm</td>
<td><strong>Aria A. TZIKA, Ph.D.</strong></td>
<td><strong>Connectivity Alterations Assessed by Combining fMRI and MR Compatible Rehabilitation Robots in Chronic Stroke</strong></td>
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<tr>
<td>12:00 - 12:15pm</td>
<td><strong>Wentai Liu, Ph.D.</strong></td>
<td><strong>High Density Brain Signal Recording and Processing Miniaturized System</strong></td>
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<tr>
<td>12:15 - 2:00pm</td>
<td><strong>LUNCH BREAK</strong></td>
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### Scientific Session 13: Mapping for Energy Delivery in the Brain

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>2:00 - 2:15pm</td>
<td><strong>CHAIR:</strong></td>
<td><strong>Importance of Fibertracking Maps for Functional Neurosurgery</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Antonio A.F. DE SALLES, M.D., Ph.D.</strong></td>
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</tr>
<tr>
<td>2:15 - 2:30pm</td>
<td><strong>CO-CHAIR:</strong></td>
<td><strong>DTI and Imaging Fusion for AVM Radiosurgery Planning and Follow-up</strong></td>
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<td><strong>Alessandra GORGULHO, M.D.</strong></td>
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<tr>
<td>2:30 - 2:45pm</td>
<td><strong>Tom S. LEE, M.S.</strong></td>
<td><strong>Software-Based MRI Distortion Correction for Precise Radiation Treatment Planning</strong></td>
</tr>
<tr>
<td>2:45 - 3:00pm</td>
<td><strong>Nzhde AGAZARYAN, Ph.D., DABR</strong></td>
<td><strong>Frameless Localization for Radiosurgery Delivery</strong></td>
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### Scientific Session 13: Mapping for Energy Delivery in the Brain (Cont.)

<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>3:00 - 3:15pm</td>
<td>Justin Zivin, M.D., Ph.D.</td>
<td>Use of Laser Irradiation of the Brain for Improving Recovery from Stroke</td>
</tr>
<tr>
<td>3:15 - 3:30pm</td>
<td>Q &amp; A</td>
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<tr>
<td>3:30 - 4:00pm</td>
<td>TEA RECESS</td>
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### Scientific Session 14: New Horizon

<table>
<thead>
<tr>
<th>Time</th>
<th>Chair</th>
<th>Title</th>
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<tbody>
<tr>
<td>4:00 - 4:15pm</td>
<td>Tzyy-Ping Jung, Ph.D.</td>
<td>Complex Brain Dynamics during Sustained Attention Tasks</td>
</tr>
<tr>
<td>4:15 - 4:30pm</td>
<td>Kenneth I. Lipo, M.D.</td>
<td>The Challenge of Neurosurgical Physiologic Augmentation</td>
</tr>
<tr>
<td>4:30 - 4:45pm</td>
<td>Arminas Ragauskas, D.Sc.</td>
<td>Innovative Technologies for Noninvasive Assessment of Intracraniospinal Physiological Characteristics</td>
</tr>
<tr>
<td>4:45 - 5:00pm</td>
<td>Jeng-Ren Duann, Ph.D.</td>
<td>Exploring BOLD Based-Causality between Independent Brain Networks</td>
</tr>
<tr>
<td>5:00 - 5:15pm</td>
<td>Srini Mukundan, PhD, MD</td>
<td>CT Based Surgical Planning in the Cases of Craniosynostosis</td>
</tr>
<tr>
<td>5:15pm</td>
<td>TEA RECESS</td>
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