

# ISOTT 2017

## Conference Program

(Status: July 21, 2017)

### Saturday 19<sup>th</sup> August

- |               |   |
|---------------|---|
| from 12.00    | Registration in the Löwengebäude (Lions Building) of the Martin-Luther-University Halle   |
| 16.30 – 17.00 | Opening ceremony – Löwengebäude Aula<br><b>Prof. O. Thews</b> , President of ISOTT 2017<br><b>Prof. M. Gekle</b> , Dean of the Medical Faculty of MLU<br><b>Dr. P. Sachse</b> , Representative of the City of Halle |
| 17.00 – 17.45 | <b>J. van Dongen</b> , RWTH Aachen University, Germany<br><b>Keynote Talk:</b><br>I01 Making sense of oxygen sensing in plants  |
| 18.00 –       | Get together – "Burse zur Tulpe" MLU  |

# Sunday 20<sup>th</sup> August

08.20 – 08.30 Opening remarks

## Session O01: Tumor (1)

Chair: P. Vaupel, A. Riemann

08.30 – 09.15 **D. Vordermark**, University of Halle, Germany

**Keynote Talk:**

I02 Tumor oxygenation in radiation biology and clinical radiotherapy

09.15 – 09.30 **H. Halpern**, University of Chicago, USA

O01-1 Finally

09.30 – 09.45 **L. Xu**, Technical University of Munich, Germany

O01-2 Impact of temporal heterogeneity of acute hypoxia on the radiation response of experimental tumors

09.45 – 10.00 **E. Lindblom**, Stockholm University, Sweden

O01-3 Accounting for two forms of hypoxia for predicting tumour control probability in radiotherapy – an *in silico* study

10.00 – 10.30 Coffee break

## Session O02: Tumor (2)

Chair: H. Halpern, I. Toma-Dasu

10.30 – 10.45 **L.Z. Li**, University of Pennsylvania, Philadelphia, USA

O02-1 Differential PGC1 $\alpha$  expression among redox subpopulations of mouse xenografts of aggressive human breast cancer

10.45 – 11.00 **P. Vaupel**, Technical University Munich, Germany

O02-2 Hypoxia-/HIF-driven factors of the tumor microenvironment impeding antitumor immune responses and promoting malignant progression

11.00 – 11.15 **Y. Tsuruno**, Saga University, Japan

O02-3 An *in vitro* model for determining tumor cell migration under metabolic gradients

11.15 – 11.30 **A. Riemann**, University of Halle, Germany

O02-4 Expression of microRNAs in fibroblasts and macrophages is regulated by hypoxia-induced extracellular acidosis

11.30 – 11.45 **A. Kalyanov**, University of Zurich, Switzerland

O02-5 Multispectral near-infrared optical tomography for cancer hypoxia study in mice

11.45 – 12.00 **A. Dasu**, Linköping University, Sweden

O02-6 Mathematical description of tumour reoxygenation from repeated functional imaging

12.00 – 13.00 Lunch

## Session O03: NIRS - Methodical aspects (1)

Chair: I. Tachtsidis, F. Scholkmann

- 13.00 – 13.45 **M. Wolf**, University of Zurich, Switzerland  
**Keynote Talk:**  
I05 Measuring tissue oxygenation by near-infrared light: Achievements, challenges and possible solutions
- 13.45 – 14.00 **J.M. Kim**, Korea Advanced Institute of Science and Technology, Daejeon, Korea  
O03-1 Real-time motion sensor-based algorithm for the removal of motion artifacts for functional near-infrared spectroscopy
- 14.00 – 14.15 **J. Russell-Buckland**, University College London, UK  
O03-2 ABroAD: A machine learning based approach to detect broadband NIRS artefacts
- 14.15 – 14.30 **H. Zohdi**, University of Bern, Switzerland  
O03-3 Long-term changes in optical properties ( $\mu_a$ ,  $\mu_s'$ ,  $\mu_{\text{eff}}$  and DPF) of human head tissue during functional neuroimaging experiments

## Poster flash presentations P01

- 14.30 – 14.32 **W. Sun**, University of Lübeck, Germany  
P01-1 Prolyl-4-hydroxylase 2 inhibits basal autophagy in glioblastoma cells through transforming growth factor- $\beta$ 1
- 14.32 – 14.34 **M.C. Schulz**, University of Halle, Germany  
P01-2 Influence of extracellular acidosis on matrix proteins of tumor cells and fibroblasts
- 14.34 – 14.36 **M. Kappler**, University of Halle, Germany  
P01-3 Normoxic stabilization of hypoxia inducible factor 1 alpha – a metabolic challenge for tumor cells
- 14.36 – 14.38 **Y. Komuro**, Nihon University, Koriyama, Japan  
P01-4 Reliability of wearable two channel CW-NIRS in measurement of brain function
- 14.38 – 14.40 **L. Giannoni**, University College London, UK  
P01-5 Hyperspectral imaging of the hemodynamic and metabolic states of the exposed cortex: a Monte Carlo investigation
- 14.40 – 14.42 **G. Bale**, University College London, UK  
P01-6 Development of a hybrid broadband NIRS/diffuse correlation spectroscopy system for simultaneous monitoring of cytochrome c oxidase and cerebral perfusion
- 14.42 – 14.44 **J. Jiang**, University of Zurich, Switzerland  
P01-7 Discrimination of complex activation patterns in near infrared optical tomography with artificial neural networks
- 14.44 – 14.46 **J. Russell-Buckland**, University College London, UK  
P02-8 WeBCMD: A modern, cross-platform interface to the BCMD modelling framework

- 14.46 – 14.48 **T. Endo**, Tokyo Medical University, Japan  
P01-9 Evaluation of functional hyperemia using NIR<sub>TRS</sub> without the influence of fat layer thickness
- 14.48 – 14.50 **Y. Sato**, Nihon University, Japan  
P01-9 Limitations of NIRS measurements in chronic stroke patients with abnormal cerebral cortices
- 15.00 – 15.30 Coffee break
- 14.50 – 16.00 Poster viewing

## Session O04: NIRS - Methodical aspects (2)

Chair: **C. Elwell**, **G. Bale**

- 16.00 – 16.15 **M.S. Ji**, Korea Advanced Institute of Science and Technology, Daejeon, Korea  
O04-1 Classification of functional near-infrared spectroscopy signals using intra-subject correlation utilizing high density measurements system
- 16.15 – 16.30 **F. Scholkmann**, University of Zurich and University of Bern, Switzerland  
O04-2 Absolute values of optical properties ( $\mu_a$ ,  $\mu_s'$ ,  $\mu_{\text{eff}}$  and DPF) of human head tissue: Dependence on head region and individual anatomical differences
- 16.30 – 16.45 **N. Nasser**, University of Bern, Switzerland  
O04-3 The impact of systematic physiology on fNIRS signals: An analysis based on oblique subspace projections decomposition
- 16.45 – 17.00 **L. Giannoni**, University College London, UK  
O04-4 Hyperspectral imaging of the hemodynamic and metabolic states of the exposed cortex
- 17.00 – 17.15 **H. Isler**, University of Zurich, Switzerland  
O04-5 Liquid blood phantoms to calibrate NIRS oximeters: Yeast versus nitrogen for deoxygenation
- 17.15 – 17.30 **Z. Kovacsova**, University College London, UK  
O04-6 Investigation of confounding factors in measuring tissue saturation with NIRS spatially resolved spectroscopy
- 17.30 – 17.45 **M. Wolf**, University of Zurich, Switzerland  
O04-7 *In vitro* comparisons of near-infrared spectroscopy oximeters: The impact of long-term changes in scattering properties of lipid phantoms on device comparisons
- 18.00 – Evening reception in the "Hallesches Brauhaus"

# Monday 21<sup>st</sup> August

## Session O05: Vascular Biology

Chair: B. Epel, D. Papkovsky

- 08.30 – 09.15 **G.M. Tozer**, University of Sheffield, UK  
**Keynote Talk:**  
I04 The role of VEGF isoforms in tumour vascularisation and response to therapy
- 09.15 – 09.30 **H.M. Swartz**, Dartmouth College, Hanover, USA  
O05-1 Direct and repeated quantitative measurements of oxygen in critical tissues at risk to enhance diagnosis and therapy of diabetic peripheral vascular disease
- 09.30 – 09.45 **T. Gladysz**, Physikalisch-Technische Bundesanstalt, Berlin, Germany  
O05-2 In vivo hemodynamics and oxygenation of the rat kidney studied by near-infrared spectroscopy and invasive probes
- 09.45 – 10.00 **G. Cicco**, University of Bari, Italy  
O05-3 Computerized video-capillaroscopy microcirculatory alterations related to diabetes mellitus and its microvascular complications
- 10.00 – 10.30 Coffee break

## Session O06: NIRS - Applications (1), Oxygenation measurements

Chair: U. Wolf, K. Oyama

- 10.30 – 10.45 **A. Tsubaki**, Niigata University of Health and Welfare, Japan  
O06-1 Changes in cerebral oxyhaemoglobin during and after a single bout of 20-minute moderate-intensity cycling
- 10.45 – 11.00 **M. Hiura**, Hosei University, Japan  
O06-2 Dynamic exercise elicits dissociated changes between tissue oxygenation and cerebral blood flow in the prefrontal cortex: a study using NIRS and PET
- 11.00 – 11.15 **B. Jones**, University of Essex, Colchester, UK  
O06-3 Near infrared spectroscopy (NIRS) observation of vastus lateralis (muscle) and pre frontal cortex (brain) tissue saturation index (TSI %) in elite synchronized swimmers
- 11.15 – 11.30 **C. Elwell**, University College London, UK  
O06-4 A fibreless multiwavelength NIRS system for imaging localised changes in cerebral oxidised cytochrome c oxidase
- 11.30 – 11.45 **R. Meertens**, University of Exeter, UK  
O06-5 The use of near-infrared systems for investigations of microvascular haemodynamics in human *in vivo* bone tissue: A systematic review

- 11.45 – 12.00 **S.P. Nichols**, Profusa Inc., San Francisco, USA  
O06-6 Tissue-integrating sensors measure oxygen over one year in a pig model: application to peripheral artery disease
- 12.00 – 12.15 Group photo
- 12.15 – 13.15 Lunch

## Session O07: Brain (1)

Chair: P.D. Ryu, A. Flood

- 13.15 – 14.00 **J. LaManna**, Case Western Reserve University, Cleveland, USA  
**Keynote Talk:**  
I05 Cerebral angioplasticity: the anatomical contribution to ensuring appropriate oxygen transport to brain
- 14.00 – 14.15 **M. Faisal Siddiqui**, University of London, UK  
O07-1 Changes in oxidised cytochrome-c-oxidase during functional activation in infants
- 14.15 – 14.30 **M.A. Puchowicz**, University of Tennessee Health Science Center, Memphis, USA  
O07-2 Metabolic changes in the aged ketotic rat brain
- 14.30 – 14.45 **G. Taga**, The University of Tokyo, Japan  
O07-3 A dynamical systems model for neuro-glio-vascular system towards understanding human brain development

## Poster flash presentations P02

- 14.45 – 14.47 **M. Shibata**, Shibaura Institute of Technology, Japan  
P02-1 Whether vascular endothelial cell or smooth muscle affects the decrease in oxygen consumption of arteriolar wall during vasodilation?
- 14.47 – 14.49 **H. Nakamura**, Shibaura Institute of Technology, Japan  
P02-2 Intravital observation of microvascular remodeling during chronic exposure to hypoxia in mice
- 14.49 – 14.51 **A. Tsubaki**, Niigata University of Health and Welfare, Japan  
P02-3 Effects of aerobic interval exercise on prefrontal oxygenation: a near-infrared spectroscopy study
- 14.51 – 14.53 **A. Tsubaki**, Niigata University of Health and Welfare, Japan  
P02-4 Prefrontal cortex oxygenation changes during cycling in the supine and upright positions
- 14.53 – 14.55 **N. Hashimoto**, Kanazawa University Hospital, Japan  
P02-5 Optimum intensity for moderate aerobic exercise to improve cerebral blood flow and performance of cognitive function tasks
- 14.55 – 14.57 **S. Lancia**, University of L'Aquila, Italy  
P02-6 Trail making test induces prefrontal cortex activation revealed by a cw wearable-wireless fNIRS/DOT imager

- 14.57 – 14.59 **S.J. Cringle**, University of Western Australia, Perth, Australia  
P02-7 Regulation of oxygen tension in the mammalian retina during systemic hyperoxia is species dependent
- 14.59 – 15.01 **K. Goto**, Nihon University School of Medicine, Japan  
P02-8 Morphological changes of doublecortin-immunoreactive cells from acute phase to chronic phase after transient global brain ischemia in rats
- 15.01 – 15.03 **N. Kutsuna**, Nihon University School of Medicine, Japan  
P02-9 Fluctuation on nutrition-associated markers after decompressive hemicraniectomy in middle cerebral artery occlusion patients
- 15.03 – 15.05 **D.E. Bragin**, University of New Mexico, Albuquerque, USA  
P02-10 Cerebral hemodynamics after transcranial direct current stimulation (tDCS) in patients with consequences of traumatic brain injury
- 15.05 – 15.07 **L. Ma**, Nantong University, China  
P02-11 Effects of exercise on restrained stress-induced changes of the brain monoamine neurotransmitters, HDACs mRNA and behaviors in mice
- 15.07 – 15.30 Coffee break
- 15.07 – 16.00 Poster viewing

## **Session O08: Brain (2)**

**Chair: G. Cicco, K.S. Soh**

- 16.00 – 16.15 **T. Sugashi**, University of Electro-Communications, Tokyo, Japan  
O08-1 Capillary dilation and tissue shrinkage during adaptation to chronic hypoxia in mouse cerebral cortex
- 16.15 – 16.30 **E. Nemoto**, University of New Mexico, Albuquerque, USA  
O08-2 Quantitative versus qualitative OEF identification of hemodynamic compromise in stroke patients with large artery occlusion
- 16.30 – 16.45 **D.E. Bragin**, University of New Mexico, Albuquerque, USA  
O08-3 Resuscitation fluid with drag reducing polymer enhances cerebral microcirculation and tissue oxygenation after traumatic brain injury complicated by hemorrhagic shock
- 16.45 – 17.00 **Y. Kakahana**, Kagoshima University, Japan  
O08-4 Monitoring of brain oxygenation during and after cardiopulmonary resuscitation - A prospective porcine study
- 17.00 – 17.15 **K. Xu**, Case Western Reserve University, Solon, USA  
O08-5 Postresuscitation normotension on survival following cardiac arrest and resuscitation in rats
- 17.15 – 17.30 **D.E. Bragin**, University of New Mexico, Albuquerque, USA  
O08-6 Increases in microvascular perfusion and tissue oxygenation via vasodilatation after anodal transcranial direct current stimulation (tDCS) in the healthy and traumatized mouse brain
- 18.00 – Evening reception in the "Saline Museum"

# Tuesday 22<sup>nd</sup> August

**Chair: S. Pias, J. Schumann**

08.30 – 09.15 **K. Mäder**, University of Halle, Germany  
**Keynote Talk:**  
I06 Oxygen - a key parameter for diseases, but also a stimulus for specific drug delivery

## Poster flash presentations P03

- 09.15 – 09.17 **T. Wakasugi**, Hyogo College of Medicine Hospital, Nishinomiya, Japan  
P03-1 Muscle oxygen consumption and blood flow to the skeletal muscle in patients with malignant hematopoietic disease
- 09.17 – 09.19 **T. Wakasugi**, Hyogo College of Medicine Hospital, Nishinomiya, Japan  
P03-2 Fatigue, muscle oxygen consumption and blood flow to the skeletal muscle after allogeneic hematopoietic stem cell transplantation
- 09.19 – 09.21 **S. Takagi**, Doshisha University, Kyoto, Japan  
P03-3 Effects of aerobic cycling training on O<sub>2</sub> dynamics in several leg muscles in early post-myocardial infarction
- 09.21 – 09.23 **A. Vrana**, University Hospital Balgrist, Zurich, Switzerland  
P03-4 Changes in spinal muscle oxygenation and perfusion during the Biering-Sørensen test: Preliminary results of a study employing NIRS-based muscle oximetry
- 09.23 – 09.25 **T. Osawa**, Juntendo University, Tokyo, Japan  
P03-5 Slower tissue reoxygenation in the calf than the thigh muscles after maximal sprint exercise
- 09.25 – 09.27 **R. Kime**, Tokyo Medical University, Japan  
P03-6 Evidence that exercise-induced blood volume expansion is derived from muscle tissue, not from skin
- 09.27 – 09.29 **J.Y. Lee**, Sangji University, Wonju, Korea  
P03-7 VEGF-C can enhance into lymphatic endothelial cells from mouse embryonic stem cells
- 09.29 – 09.31 **J.Y. Lee**, Sangji University, Wonju, Korea  
P03-8 The role of plerixafor in megakaryocyte reinstatement by increased sinusoidal vessel density
- 09.31 – 09.33 **J. Jiang**, University Hospital Zurich, Switzerland  
P03-9 A new method based on virtual relative fluence detectors and software toolbox for handheld spectral optoacoustic tomography
- 09.33 – 09.35 **L. Ma**, Nantong University, China  
P03-10 Stress reduced the capacity of attention responses regulation of amateur but not fence athletes

- 09.35 – 09.37 **S. Cicco**, University of Bari Medical School, Italy  
P03-11 Mucine-1 is related to cell-mediated immunoexpression and blood pressure in pulmonary artery in pulmonary arterial hypertension (PAH): preliminary results
- 09.37 – 10.30 Poster viewing
- 10.00 – 10.30 Coffee break

## **Session O09: Oxygen in the clinical setting**

**Chair: E. Nemoto, J. Skowno**

- 10.30 – 10.45 **T.C.Y. Liu**, South China Normal University, Guangzhou, China  
O09-1 Light-promoted self-limited myocardial adaptation to ischemia
- 10.45 – 11.00 **A.B. Flood**, Dartmouth College, Hanover, USA  
O09-2 Translating oximetry into clinical practice
- 11.00 – 11.15 **S. Cicco**, University of Bari Medical School, Italy  
O09-3 Analysis of aortic remodeling and stiffness in patients with obstructive sleep apnea syndrome (OSAS): preliminary results
- 11.15 – 11.30 **K. Oyama**, Nihon University, Koriyama, Japan  
O09-4 Prediction of MMSE score using time-resolved near-infrared spectroscopy
- 11.30 – 11.45 **T. Steiner**, University Hospital Halle, Germany  
O09-5 Hyperbaric oxygen therapy in necrotizing soft tissue infections – a retrospective study
- 11.45 – 12.00 **X. Shen**, Nantong University, China  
O09-6 The character of physique indexes on middle and old age female from 44~75 in Nanchang china
- 12.00 – 12.15 Break

## **Session O10: Membranes/Polymers and Imaging**

**Chair: E. Takahashi, S.S. Lee**

- 12.15 – 12.30 **D. Gündel**, University of Halle, Germany  
O10-1 Impact of hypoxia and acidosis on endocytotic uptake of macromolecules in tumor cells
- 12.30 – 12.45 **S. Pias**, New Mexico Institute of Mining and Technology, Socorro, USA  
O10-2 Integral proteins influence membrane oxygen permeability: a molecular simulation study
- 12.45 – 13.00 **A. Ghysels**, Ghent University, Belgium  
O10-3 Oxygen permeability through lipid bilayers from simulations
- 13.00 – 13.15 **G. Angles**, New Mexico Institute of Mining and Technology, Socorro, USA

O10-4 Tempocholine membrane probes measure oxygen in hydrophobic regions: insight from molecular simulations

13.15 – 13.30 **P.B. Papkovsky**, University College Cork, Ireland

O10-5 High-resolution imaging of O<sub>2</sub> and metabolism in 3D tissue models

13.30 – 13.45 **G. Saiko**, Ryerson University, Toronto, Canada

O10-6 Visualization of oxygenation and perfusion in patients with chronic wounds of the lower extremity

13.45 – 15.00 EC meeting

Free afternoon

# Wednesday 23<sup>rd</sup> August

**Chair: K. Kang, A. Ghysels**

08.30 – 09.15 **A. Görlach**, German Heart Centre Munich, Germany  
**Keynote Talk:**  
I07 NADPH oxidases: Emerging players in the response to hypoxia

## Poster flash presentations P04

- 09.15 – 09.17 **S. Trommer**, University Hospital Halle, Germany  
P04-1 Polyunsaturated fatty acids induce ROS synthesis in microvascular endothelial cells
- 09.17 – 09.19 **K.Y. Baik**, Kwangwoon University, Seoul, Korea  
P04-2 Hemoglobin oxidation by reactive species from atmospheric pressure plasma
- 09.19 – 09.21 **S.S. Lee**, Sangji University, Wonju, Korea  
P04-3 Observation and property of deoxidized red blood cell coupled to magnetic beads by using turn coil and channel above GMR-SV device
- 09.21 – 09.23 **M. Moriya**, Nihon University Itabashi Hospital, Tokyo, Japan  
P04-4 Relation between asymmetry of prefrontal cortex activity and orthostatic hypotension in post-stroke patients with conscious disorder
- 09.23 – 09.25 **X. Shen**, Nantong University, China  
P04-5 Detection and evaluation of spinal cord conduction function based on functional electrical stimulation
- 09.25 – 09.27 **F. Scholkmann**, University of Zurich, Switzerland  
P04-6 Synchronized oscillations of arterial oxygen saturation, cerebral tissue oxygenation and heart rate in preterm neonates: Investigation of long-term measurements with multiple Einstein's cross wavelet analysis
- 09.27 – 09.29 **L. Ma**, Nantong University, China  
P04-7 Salivary alpha-amylase, heart-rate variability and behavior reaction in acute learning stress and the impact of tridimensional personality
- 09.29 – 09.31 **G. Saiko**, Ryerson University, Toronto, Canada  
P04-8 Visualization of methemoglobin distribution in tissues: phantom validation
- 09.31 – 09.33 **G. Saiko**, Ryerson University, Toronto, Canada  
P04-9 Image quality quantification during visualization of microvasculature
- 09.33 – 09.35 **S. Kim**, Wonkwang University Hospital, Gwangju, Korea  
P04-10 The effects of acupuncture treatment on respiratory physiology parameters in ALS
- 09.35 – 10.30 Poster viewing
- 10.00 – 10.30 Coffee break

## Session O11: Blood, Oxidative Stress, Mitochondria

Chair: L. Li, M. Puchowicz

- 10.30 – 10.45 **M. Chantillon**, University of Duisburg-Essen, Germany  
O11-1 Analysis of candidate transcription factors contributing to erythropoietin gene expression
- 10.45 – 11.00 **A. Doctor**, Washington University in Saint Louis, USA  
O11-2 ErythroMer (EM), a nanoscale bio-synthetic artificial red cell: proof of concept and *in vivo* efficacy results
- 11.00 – 11.15 **C. Cooper**, University of Essex, Colchester, UK  
O11-3 Novel redox active tyrosine mutations enhance the recovery of functional oxyhemoglobin from methemoglobin: implications for the design of blood substitutes
- 11.15 – 11.30 **B. Schmidt**, University Hospital Halle, Germany  
O11-4 Septic induced microRNA expression modulations are linked to respiratory burst, angiogenesis, and vasomotion
- 11.30 – 11.45 **E. Takahashi**, Saga University, Japan  
O11-5 Dimethyloxalylglycine-induced changes in mitochondria morphology and respiration
- 11.45 – 12.00 **T.C.Y. Liu**, South China Normal University, Guangzhou, China  
O11-6 The mitochondrial Na<sup>+</sup>/Ca<sup>2+</sup> exchanger is necessary but not sufficient for Ca<sup>2+</sup> homeostasis and viability
- 12.00 – 13.00 Lunch

## Session O12: Special topics

Chair: H. Swartz, G. Saiko

- 13.00 – 13.30 **G. Cicco**, University of Bari, Italy  
**Overview Talk:**  
I08 Evaluation of microcirculation and its alterations using computerized videocapillarioscopy
- 13.30 – 13.45 **K.S. Soh**, Seoul National University, Korea  
O12-1 Homing of the stem cells injected at the acupoint ST-36 to the site of a spinal cord injury
- 13.45 – 14.00 **K.A. Kang**, University of Louisville, USA  
O12-2 The Sanal-cell cycle and primo vascular system: Regeneration via recycling chromosomes
- 14.00 – 14.15 **P.D. Ryu**, Seoul National University, Korea  
O12-3 Mesothelial cells identified on the surface of novel vascular tissue in rat abdomen
- 14.15 – 14.30 **L. Ma**, Nantong University, China  
O12-4 Solid-phase extraction with packed-fiber is a biological sample preparation tool for neuro-active molecules detection

14.30 – 15.00 Coffee break

## **Session O13: NIRS - Applications (2)**

**Chair: J. LaManna, C. Cooper**

- 15.00 – 15.15 **G. Bale**, University College London, UK  
O13-1 Broadband NIRS cerebral cytochrome-c-oxidase response to anoxia before and after neonatal hypoxic-ischaemic injury
- 15.15 – 15.30 **J. Skowno**, The University of Sydney, Australia  
O13-2 Cerebral oxygenation during neonatal and infant anaesthesia and surgery: an exploration of autoregulation metrics
- 15.30 – 15.45 **P. Phan**, University College London, UK  
O13-3 Monitoring spatial variation in haemodynamics and cellular oxygen metabolism following acute brain injury using multi-channel broadband near-infrared spectroscopy
- 15.45 – 16.00 **G. Bale**, University College London, UK  
O13-4 Relationship between cerebral metabolism and oxygenation predicts injury severity in hypoxic-ischaemic encephalopathy
- 16.00 – 17.00 ISOTT Annual General Meeting
- 18.00 – Award ceremony and banquet in the German National Academy of Sciences "Leopoldina"