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The U.S. Army Medical Research and Materiel Command

Telemedicine and Advanced Technology Research Center

The Safar Center for Resuscitation Research,
The Department of Anesthesiology,
The Department of Critical Care Medicine
and the Winter Institute for Simulation, Education and Research

4th Annual

Safar Symposium

Wednesday, June 28, 2006

Biomedical Science Tower II

South-Room S100A

4th Annual Safar Symposium
June 28, 2006
Morning Session

7:30 AM	Continental Breakfast
8:00 – 12:00	**Advances in Resuscitation Medicine** **"Mitochondria in Resuscitation"**
8:00 - 8:05	Opening Comments – Morning Session Patrick M. Kochanek, MD Director, Safar Center for Resuscitation Research
Moderators:	Clifton W. Callaway, MD, PhD and Valerian Kagan, PhD
8:05 – 8:35	Gary Fiskum, PhD Prof. and Vice-Chair for Research, Dept. of Anesthesiology Univ. of Maryland School of Medicine **"Resuscitative Hyperoxia: Too Much of a Good Thing Can Hurt"**
8:35 – 8:45	Discussion
8:45 – 9:15	Miguel A. Perez-Pinzon, PhD Assoc. Prof. of Neurology, Univ. of Miami School of Medicine **"Protein Kinase C, Mitochondria and Cerebral Ischemia"**
9:15 – 9:25	Discussion
9:25 – 9:45	Yi-Chen Lai, MD Fellow, Safar Center for Resuscitation Research **"Mitochondria, PARP and Energy Failure: A Novel Perspective"**
9:45 – 9:55	Discussion
9:55 – 10:15	Coffee break
10:15 – 10:45	Patrick Sullivan, PhD Asst. Prof., Spinal Cord & Brain Injury Research Center Univ. of Kentucky Chandler Medical Center **"Targeting Mitochondrial Permeability as a Neuroprotective Strategy Following Traumatic Brain and Spinal Cord Injury"**
10:45 – 10:55	Discussion
10:55 – 11:25	M. Ross Bullock, MD, PhD Reynolds Prof, Division of Neurosurgery Virginia Commonwealth Univ., Medical College of Virginia Campus **"Cyclosporin in Traumatic Brain Injury: Preliminary Clinical Findings"**
11:25 – 11:35	Discussion
11:35 – 11:45	Presentation of the 4th Nancy Caroline Fellowship Award Presented by Patrick M. Kochanek, MD

The 26th Peter and Eva Safar Annual Lectureship in Medical Sciences and Humanities

Guest Speaker: ANTHONY ATALA, MD
Director, Wake Forest Institute for Regenerative Medicine

Topic: Regenerative Medicine: New Advances in Health Care for the 21st Century

12:00 – 12:05	Introduction of the *Safar Lecture* – John P. Williams, MD
12:05 – 12:10	Introduction of *Safar Lecturer* – Patrick M. Kochanek, MD
12:10 – 12:50	26th Annual Safar Lecture – Anthony Atala, MD
12:50 – 1:00	Questions and Discussion
1:00 – 1:45	Reception – Foyer

Afternoon Session

1:45 – 5:00	**Advances in Human Simulation Education**
1:45 – 1:50	Opening Comments – Afternoon Session Paul Phrampus, MD, FACEP Interim Director, Winter Institute for Simulation, Education and Research
Moderators:	Joseph Quinlan, MD and Paul Phrampus, MD
1:50 – 2:20	Gerald Moses, PhD Lead, Clinical Applications Area of the TATRC, USAMRMC **"Advanced Technologies Applied to Health Care: A TATRC Perspective"**
2:20 – 2:30	Discussion
2:30 – 3:00	Mark Scerbo, PhD Prof., Human Factors, Dept. of Psychology, Old Dominion University **"Enhancing Simulation-Based Training in Medicine Through Virtual Environments"**
3:00 – 3:10	Discussion
3:10 – 3:25	Coffee Break
3:25 – 3:55	Paul Rogers, MD Prof., Critical Care Medicine, Univ. of Pittsburgh School of Medicine **"Dying 1,000 Deaths for Critical Care Trainees"**
3:55 – 4:00	Discussion
4:00– 4:20	Dave Metro, MD Asst. Prof., Dept. of Anesthesiology, Univ. of Pittsburgh School of Medicine **"Simulation as a Tool for Difficult Airway Management Training"**
4:20 – 4:25	Discussion
4:25 – 4:45	John O'Donnell, MSN, CRNA Director, Nurse Anesthesia Program, Univ. of Pittsburgh School of Medicine **"Back Injury Prevention and Other Nursing Initiatives – Methodology and Approaches in Simulation"**
4:45 – 4:50	Discussion
4:50 – 5:00	Concluding Comments – Patrick M. Kochanek, MD

4th Annual Safar Symposium
June 28, 2006

Morning Session Speakers
Advances in Resuscitation Research
Mitochondria in Resuscitation

GARY FISKUM, PhD
Prof. & Vice-Chair, Research of Anesthesiology,
University of Maryland School of Medicine

Dr. Fiskum received his B.A. degree from U.C.L.A. and his Ph.D. in Biochemistry from St. Louis University in 1978. He then spent three years as a postdoctoral fellow with Dr. Albert L. Lehninger at the Johns Hopkins University, where he contributed significantly to the knowledge of the role of mitochondrial calcium transport in cellular calcium homeostasis. In 1981, he joined the faculty at George Washington University and was promoted to Professor of Biochemistry and Molecular Biology in 1991. During the 1990s, he and his collaborators used a clinically-relevant large animal model of brain injury caused by cardiac arrest to provide insight into the relationships between oxidative stress and altered cerebral energy metabolism. They also demonstrated ischemic neuroprotection with acetyl-L-carnitine, an agent that will soon be tested in clinical trials. Dr. Fiskum and collaborators were also the first to demonstrate a mitochondrial activity for the anti-apoptotic gene Bcl-2, and continues to work on mitochondrial pro- and antiapoptotic proteins. He moved to the University of Maryland School of Medicine in 1997 where he serves as Professor and Vice-Chair for Research in the Department of Anesthesiology and as Professor in the departments of Biochemistry and Molecular Biology and Pharmacology and Experimental Therapeutics. He is also the organizer of the Program in Neuroscience Neuroprotection Research Focus Group. Dr. Fiskum's current areas of research include molecular mechanisms of neurodegeneration, mitochondrial bioenergetics, oxidative stress, apoptosis, cerebral energy metabolism, cerebral ischemia, traumatic brain injury, and Parkinson's disease. He has published over 115 peer-reviewed research articles, 15 review articles, 20 book chapters, and has edited several books. He has also directly mentored 35 PhD students, postdoctoral fellows and junior faculty.

MIGUEL PEREZ-PINZON, PhD
Director, Cerebral Vascular Disease Research Center
Professor of Neurology
University of Miami School of Medicine

Dr. Perez-Pinzon obtained a BSc degree in Biology at the University of Panama, a Masters of Science at the University of Miami in Biological Oceanography, and a PhD at the University of Miami, Rosenstiel School Marine and Atmospheric Sciences, with training and courses at the University of Miami School of Medicine (Department of Neurology) under the guidance of Drs. Myron Rosenthal (Neurology) and Peter Lutz (Marine Biology and Fisheries). He furthered his training by carrying out post-doctoral training in Physiology and Biophysics with Dr. Charles Nicholson at the Department of Physiology and Biophysics from New York University Medical Center, followed by a second post-doctoral training in neuroscience at the Department of Neurosurgery of Stanford University Medical School, where he expanded his training by complementing basic science with more clinical neuroscience research with Dr. Gary K. Steinberg.

A major area of interest in his laboratory relates to the role of mitochondrial dysfunction on neurological pathologies. Even though mitochondria are considered the 'powerhouse of the cell', as they are the main energy producers, they have also been linked to the cell death pathway and aging. Two reports published in *Science* in 1997 (275(5303): 1132-1136; 275(5303): 1129-1132) had demonstrated that cytochrome c release from mitochondria played a role in the induction of cell death by apoptosis. We were one of the first groups to demonstrate that cerebral ischemia induces cytochrome c release (*J Cereb Blood Flow Metab* 1999 19(1):39-43), thus suggesting that this may be one of the pathways leading to neuronal death after a stroke or cardiac arrest.

Dr. Perez-Pinzon's main research interest is to characterize the mechanisms of neuroprotection against conditions of energy deprivation, such as anoxia/ischemia. Based on the fact that normal brain metabolism is highly dependent upon cellular generation of energy in the form of adenosine triphosphate (ATP), supplied by the circulatory system, my interest has focused in the interaction between the energy level of brain cells, electrical activity which is an intrinsic part of this specialized organ and mitochondria, which is the powerhouse of the cell. This special interaction has directed my research in three specific directions which are aimed at determining: a) how a loss in this stable interaction could affect neuronal survival; b) how during stress conditions certain species or cells can adapt to this instability by promoting specific metabolic adaptations; and c) how brain mitochondria react under both resistance and pathological states to anoxia/ischemia. Dr. Perez-Pinzon has published 61 abstracts, 5 book chapters (some refereed) and 66 refereed manuscripts.

YI-CHEN LAI, MD
Fellow, Pediatric Critical Care Medicine and
Safar Center for Resuscitation Research
University of Pittsburgh School of Medicine

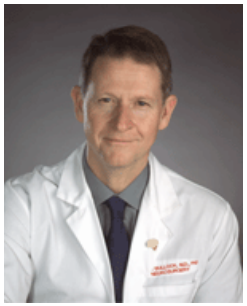
Dr. Lai received his undergraduate degree in Biochemistry from the University of Pennsylvania, and M.D. degree from the University of Pittsburgh. Subsequently, he completed his pediatric training at Children's Hospital of Pittsburgh. After the completion of his pediatric residency, he pursued additional training in Pediatric Critical Care at Children's Hospital of Pittsburgh. During his fellowship, he was the recipient of several Educational Scholarship Awards from the Society of Critical Care Medicine. Dr. Lai currently is an NRSA fellow at Safar Center for Resuscitation Research under Dr. Patrick M. Kochanek's T-32 training grant entitled "Training in Pediatric Neurointensive Care and Resuscitation Research" (NIH/NICHD). His research is focused on the neuronal response to injury, with a primary interest in apoptosis and related emphasis on anti-apoptotic therapies. For the past few years, Dr. Lai has been working directly under Dr. Robert S.B. Clark, investigating the role of mitochondrial poly-ADP-ribosylation in neuronal death and potential therapeutic interventions.

PATRICK G. SULLIVAN, PhD
Assistant Professor, Spinal Cord and Brain Injury Research Center, University of Kentucky Chandler Medical Center

Patrick Giles Sullivan, PhD, is an assistant professor in the Spinal Cord and Brain Injury Research Center and the Department of Anatomy and Neurobiology at the University of Kentucky Chandler Medical Center in Lexington. He received his undergraduate degree in biology and doctoral degree in anatomy and neurobiology from the University of Kentucky. Dr. Sullivan completed a postdoctoral fellowship at The Reeve-Irvine Research Center at the University of California at Irvine.

Dr. Sullivan's areas of research include the role of mitochondrial dysfunction in the neuropathology of acute brain and spinal cord injury, mitochondrial aging and the CNS, and mitochondrial uncoupling proteins and the ketogenic diet in epilepsy. A widely published author, Dr. Sullivan's articles have appeared in numerous professional publications including the *Journal of Neurotrauma, Journal of Neuroscience, Journal of Comparative Neurology* and *Annals of Neurology.*

Dr. Sullivan is a frequently invited presenter and a current course lecturer for several classes. He was a recipient of the Charles T. Wethington Excellent in Research Award in 2004, 2005 and 2006 from the University of Kentucky and was awarded a Young Investigator Award from the National Neurotrauma Society in 2001.



M. ROSS BULLOCK, MD, PhD
Reynolds Professor, Department of Neurosurgery Virginia Commonwealth University

M. Ross Bullock, MD, PhD, is the Reynolds Professor of Neurosurgery and Director of the Neurointensive Care Unit at the Virginia Commonwealth University. He received his medical degree from the University of Birmingham, England and his PhD from the University of Natal, South Africa. Dr. Bullock has a longstanding interest and is a recognized expert in the area of clinical trials in the field of severe traumatic brain injury. His work has included a bench-to-bedside approach in experimental models of brain injury and state-of-the-art bedside biochemical investigation of patients with severe head injury. Dr. Bullock has published a number of important reports on the excitotoxic response and other metabolic derangements in human head injury. He has published over 220 manuscripts, books, and chapters. He has also played important roles in the neurotrauma community, including serving as deputy editor of the *Journal of Neurotrauma*, President of the National Neurotrauma Society, and Chair of the American Association of Neurological Surgeons Joint Section on Neurotrauma and Critical Care.

The 26th Peter and Eva Safar Annual Lectureship in Medical Sciences and Humanities

Guest Speaker: ANTHONY ATALA, MD
Director, Wake Forest Institute for Regenerative Medicine

Topic: Regenerative Medicine: New Advances in Health Care for the 21st Century

Anthony Atala, M.D., is the W.H. Boyce Professor and Director of the Wake Forest Institute for Regenerative Medicine, and Chair of the Department of Urology at the Wake Forest University School of Medicine. Dr. Atala is a surgeon in the area of pediatric urology and a researcher in the area of regenerative medicine and tissue engineering. His current work focuses on growing new human cells, tissues and organs (including kidney, blood vessels, cartilage, muscle, bladder, pancreas, and others) to repair or replace tissues or organs damaged by age, cancer, trauma, or abnormal development.

Dr. Atala is a founding member, Governor, and Continental Chair of the North America Chapter of the Tissue Engineering and Regenerative Medicine International Society. He is a member of the Scientific Advisory Board of the Regenerate International Conference. Dr. Atala is an Editor for several journals, including Stem Cells and Development, Regenerative Medicine, Tissue Engineering, Current Stem Cell Research & Therapy, The Journal of Rejuvenation Research, Expert Opinion on Biological Therapy , and The Scientific World: Tissue Engineering, and Cell Biology. He also serves as editor of Investigative Urology (Journal of Urology), Urology, Current Reviews in Urology, Current Opinion in Urology, and the Journal of Laparoendoscopic and Advanced Surgical Techniques: Endosurgery and Innovative Techniques.

In addition to his clinical practice, Dr. Atala has held numerous visiting appointments worldwide and has received numerous awards and honors, including the US Congress funded Christopher Columbus Foundation Award, bestowed on a living American who is currently working on a discovery that will significantly affect society, the Gold Cystoscope Award for contributions to his field, and was named by Scientific American as a Medical Treatments Leader of the Year, for his contributions to the fields of cell, tissue and organ regeneration.

Dr. Atala has led or served several national professional and government committees, including the National Institutes of Health working group on Cells and Developmental Biology, and the National Institutes of Health Bioengineering Consortium. Dr. Atala heads a team of 80 physicians and researchers. Ten applications of technologies developed in Dr. Atala's laboratory have been used clinically. He is the editor of 6 books, including Tissue Engineering and Methods of Tissue Engineering (Academic Press), and has published more than 200 journal articles or book chapters, more than 250 abstracts, and has applied for or received over 150 national and international patents.

Afternoon Session Speakers
Advances in Human Simulation Education

GERALD MOSES, PhD
Lead, Clinical Applications Area of the TATRC
U.S. Army Medical Research & Materiel Command

Dr. Gerald Moses is the Lead in the Clinical Applications Area of the Telemedicine and Advanced Technology Research Center (TATRC), U.S. Army Medical Research and Materiel Command. He serves as Program Manager for several projects related to advanced technologies for military and civilian health care. He serves also as Contracts Officer Representative (COR) for the DARPA biomedical research projects. Dr. Moses came to TATRC in 1999 from the Congressionally Directed Medical Research Program where, since 1996, he managed the DOD Breast Cancer Research Program.

Dr. Moses' professional life spans nearly forty years of civilian and military service. He earned his Masters degree in Speech Pathology and Audiology from Western Michigan University and his doctoral degree in Speech and Hearing Science from The Ohio State University. He taught graduate and undergraduate students, maintained a large clinical practice and conducted research for over thirteen years while serving on the faculties of Miami University and Eastern Michigan University. He published extensively on modernizing approaches to the treatment of stuttering problems. He focused on experimental phonetics and speech intelligibility. He became the founding Editor of the *Journal of Communication Pathology*.

From 1980 to 1993, Dr. Moses served on active military duty in the U.S. Army Medical Service Corps. His assignments focused upon medical readiness requirements for active and reserve forces, including recruiting of physicians and other medical officers, and serving as Chief of the Medical Branch at the Army Reserve Personnel Center. In 1985, he became Reserve Advisor to the Commandant of the Academy of Health Sciences. In addition to training responsibilities, Dr. Moses provided reserve component input to revisions in Army doctrine related to health service support to Air Land Battle, and led a Tri-service working group on sustainment training of combat medical skills. Upon promotion to Colonel, he served as Senior Reserve Advisor to the Commander of Health Services Command (HSC). He played a leadership role in the HSC Medical Mobilization Readiness Program, and then applied that leadership to the mobilization of reserve forces in support of Desert Shield and Desert Storm. After demobilization of forces after the Gulf War, Dr. Moses served as an active agent in planning for force reductions and presenting medical reserve force structure recommendations to the Army. He left active military service in 1993 and assumed managerial responsibility in the contract therapy services industry.

MARK W. SCERBO, PhD
Professor, Human Factors, Department of Psychology
Old Dominion University, Norfolk, VA

Mark W. Scerbo is a Professor of Human Factors Psychology at Old Dominion University and Co-Director of the National Center for Collaboration in Medical Modeling and Simulation, a joint venture of Old Dominion University and Eastern Virginia Medical School. He leads a team of researchers and developers who are working to validate medical simulators, develop new simulation models and technology, integrate simulation into medical school curricula, and develop models for regional response to mass casualty events.

Dr. Scerbo received his PhD from the University of Cincinnati in 1987 and worked at the AT&T Systems Evaluation Center in New Jersey from 1987 to 1990. He is a Fellow of the Human Factors and Ergonomics Society and received his Modeling and Simulation Professional Certification in 2002. In addition to medical modeling and simulation, he has studied human factors issues related to the behavioral and physiological factors that affect human interaction with virtual environments, automated systems, and adaptive interfaces. His research has been funded by NASA, the Office of Naval Research, and the U.S. Army Medical Research and Materiel Command.

PAUL L. ROGERS, MD
Professor, Department of Critical Care Medicine
University of Pittsburgh School of Medicine

Paul L. Rogers, MD is a Professor of Critical Care Medicine at the University of Pittsburgh School of Medicine. In addition, he serves as the Medical Director of the Surgical ICU and Vice President of the Critical Care Service Line at the Veterans Affairs Healthcare System of Pittsburgh (Oakland). Dr. Rogers is also the Vice Chair for Education in the Department of Critical Care Medicine and Director of the third and fourth year CCM medical student electives.

He is a graduate of the University of Arkansas and completed his Internal Medicine training at the University of Virginia, followed by a Critical Care Medicine fellowship at the National Institutes of Health in Bethesda, Maryland.

Dr. Rogers' academic interests are mainly focused in the areas of education and simulation teaching and research. He continues to study the role of simulation in teaching and evaluation of medical students and has presented his findings at numerous national meetings.

DAVE METRO, MD
Assistant Professor, Dept. of Anesthesiology
University of Pittsburgh School of Medicine

Dr. Metro is an Assistant Professor of Anesthesiology at the University of Pittsburgh School of Medicine. He graduated from the University of Pittsburgh School of Medicine in 1994 and completed his residency there in 1998. Since that time, Dr. Metro has been involved in several areas in the clinical, educational and research realms. His clinical areas of interest include acute pain management/regional anesthesia and anesthesia for patients with difficult airways. He is currently Director of the Perioperative and Trauma Pain Service at the University of Pittsburgh Medical Center.

Dr. Metro has been heavily involved in both medical student and resident education since joining the staff and is currently the medical student coordinator at UPMC Montefiore and the Associate Residency Program Director for the Department of Anesthesiology. He actively advises residents and medical students on career paths in Anesthesiology and as Chair of the Resident Selection Committee, is responsible for recruiting the best medical students in the country to join one of the top Anesthesiology programs in the country.

Dr. Metro has been involved with Difficult Airway Management training using dynamic human simulation since its inception at the university and has taught medical students, residents, and faculty the management of the difficult airway. He has presented and taught this topic at local, national and international levels.

As past president and current treasurer of the Western Pennsylvania Society of Anesthesiologists, Dr. Metro has worked to bring national and local academics and innovations in anesthesiology to the community anesthesiologists and continues to work with current officers to expand the Society.

JOHN O'DONNELL, MSN, CRNA
Program Director, Nurse Anesthesia Program
University of Pittsburgh

John O'Donnell is currently a doctoral candidate in Epidemiology at the University of Pittsburgh Graduate School of Public Health. His areas of interest include research using simulation interventions supported by web based curriculum as well as epidemiology related to patient and provider safety. Mr. O'Donnell has been a member of the Board of Directors of the Anesthesia Patient Safety Foundation (APSF) since 2003 and he has accepted an additional role as the Associate Director of the Winter Institute for Simulation Education and Research (WISER) at the University of Pittsburgh where he consults in nursing simulation efforts for undergraduate and graduate nursing education as well as for practicing nurses in the 19 hospitals of the UPMC health system.

OPEN HOUSE
THURSDAY, MAY 29, 2006
10:00 AM – 3:00 PM
SAFAR CENTER FOR RESUSCITATION RESEARCH

COME BY TO SEE OUR NEWLY RENOVATED CENTER AND THE HISTORIC DISPLAY PAYING TRIBUTE TO THE CAREER OF PETER J. SAFAR, MD