

# ISOTT-2006 Scientific Program

(All Scientific Sessions will be held in the  
Archibald/Cochran Ball Rooms at the Galt House Hotel)

## Saturday, August 12: Arrival & Registration

- 3:00 - 6:30PM**      **Registration**  
Galt House Hotel, Registration Desks of Archibald/Cochran Halls
- 7:00 - 10:00PM**      **Reception for 34th Annual ISOTT Conference with Blue Grass Music**  
The Kentucky Center for the Performing Arts
- 9:00PM**              *Special Tour of the Center - Whitney Hall*

## Sunday, August 13: Conference Day 1

- 7:00AM**              **Registration & Poster Setup**
- 7:30 - 8:00AM**      **Breakfast & Poster Viewing**
- 8:00AM**              **Welcome & Opening Remarks**  
**K. A. Kang, Ph.D., President, ISOTT-2006**
- 8:15AM**              **Greeting by M. Pfeifer, M.D.**  
Interim Dean, University of Louisville School of Medicine
- 8:25 - 9:00AM**      **Invited Lecture 1: *ISOTT Roots, Founding, Beyond***  
**D. F. Bruley, Ph.D.**                      **(Introduced by K.A. Kang)**  
Founder of ISOTT; Synthesizer, Inc.; UMBC, Baltimore, MD, USA
- 9:10 - 10:00AM**      **Session A: Oxygen Transport in Tissue - Internal Organs, Muscle**  
**(Co-Chairs: P. Liss & E. Nemoto)**
- 9:10**      **A-1**      *Altered regulation of tissue oxygenation in the post-clip kidney in two-kidney, one clip hypertension.*  
F. Palm, M. Mendonca, W.J. Welch, and C.S. Wilcox.  
Georgetown University, Washington, DC, USA.
- 9:20**      **A-2**      *Diabetes-induced increase in renal oxygen consumption is correlated to increased expression of mitochondrial uncoupling Protein-2 (UCP-2)*  
M. Friederich, P.-O. Carlsson, A. Fasching, P. Liss, F. Palm, and P. Hansell  
Uppsala University, Uppsala, Sweden
- 9:30**      **A-3**      *Non-invasive monitoring of in situ oxygenation in the infarct heart transplanted with skeletal myoblasts*  
M. Khan, V.K. Kutala, D.S. Vikram, S. Wisel, S.M. Chacko, M.L. Kuppusamy, P. Kwiatkowski, and P. Kuppusamy  
Ohio State University, Columbus, OH, USA

- 9:40 A-4 *Rotational diffusion involving myoglobin; a necessary condition for oxygen diffusion into myocytes?*  
D.J. Maguire and M.McCabe  
 Griffith University, Nathan, Australia
- 9:50 A-5 *Regulation of renal function and blood pressure (BP) by angiotensin II-induced superoxide (O<sub>2</sub><sup>-</sup>): Use of in vivo siRNA against NADPH oxidase (NOX)*  
 P. Nouri and W.J Welch  
 Georgetown University, Washington, DC, USA
- 10:00 A-6 *Oxygen pressures in the interstitial space and their relationship to those in the blood plasma resting skeletal muscle and tumors in vivo*  
D.F. Wilson, S. Makonnen, W.M.F. Lee, O. Finikova, S. Apreleva, and S.A. Vinogradov  
 University of Pennsylvania, Philadelphia, PA, USA
- 10:10 - 10:40AM Break & Poster Viewing**
- 10:40 - 11:20AM Session B: Other Metabolites (Glucose, Lactate, Nitric Oxide, etc.)**  
**(Co-Chairs: D. Sessler & E. Takahashi)**
- 10:40 B-1 *The effect of glucose uptake inhibitors Phloretin and Cytochalasin B on CD4+ T-lymphocyte survival*  
R.J. Vitale, S. Sengupta, and T. Mitchell  
 DuPont Manual High School and University of Louisville, Louisville, KY, USA
- 10:50 B-2 *Lactate accumulation in the presence of oxygen is angiogenic*  
T K Hunt, R Aslam, Z. Hussain, M. Rollins, H Hopf, and S. Beckert  
 University of California, San Francisco, USA
- 11:00 B-3 *Increased hepatic L-Arginine uptake results in reduced renal medullary nitric oxide bioavailability in Streptozotocin-induced diabetic rat*  
F. Palm, A. Fasching, P. Liss, and P. Hansell  
 Uppsala University, Uppsala, Sweden
- 11:10 B-4 *Iodinated contrast media inhibits oxygen consumption in proximal tubular cells from diabetic rats by inducing nitric oxide release*  
 F. Palm, P.-O. Carlsson, A. Fasching, P. Hansell and Per Liss  
 Uppsala University, Uppsala, Sweden
- 11:20 - 12:10PM Invited Lecture 2: *Microtools for Cell Biology***  
**G. M. Whitesides, Ph.D. (introduced by J.L. Wittliff)**  
 Harvard University, Cambridge, MA, USA
- 12:10 - 1:30PM Lunch & Poster Viewing (Sponsored By MIMS)**
- 1:30 - 5:00PM Symposium on Modeling and Analysis of Metabolism and Transport**  
 Sponsored by The Center for Modeling Integrated Metabolic Systems (MIMS), Supported by a grant (P50-GM66309) from the National Institute of General Medical Sciences, NIH, to Case Western Reserve University in cooperation with Cleveland State University, University Hospitals of Cleveland, and Cleveland Clinic Foundation
- 1:30PM Symposium Introduction: Dr. G.M. Saidel, Director, MIMS Center**

**1:35 – 3:00PM: Symposium Session – I**  
(Co-Chairs: G.M. Saidel and F. Hyder)

- 1:35 C-1 *Pulmonary oxygen uptake and muscle oxygen consumption*  
N. Lai  
MIMS Center, Case Western Reserve University, Cleveland, OH, USA
- 1:50 C-2 *Differences between pulmonary and muscle oxygen uptake and muscle oxygen consumption dynamics at exercise onset*  
N. Lai, G. Saidel, and M. Cabrera  
MIMS Center, Case Western Reserve University, Cleveland, OH, USA
- 2:00 C-3 *Skeletal muscle metabolic dynamics during reduced blood flow*  
R. Dash, Y. Li, G. Saidel, and M. Cabrera  
MIMS Center, Case Western Reserve University, Cleveland, OH, USA
- 2:10 C-4 *Mathematical model of oxygen transport in myocardial infarction*  
B. Wang, R. Scott, C. Pattillo, B. PrabhakarPandian, S. Sundaram, and M. Kiani  
Temple University & CFD Research Corp., Philadelphia, PA, USA
- 2:20 C-5 *Hypoxia reduces the concentration of glucose transporters (GLUT2) in rat jejunum more than in ileum*  
E. Fisher, B. Erokwu, and J. LaManna  
University of Akron and Case Western Reserve University, OH, USA
- 2:30 **Invited presentation: *Role of Hemoglobin in Respiratory Gas Exchanges***  
**J. B. Bassingthwaighte, Ph.D.**  
University of Washington, Seattle, WA, USA

**3:00 - 3:30PM Break (Sponsored by MIMS) & Poster Viewing**

**3:30 - 5:00PM Symposium Session - II**  
(Co-Chairs: J.C. LaManna and J.B. Bassingthwaighte)

- 3:30 D-1 *Modeling metabolic processes in brain tissue during hypoxia and ischemia*  
J.E. Gatica  
MIMS Center, Cleveland State University, Cleveland, OH, USA
- 3:45 D-2 *Modeling and analysis of mammalian brain metabolism under hypoxic and ischemic events: Alternative routes to cerebral energy metabolism*  
S. Koppaka, M.A. Puchowicz, J.C. LaManna, and J. Gatica  
MIMS Center, Cleveland State Univ. and Case Western Reserve Univ. Cleveland, OH
- 3:55 D-3 *Cerebral blood flow adaptation to chronic hypoxia*  
H. Zhou, G. M. Saidel, and J.C. LaManna,  
MIMS Center, Case Western Reserve University, Cleveland, OH, USA
- 4:05 D-4 *Cerebral tissue oxygen saturation calculated using spontaneous low frequency oscillations in oxy and deoxy-haemoglobin measured by near infrared spectroscopy in adult ventilated patients*  
T. Leung, M. Tisdall, I. Tachtsidis, M. Smith, D. Delpy, and C.Elwell  
University College London and National Hospital for Neurology and Neurosurgery,  
London, UK
- 4:15 D-5 *Mitochondria dysfunction in aging rat brain following transit global ischemia*  
K. Xu, M.A. Puchowicz, and J. C. LaManna,  
Case Western Reserve University, Cleveland, OH, USA



- 10:10 E-4 *Cerebral oxygenation by near infrared spectroscopy during deep hypothermic cardiopulmonary bypass in neonates and infants*  
E.M. Nemoto, F.A. Pigula, and R. Siewers.  
 University of Pittsburgh, Pittsburgh, PA, USA
- 10:20 E-5 *Do red blood cell  $\beta$ -Amyloid interactions alter oxygen delivery in Alzheimer's disease?*  
J.G. Mohanty, D.M. Eckley, J. Williamson, L.J. Launer, J.M. Rifkind  
 National Institute on Aging, Baltimore, MD USA
- 10:30 - 11:00AM Break & Poster Viewing**
- 11:00 - 12:00PM Invited Lecture 5: *Tissue Engineering: Back to the Future***  
**R. M. Nerem, Ph.D.** (Introduced by **D.F. Bruley**)  
 Georgia Institute of Technology, Atlanta, GA, USA
- 12:00 - 1:00PM Lunch & Poster Viewing**
- 1:00PM Greeting by N. C. Martin, Ph.D.**  
 Senior Vice President for Research, University of Louisville
- 1:10 – 2:00PM Invited Lecture 6: *Engineering gel niches to promote tissue regeneration***  
**K. S. Anseth, Ph.D.** (Introduced by **R.E. Berson**)  
 University of Colorado, Boulder, CO, USA
- 2:00 - 2:20PM Session F: Tissue Engineering**  
**(Co-Chairs: K.A. Kang & M. Wolf)**
- 2:00 F-1 *Computationally determined shear on cells grown in orbiting culture dishes.*  
 R.E. Berson  
 Department of Chemical Engineering, University of Louisville, Louisville, KY, USA
- 2:10 F-2 *Formation of capillary structure on micro patterned biomaterials*  
D. Gao, G. Kumar, C. Co and C. Ho  
 University of Cincinnati, Cincinnati, OH, USA
- 2:20 - 3:00PM Invited Lecture 7: *Spinal Ischemia-Induced Spastic Paraplegia-Modulation by Spinal Stem Cell Implant***  
**M. Marsala, M.D.** (Introduced by **K.A. Kang**)  
 University of California San Diego, La Jolla, CA USA
- 3:00 - 3:30PM Break & Poster Viewing**
- 3:30 – 4:30PM Session G: Tumor, Cancer, Oncology – I**  
**(Co-Chairs: O. Thews & P. Okunieff)**
- 3:30 G-1 *Hypoxia stress signalling and strikingly high respiratory quotients in malignant tumors*  
 P. Vaupel  
 University of Mainz, Mainz, Germany
- 3:40 G-2 *Endogenous hypoxia markers: Case not proven!*  
 A. Mayer, M. Höckel, and P. Vaupel  
 University of Mainz, Mainz, Germany

- 3:50 G-3 ***Mutagenic Proteins Detected in DNA Stalled by UV Radiation***  
S. Kakar and W.G. McGregor  
 Ballard High School and University of Louisville, Louisville, KY, USA
- 4:00 G-4 ***Ala in Kir; a silent mutation shouts out!***  
D.J. Maguire, A. Cotterill, D. Cowley, and J. Shah  
 Griffith Univ. and Mater Misericordiae Health Services, South Brisbane, Australia
- 4:10 G-5 ***Cytochrome C oxidase activity and oxygen tolerance***  
J.L. Campian, X. Gao, M. Qian, and J.W. Eaton  
 James Graham Brown Cancer Center, University of Louisville, Louisville, KY USA
- 4:20 G-6 ***Biomathematics in Cancer Detection***  
P. Huang and B. Chance  
 University of Pennsylvania, Philadelphia, PA, USA

**4:30 – 5:50PM**      **Session H: Tumor, Cancer, Oncology – II**  
**(Co-Chairs: P. Vaupel & S.S. Kakar)**

- 4:40 H-1 ***Angiogenesis of the tumor model*** (20 minutes)  
B. Chance, S. Nioka, J. Zhang, E.F. Conant, E. Hwang, S. Briest, S.G. Orel, M.D.  
 Schnall, B.J. Czerniecki,  
 University of Pennsylvania and Hospital of the University of Pennsylvania, Philadelphia,  
 PA, USA and University of Leipzig, Leipzig, Germany
- 5:00 H-2 ***NADH/Fp fluorescence imaging predicts aggressiveness of human melanoma mouse xenografts***  
L.Z.J. Li, L. Moon, T. Zhong, E. Seftor, H.N. Xu, R. Zhou, M. Hendrix, D.B. Leeper,  
 B. Chance, and J.D. Glickson  
 University of Pennsylvania, Philadelphia, PA, USA
- 5:10 H-3 ***Activity of drug efflux transporters in tumor cells under hypoxic conditions***  
O. Thews, B. Gassner, D.K. Kelleher, and M. Gekle  
 University of Mainz, Mainz, Germany
- 5:20 H-4 ***Antioxidants used to reduce consequences of radiation exposure***  
P. Okunieff, P. Keng, W. Sun, W. Wang, J. Kim, S. Yang, H. Zhang, C. Liu, J. Williams,  
 and L. Zhang  
 University of Rochester Medical center, Rochester, NY USA
- 5:30 H-5 ***Anti-cancer effect of resveratrol is associated with induction of apoptosis via a mitochondrial pathway***  
 W. Sun, W. Wang, J. Kim, P. Keng, S. Yang, H. Zhang, C. Liu, P. Okunieff and L. Zhan
- 5:40 H-6 ***Ascorbic acid: An essential vitamin for tumor growth?***  
S. Telang, A. L. Clem, J. W. Eaton and J. Chesney  
 James Graham Brown Cancer Cntr., University of Louisville, Louisville, KY, USA

**6:00PM**      **Announcement/Poster Removal**

**6:15PM**      **Bus Departs for Churchill Downs/Kentucky Derby Museum**

- 6:30 – 7:00      **Cocktails Reception**  
 7:00              **ISOTT 2006 Group Photo**  
 7:15              **Greeting by Dr. J.R. Ramsey** (President, University of Louisville)  
 7:15 – 8:30      **Dinner**  
 8:30              **A Short Film, “The Greatest Race”**  
 8:45 – 10:00    **After Dinner Social and Museum Tour**

## Tuesday, August 15: Conference Day 3

- 7:00AM**                      **Registration & Poster Setup**
- 7:30 – 8:00AM**                **Breakfast & Poster Viewing**
- 8:00 – 8:40AM**                **Memorial Lecture: *Dietrich W Lübbers - Celebration of a Life Dedicated to Research into Oxygen Transport to Tissue***  
D. K. Harrison, Ph.D.  
University Hospital of North Durham, Durham, UK
- 8:40 – 10:30AM**                **Session I : BioInstrumentation**  
**(Co-Chairs: B. Chance & D.K. Harrison)**
- 8:40**    **I-1**            ***Near-infrared spectroscopy and imaging***  
M. Tamura  
Hokkaido University, Sapporo, Japan
- 8:50**    **I-2**            ***Error analysis of finite-spectral-linewidth illumination in optical oximetry systems***  
Joseph Hollmann and C.A. DiMarzio  
RBC Product Development, Lenexa, KS and Northeastern University, Boston, MA, USA
- 9:00**    **I-3**            ***Changes in the attenuation of near infrared spectra during hypoxaemia in the healthy adult brain cannot be accounted for solely by changes in the concentrations of oxy- and deoxy-haemoglobin.***  
M. Tisdall, I. Tachtsidis, T.S. Leung, C.E. Elwell, and M. Smith  
The National Hospital for Neurology and Neurosurgery and Univ. College London, UK
- 9:10**    **I-4**            ***Assessment of oxygenation and perfusion in the tongue and oral mucosa by visible spectrophotometry and laser doppler flowmetry in healthy subjects***  
D.B. Singh, G. Stansby and D.K. Harrison  
Medical Physics Department, University Hospital of North Durham, Durham, UK
- 9:20**    **I-5**            ***A Wireless Near-Infrared Imaging Device***  
Th. Muehleemann, D. Haense, and M. Wolf  
University and University Hospital, Zurich, Switzerland
- 9:30**    **I-6**            ***Biosensor for diagnosing factor V leiden, a single amino acid mutated abnormality of factor V***  
Y. Ren, S. Rezaia, and K.A. Kang  
University of Louisville, Louisville, KY, USA
- 9:40**    **I-7**            ***Scanning laser ophthalmoscope-particle tracking method to assess blood velocity during hypoxia and hyperoxia***  
K. Lorentz, A. Zayas-Santiago, S. Tummula, and J. J. Kang Derwent  
Illinois Institute of Technology, Chicago, IL, USA
- 9:50 – 10:30AM**                **Invited Lecture 8: *The Use of High-Density Array Event-Related Potentials and Near-infrared Technologies to Provide Spatio-Temporal Insights into Language Processing***  
**D. L. Molfese, Ph.D.**                      **(Introduced by K.A. Kang)**  
University of Louisville School of Medicine, Louisville, KY, USA





