

ISOTT 2010 – Conference Program

Monday, July 19th, 2010

- 8.30 – 8.45 **Martin Wolf**, President of ISOTT 2010
Greetings and welcome
- 8.45 – 9.00 **Paolo Demaria**
Welcome to Centro Stefano Franscini

Brain Oxygenation

Chairs: Clare Elwell and Mark Muthalib

- 9.00 – 9.40 **Joseph La Manna**, Keynote lecture
Angioplasticity and cerebrovascular remodeling
- 9.40 – 9.55 **Yasuyuki Kakihana**
Cerebral monitoring by Near-infrared time-resolved
spectroscopy and postoperative cognitive dysfunction
- 9.55 – 10.10 **Mikio Hiura**
Comparison of the kinetics of pulmonary oxygen uptake and
middle cerebral artery blood flow velocity during
exercise
- 10.10 – 10.25 **Ursula Wolf**
Colored light and brain and muscle oxygenation
- 10.30 – 11.00 *Coffee break*

Chairs: Martin Wolf and Ivo Trajkovic

- 11.00 – 11.40 **Hans Ulrich Bucher**, Keynote Lecture
Oxygen treatment in preterm babies: Between Scylla and
Charybdis
- 11.40 – 11.55 **Alexander Caicedo**
Assessment of the Myogenic and metabolic mechanism
influence in cerebral autoregulation using near-infrared
spectroscopy

- 11.55 – 12.10 **Gerhard Pichler**
 Regional cerebral oxygen saturation during neonatal
 transition – comparison of vaginal delivery vs. cesarian
 section
- 12.10 – 12.25 **Mark Muthalib**
 Frontal cortex activation during electrical muscle stimulation
 as revealed by functional near-infrared spectroscopy
 (fNIRS)
- 12.30 – 14.00 *Lunch*
- 14.00 – 15.30 **Poster session**
- 15.30 – 16.00 *Coffee break*

Tumor Oxygenation

Chairs: Kurt Zänker and Oliver Thews

- 16.00 – 16.40 **Markus Rudin**, Keynote Lecture
 Longitudinal multi-modal in vivo imaging of tumor hypoxia
 and its downstream molecular events
- 16.40 – 16.55 **Job van den Bosch**
 Isolated hypoxic liver perfusion with melfalan in humans
 and its anesthesiologic aspects
- 16.55 – 17.10 **Anna Maria Novello**
 Triplet state lifetime based tissular oxygen measurements to
 drive photo dynamic therapy: results on the *in-vivo*
 CAM model
- 17.10 – 17.35 **Peter Vaupel**
 Oxygenation status of gastrointestinal cancers
- 19.00 *Dinner at Monte Verità*

Tuesday, July 20th, 2010

Tumor Oxygenation (continued)

Chairs Markus Rudin and Peter Vaupel

- 8.30 – 9.10 **Kurt Zänker**, Keynote Lecture
Tumor growth and metastasis formation: A balancing act
between oxygenation, hypoxia and ROS formation
- 9.10 – 9.25 **Oliver Thews**
Impact of environmental parameters on the activity of the
p-glycoprotein
- 9.25 – 9.40 **Lin Li**
Metabolic profiling and autophagy in metastatic melanoma
- 9.40 – 9.55 **Jerry Glickson**
Metabolic network models of tumor energy metabolism:
validation by prediction of oxygen consumption rates
- 9.55 – 10.10 **Kwang-Sup Soh**
Primo-vascular system as cancer metastasis route
- 10.10 – 10.25 **Paul Okunieff**
Effect of ionizing radiation on mitochondrial biogenesis
- 10.30 – 11.00 *Coffee break*

Chair: Wilhelm Erdmann

- 11.00 – 11.25 **Duane Bruley**
History of ISOTT and Natures Unique Blood
Anticoagulant/Antithrombotic Mechanism “Zymogen
Protein C/Activated Protein C”

Anemia and Hypoxia

Chairs Joseph LaManna and Takashi Eriguchi

- 11.25 – 11.40 **Eiji Takahashi**
Imaging of O₂ in monolayer cultured cells revealed steep O₂
gradients

- 11.40 – 11.55 **Joseph Rifkind**
The regulation of oxygen delivery by the reaction of nitrite
with RBCs under hypoxic conditions
- 11.55 – 12.10 **Zareen Bashir**
Acute normovolaemic haemodilution impairs tissue
oxygenation
- 12.10 – 12.25 **Kim Vandegriff**
Carboxylated-hemoglobin: attenuated nitric oxide binding
with low-dose carbon monoxide gasotransmitter
properties
- 12.30 – 13.45 *Lunch*

Chairs Eiji Takahashi and Catalina Messmer

- 13.45 – 14.25 **David Harrison, Keynote Lecture**
Clinical Applications of Tissue Oxygen Saturation
Measurements
- 14.25 – 14.40 **Chris Wolff**
Periodic breathing at high altitude and the circulatory
response to hypoxia
- 15.00 Excursion to Cardada/Cimetta, the mountain above Locarno
(<http://www.cardada.ch/>).
Ascent by cable car. Possibility of short hikes in the
surroundings of the hill top. Dinner at Cardada and return
after dinner with cable car to Locarno and by bus to Monte
Verità or your hotel.
Take appropriate shoes and clothing with you.

Reproducibility of cerebral tissue oxygen saturation
measurements by near infrared spectroscopy in
newborn infants

Brain Oxygenation

Chairs Ilias Tachtsidis and Sebastiano Cicco

- 11.50 – 12.30 **Kaoru Sakatani**, Keynote lecture
Optical diagnosis of mental stress and cognitive impairment
- 12.30 – 12.45 **Martin Biallas**
How to conduct studies in neonates combining near-infrared
imaging and electroencephalography
- 12.45 – 13.00 **Arnab Ghosh**
Use of a hybrid optical spectrometer for the measurement of
chromophore concentration and tissue scattering
changes during functional activation
- 13.00 *Lunch*

Free afternoon and evening (no dinner organized)

ISOTT EC meeting

Thursday, July 22nd, 2010

Methodology for O₂ measurement

Chairs Thomas Gisler and Jack Honeysett

- 8.30 – 9.10 **Sabine Van Huffel**, Keynote Lecture
Multivariate system identification approaches to tissue oxygenation using near-infrared spectroscopy
- 9.10 – 9.25 **Dirk Baumann**
Determination of absolute chromophore concentrations in human brain exploiting minimal invasive probes
- 9.25 – 9.40 **Jack Honeysett**
Feasibility study of non-invasive oxygenation measurement in the pulmonary artery using acousto-optics
- 9.40 – 9.55 **Kyung Kang**
Sensitivity enhancement of NIR fluorescence contrast agent utilizing gold nanoparticle
- 10.00 – 10.30 *Coffee break*
- 10.30 – 10.45 **Tracy Moroz**
Computational modelling of the NIRS brain tissue oxygenation signal in healthy adults during a CO₂ challenge
- 10.45 – 11.00 **Felix Scholkmann**
A new algorithm to detect and reduce movement artifacts in near-infrared imaging time series
- 11.00-12.30 **Poster session**
- 12.30 – 14.00 *Lunch*

Chairs: Sabine van Huffel and Felix Scholkmann

- 14.00 – 14.40 **Ilias Tachtsidis**, Keynote Lecture
Measuring brain energy metabolism with NIRS: the research of the non-invasive in-vivo measurement of cerebral

cytochrome-c-oxidase redox changes in the adult human brain

14.40 – 14.55

Terence Leung

The case for in vivo oxygenation measurement with acousto-optics

14.55 – 15.10

Markus Ninck

diffusing-
blood flow rates

Measuring microvascular blood flow with near-infrared wave spectroscopy: Towards quantitative

15.10 – 15.25

Daniel Coman

Quantitative CEST with BIRDS

15.25 – 15.40

Martin Wolf

Closing of ISOTT 2010

15.40 – 16.10

Coffee break

16.10 – 17.10

ISOTT general meeting

From 18.30

Conference dinner and Awards celebration

Posters

1. Whole body oxygen delivery and consumption during cardiopulmonary bypass surgery

J. Ashmore, J. Pickett, J. Alder, R. Marks and M. Thorniley

2. Cerebral oxygen saturation measurements in red cell transfusion

Z. Bashir, P. Sandbach, S. Haynes, R. Calderwood, C. McCollum and M. Thorniley

3. 3D Monte-Carlo simulation of the influence of blood on light propagation in the human head

C. Böcklin, D. Baumann, M. Muser, E. Keller and J. Fröhlich

4. Oxygen supply and utilization investigated dynamically and non-invasively in mouse skeletal muscle by multi-parametric functional (mpf-)NMR imaging and spectroscopy

P.G. Carlier, C. Baligand, J.C. Ménard, E. Giacomini and C. Wary

5. Does VEGF of Multiple Myeloma modify systemic microcirculation?

S. Cicco, P. Ditonno, A. Reale, S. Savino, A. Castrovilli, I. Catachio, R. Ria and A. Vacca

6. Distribution of temperature changes and dynamics in rat brain after 3,4-methylenedioxymethamphetamine (MDMA) injection

D. Coman, L. Jiang^a, F. Hyder and K. Behar

7. Influence of stress preconditioning on hippocampal neuronal cell death and neurogenesis in rat cerebral ischemia

T. Eriguchi, N. Kutsuna, Y. Kondo, J. Shi, Y. Murata, H. Oshima, K. Sakatani and Y. Katayama

8. Modulation of splanchnic-catecholamine receptor activity to ameliorate the effects of ventilation with positive end-expiratory pressure on splanchnic oxygenation

A. Fournell, T.W.L. Scheeren, O. Picker and L.A. Schwarte

9. A great planetary oxygen cycle ?

M. Gosálvez

10. Induction of HIF normalizes oxygen utilization and oxygenation in the diabetic kidney

F. Palm, A. Fasching, M. Nangaku and P. Hansell

11. Motor imagery measured by wireless functional near-infrared spectroscopy (fNIRS)

L. Holper, T. Muehlemann and M. Wolf

12. Boron tracedrug: Design, synthesis and pharmacological activity of phenolic BODIPY-containing antioxidants as traceable next-generation drug model

H.Hori, E. Nakata, M. Koizumi, Y. Yamashita and Y. Uto

13. Accuracy of lower GI NIRS in the presence of neonatal meconium

R. J. Kopotic

14. 3-D high-resolution mapping of the heterogeneity in mitochondrial redox state of human breast tumor xenografts

H. N. Xu, S. Nioka, B. Chance and L. Z. Li

15. High-resolution simultaneous mapping of mitochondrial redox state and glucose uptake in human breast tumor xenografts

H. N. Xu, G. Zheng, S. Nioka, B. Chance and L. Z. Li

16. Effect of pneumoperitoneum on functional residual capacity

A. Matsunaga, K. Ohse, Y. Kakihana, K. Ikoma and Y. Kanmura

17. Effects of acute anemia and hyperoxia on oxygen distribution

C. Messmer, P. Cabrales and M. Intaglietta

18. Spin-orbit coupling effects in dioxygen binding by hemoglobin

B. Minaev, V. Minaeva, G. Baryshnikov, A. Shevchenko and H. Ågren

19. Sensitivity of Near-Infrared spectroscopy to oxygenation changes in different vascular compartments

Y. Murata, T. Eriguchi, T. Awano, N. Yokose, T. Hoshino, S. Nakamura, N. Fujiwara, K. Sakatani, Y. Katayama, T. Shikayama and M. Miwa

20. Radiation induced plasma DNA is associated with genomic background

L. Zhang, M. Zhang, B. Zhang, Y. Cao, S. Yang, L. Yin, Y. Tian, K. Zhang, L. Zhang, A. Zhang, Y. Ma, S. Swarts, P. Okunieff and L. Zhang

21. Multichannel optical topography to measure regional cerebral oxygenation in infants and children supported on extra-corporeal membrane oxygenation

M. D. Papademetriou, I. Tachtsidis, A. Hoskote and C. E. Elwell

22. Cerebral and muscle fractional tissue oxygen extraction

U. Patel, A. Bryan, J. Moore, D. Atkinson, I. Gall, C. Jepegnanam, P.N. Foster, M. Parker and M. Thorniley

23. Protein Kinase C modulates post-ischemic cerebral blood flow

M. A. Perez-Pinzon, H. W. Lin, R. A. DeFazio, D. DellaMorte, A. P. Raval, I.Saul and K. R. Dave

24. Curvilinear relationship between submaximal generated force and NIRS-measured brain activation

S. Perrey and G. Derosiere

25. Nocturnal cerebral hemodynamics in acute stroke patients during sleep disordered breathing: a near infra-red spectroscopy study

F. Pizza, M. Biallas, U. Kallweit, M. Wolf and C. L. Bassetti

26. Oropharyngeal suctioning in newborn infants impairs cerebral oxygenation during transition

M. Pocivalnik, G. Pichler, W. Raith, H. Zotter, E. Ziehenberger, W. Müller and B. Urlesberger

27. Neuroprotective properties of ketone bodies

K. Xu, J. C. LaManna and M. A. Puchowicz

28. Determining the pulse rate variability from near-infrared spectroscopy measurements on the human forehead using adaptive heartbeat estimation algorithms

F. Scholkmann, I. Trajkovic and M. Wolf

29. Effects of autonomic nervous system on functional neuroimaging: Analyses based on the vector autoregressive model

A. Seiyama, Y. Sasaki, A. Takatsuki and J. Sekir

30. Estimation of oxygen radical production in the body by molecular hydrogen consumption after ingestion of hydrogen-rich water

A. Shimouchi, K. Nose, H. Y. Lee, M. Shirai

31. In vitro evaluation of potential cytotoxic effects of indocyanine green and combined irradiation with near infrared light on cultured human endothelial cells

C. Sikorski, K. Frei, S. Dolski, J. Fröhlich, M. Muser, D. Baumann, C. Böcklin and E. Keller

32. Neuromonitoring in intensive care: A new intraparenchymatous probe for combined monitoring of intracranial pressure (ICP) and cerebral blood flow (CBF)

E. Keller, J. Froehlich, C. Sikorski and M. Muser

33. Assessment of potential short-term effects of intermittent UMTS electromagnetic fields on blood circulation in an exploratory study, using near-infrared imaging

S. Spichtig, F. Scholkmann, L. Chin and M. Wolf

34. Modelling and filtering of physiological oscillations in Near-Infrared Imaging by Time-Varying Fourier Series

I. Trajkovic, C. Rellerand M. Wolf

35. Prenylated acylphloroglucinol derivatives: Isoprenomics-based design, syntheses and antioxidative activities

Y. Uto, R. Tanaka, K. Ohnaka, Y. Ohta, K. Yazaki, N. Umemoto, E. Nakata and H. Hori

36. The relationship between mild mountain sickness and the arterial oxygen saturation

T. Parks, G. Brierley, C. Wilson and C. Wolff