fNIRS 2014

October 10-12

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Welcome to fNIRS 2014,

We are glad (and a bit proud) that the number of contributions to our biannual conference on functional near-infrared spectroscopy has increased, now reaching over 200 abstracts submitted. From the many excellent contributions we hope to have arranged a program which will spur discussions and will inspire you and other colleagues to produce new and exciting work in the field. Choosing a bilingual city like Montre(é)al, we prepare you for a leap back across the Atlantic, to 'the Continent' where we are planning to organize fNIRS 2016! As our Society grows, we'll have to consider meeting further East in the near future.

We wish you a great time in Montreal! To arrange and evaluate the submissions many colleagues have been helping us and we thank them all for their work!

Frederic Lesage
local organizer

Hellmuth Obrig
program chair

Acknowledgments

The submissions were reviewed by: **Silvia Benavides, Louis Bherer, David Boas, Sabrina Brigadoi, Erin Buckley, Robert Cooper, Joseph Culver, Mathieu Dehaes, Sol Diamond, Clare Elwell, Nick Everdell, Tiago Falk, Scholkmann Felix, Maria Angela Franceschini, Louis Gagnon, Anne Gallagher, Judit Gervain, David Gomez, Tobias Grossmann, Christophe Grova, Yoko Hoshi, Ted Huppert, Pascal Jean-Pierre, Satoru Kohno, Frédéric Lesage, Terence Leung, Jean-Marc Lina, Sarah Lloyd-Fox, Jan Mehnert, Dang Nguyen, Hellmuth Obrig, Marcela Pena, Philippe Pouliot, Sonja Rossi, Akitoshi Seiyama, Juliette Selb, Jens Steinbrink, Ilias Tachtisidis, Gentaro Taga, Silke Telkemeyer, Fenghua Tian, Yukio Ueda, Julien Voisin, Fabrice Wallois, Isabell Wartenburger, Eiju Watanabe.** Thank you all!

For the indexing, merging and arranging of the many submissions a special thanks to: **Juliette Selb, Meryem Yucel, Stefan Carp, Ivy Lin,** and **Jason Sutin**!

Special thanks goes to **Maria Angela Franceschini** and **Qianqian Fang** for the great animated[1] artwork embellishing our program and webpage!

Stacey Ladieu has been a great support for the organization of the venue and many other administrative tasks. She will also help us onsite, thank you Stacey!

And last but certainly not least: clearly the most energetic person driving this meeting is **David Boas**, who has launched the Society for fNIRS following the successful 2012 meeting chaired by **Clare Elwell**. Thank you David and Clare!

[1] http://www.opticsinfobase.org/boe/fulltext.cfm?uri=boe-1-1-165&id=203857

Our hosts:


POLYTECHNIQUE
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UT TENSIO
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Center for Biomedical Imaging
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HST
Harvard-MIT
Health Sciences & Technology

Friday

Welcome 8:05-8:15

8:15—9:45
Neurodevelopment I
Invited talk on Autism
K Plephrey • Yale
Fr O.01-O.04

POSTER I • Fr P1.01-55 *odd*

11:00—12:30
Neonatal and Pediatrics
Inv. talk on EEG/NIRS neonates
F Wallois • Amiens
Fr O.05-O.08

12:30-13:30
LUNCH

13:30—15:00
Multimodal
Invited talk on NIRS/EEG/fMRI
J Steinbrink • Berlin
Fr O.09-O.12

POSTER II • Fr P2.02-54 *even*

16:15—17:15
Analysis I
•
Fr O.13- O16

17:15 Keynote
fNIRS & Global Health
C. Elwell • London

18:30-22:00
drinks & bouchées
@ Ancienne Chapelle Bréboef

Saturday

8:15—9:45
Clinical I
Invited talk on Epilepsy
D Nguyen, Montréal
Sa O.17-O.20

POSTER III • Sa P3.01-57 *odd*

11:00—12:30
Neurocognition I
Inv. talk on Cognitive workload
S Perrey, Montpellier
Sa O.21-O.24

12:30-13:30
LUNCH

13:30—15:00
Neurodevelopment II
•
Sa O.25-O.30

POSTER IV • Sa P4.02-56 *even*

13:30—15:00
Neonatal and Pediatrics II
•
Sa O.31- O.33

17:00 Presidential Talk
Mapping with NIRS
J Culver• St. Louis

19:00-23:00
musique & fun
@ l'Auberge Saint-Gabriel

Sunday

8:15—9:45
Hardware
Inv. Talk: Time domain mapping
A Torricelli • Milano
Su O.34- O.37

POSTER V • Su P5.01-55 *odd*

11:00—12:30
Analysis II
Invited talk on Analysis advances
T Huppert • Pittsburg
Su O.38-O.41

12:30-13:30
LUNCH
Business meeting (13:00-13:30)*

13:30—14:45
Neurocognition II
•
Su O.42-O.46

POSTER VI • Su P6.02-54 *even*

16:15—17:00
Clinical II
•
Su O.47-O.50
17:00-17:15 closing remarks

* Issues pertaining to the Society for fNIRS will be discussed and the next meeting will be announced .

Friday

10th Oct 2014

8:05-8:15 Welcome and brief introduction *Frédéric Lesage & Hellmuth Obrig*

Friday 8:15-9:45 Neurodevelopment I

8:15 **Invited Talk 1**

Identifying Early Biomarkers of Autism Risk

Kevin Pelphrey • *Yale University, USA*

8:45 **Fr O.01** (#079)

Different Language Learning Settings Alter the Processing of Phonotactics in Infancy: a Combined EEG and fNIRS Study

Maria Richter [1,2], Micol Vignotto [1,2], Julia Mock [1,2], Franziska Stephan [1,2], Hellmuth Obrig [1,2], Sonja Rossi [1,2,3]

[1] Clinic f. Cognitive Neurology & Medical Faculty, Univ. of Leipzig, ; [2] Max Planck Institute for Human Cognitive &Brain Sciences, Leipzig, Germany, [3] Clinic for Medi. Psychology, Medical Univ. Innsbruck, Austria

9:00 **Fr O.02** (#083)

Re-test reliability of fNIRS with infants

A. Blasi[1], S. Lloyd-Fox[1], M.H. Johnson[1] and C.E. Elwell[2]

[1] Centre for Brain and Cognitive Development, Birkbeck; [2] Department of Medical Physics and Bioengineering, University College London, UK

9:15 **Fr O.03** (#144)

Acute neuropharmacological effects of atomoxetine and methylphenidate on children with attention deficit/hyperactivity disorder as assessed using fNIRS

Ippeita Dan[1,2], Masako Nagashima[3], Yukifumi Monden[3], Haruka Dan[1,2], Tsutomu Mizutani[3], Daisuke Tsuzuki[1], Yasushi Kyutoku [1], Yuji Gunji [3,5], Hiorano Daisuke[5], Taniguti Takamichi[5], Shimoizumi Hideo[5], Mariko Y. Momoi[5], Eiju Watanabe[4], and Takanori Yamagata[3]

[1] Applied Cognitive Neuroscience Laboratory, Chuo University, Tokyo; [2] Functional Brain Science Laboratory, Jichi Medical University, Tochigi; [3] Department of Pediatrics, Jichi Medical University, Tochigi; [4] Department of Neurosurgery, Jichi Medical University, Tochigi; [5] International University of Health and Welfare, Tochigi; Japan

9:30 **Fr O.04** (#208)

Differences in Activation to Biological and Mechanical Motion in the Infant Temporal Cortex

Marisa Biondi, Teresa Wilcox

Texas A&M University; USA

POSTER SESSION I

•

Fr P1.01 to Fr P1.55 *odd numbers*

Friday 11:00-12:30 Neonatal and Pediatrics I

chair: Mathieu Dehaes

11:00 **Invited Talk 2** (#169)

Simultaneous EEG and fNIRS recordings in neonates and children

F. Wallois, M. Mahmoudzadeh

Inserm U 1105, GRAMFC, Université de Picardie, CHU Nord, Amiens, France

11:30 **Fr O.05** (#210)

Interhemispheric connectivity is disrupted in primary motor cortex of pediatric post-concussion syndrome patients

Karolina J. Urban [1,2,3], Karen M. Barlow [4,5], Jon J. Jimenez [3], Bradley G. Goodyear [1,2], Jeff F. Dunn[1,2,3]

Calgary Imaging Centre, Faculty of Medicine, University of Calgary, Canada

11:45 **Fr O.06** (#205)

Depressed Cerebral Blood Flow Response to Hypercapnia in Children with Obstructive Sleep Apnea Syndrome

David R. Busch [1,2], Jennifer M. Lynch [1], Madeline E. Winters [2], Ann L. McCarthey [4], Mary Anne Cornaglia [3], Arjun G. Yodh [1], Carole L. Marcus[3], Daniel J. Licht [2], Rui Xiao [5], Ignacio E. Tapia [3]

[1] Department of Physics and Astronomy, 5Department of Biostatistics and Epidemiology, University of Pennsylvania, Philadelphia, PA 19104; [2] Division of Neurology, [3] Division of Pulmonology, Children's Hospital of Philadelphia and Hospital of the University of Pennsylvania [4] Temple University School of Medicine, Philadelphia, PA; USA

12:00 **Fr O.07** (#084)

In vivo measurement of cerebral mitochondrial metabolism using broadband near infrared spectroscopy following neonatal stroke

S. Mitra [1], G. Bale [2], N. Robertson [1], J. Meek [1], S. Mathieson [1], C. Uria [1] and I. Tachtsidis [2]

[1] Institute for Women's Health, University College London, UK; [2] Department of Medical Physics and Bioengineering, University College London, UK

12:15 **Fr O.08** (#018)

Contribution of deep - and shallow-layer hemodynamics to fNIRS signals in infants' heads

Tsukasa Funane [1*], Fumitaka Homae [2], Hama Watanabe [3], Masashi Kiguchi [1], Gentaro Taga [3]

[1] Hitachi, Ltd., Central Research Laboratory; [2] Department of Language Sciences, Tokyo Metropolitan University; [3] Graduate School of Education, The University of Tokyo, Japan

Lunch

•

12:30-13:30

Friday 13:30-15:00 Multimodal

chair: Ilias Tachtsidis

13:30 **Invited Talk 3**

When in doubt do it both ways: fNIRS combined with electrophysiology or fMRI to empower neuroimaging

Jens Steinbrink

Center for Stroke Research Berlin & Dept. Neurology, Charité, Berlin; Germany

14:00 **Fr O.09** (#102)

Correlation Analysis between fNIRS, EEG and EMG during Treadmill Walking Task

Sang Hyeon Jin, Jinung An*, Seung Hyun Lee, Gwang Hee Jang, Yoo Jung Lee

Robotics Research Division, DGIST, Daegu, Korea

14:15 **Fr O.10** (#125)

Impact of Mayer waves on motor cortical excitability explored by a combination of NIRS-TMS

Julien IA Voisin [1,2], Emilie Gontier [2], Karine Meunier [2], Philip L Jackson [2,3], Catherine Mercier [1,2], Pierre Rainville [4], Frédéric Lessage [5]

[1] Faculté de médecine, Université Laval; [2] CIRRIS-IRDPQ; [3] Ecole de Psychologie, Université Laval [4] GRSNC, CRIUGM, Université de Montréal; [5] Département de génie électrique, Ecole Polytechnique de Montréal; Canada

14:30 **Fr O.11** (#020)

Probing the neural basis of visual working memory: A validation studying using fMRI and fNIRS

Sobana Wijeakumar[1,2], Aaron T. Buss [1,2], Vincent A. Magnotta [1,3], John P. Spencer [1,2]

[1] DELTA Center, University of Iowa, Iowa City; [2] Department of Psychology, University of Iowa, Iowa City, Iowa; [3] Department of Radiology, University of Iowa, Iowa City, U.S.A

14:45 **Fr O.12** (#094)

Intrinsic Connectivity Network Strength Modulated by Working Memory Load: An fNIRS Study

Frank A. Fishburn [1], Megan E. Norr [2], Andrei V. Medvedev [3], Chandan J. Vaidya [2,4]

[1] Interdisciplinary Program in Neuroscience, Georgetown Univ. Medical Center; [2]Dpt. Psychology, Georgetown Univ.; [3] Center for Functional and Molecular Imaging, Georgetown Univ. Medical Center; [4] Childrenís Research Institute & National Medical Center, Washington, DC; USA

POSTER SESSION II

•

Fr P2.02 to Fr P2.54 *even numbers*

Friday 16:15-17:15 Analysis I

chair: Christophe Grova

16:15 **Fr O.13** (#097)

Probe Pressure Modulation Algorithm Reduces Extra-cerebral Contamination in Optical Measurements of Cerebral Blood Flow

Wesley B Baker [1], Ashwin B. Parthasarathy [1], David R. Busch [1,2], Rickson C. Mesquita [1,3], Turgut Durduran [4], Kenneth Abramson [1], Arjun G. Yodh [1]

[1] Department of Physics & Astronomy, University of Pennsylvania, Philadelphia, PA 19104, USA; [2]Department of Neurology,Childrenís Hospital of Philadelphia, Philadelphia, PA 19104, USA; [3] Institute of Physics, University of Campinas, Campinas,SP 13083-859, Brazil; [4] ICFO-Institut de Ciencies Fotoniques, Mediterranean Technology Park, 08860 Castelldefels, Spain

16:30 **Fr O.14** (#008)

Dynamic Causal Modelling for Near-Infrared Spectroscopy

S. Tak, A. Kempny, K. Friston, A. Leff and W. Penny

Wellcome Trust Centre for Neuroimaging, University College, London WC1N 3BG, UK.

16:45 **Fr O.15** (#167)

Studying the systemic low frequency oscillations using peripheral NIRS recordings

Yunjie Tong [1,2], Lia M. Hocke [1,3] and Blaise de B. Frederick [1,2]

[1] Brain Imaging Center, McLean Hospital, Belmont, MA; [2] Department of Psychiatry, Harvard University Medical School, Boston, MA; [3] Biomedical Engineering Department, Tufts University, Medford, MA; USA

17:00 **Fr O.16** (#099)

Monitoring attentional state with fNIRS

Angela R. Harrivel [1,2], Daniel H. Weissman [3], Douglas C. Noll [2], Scott J. Peltier [2]

[1] *NASA Langley Research Center, Crew Systems & Aviation Ops. Branch;* [2] *University of Michigan, Department of Biomedical Engineering, fMRI Laboratory;* [3] *University of Michigan, Department of Psychology*

Friday 17:15-18:00 Keynote

17:15 **Invited Talk 4**

fNIRS as an assessment tool of infant cognitive function in global health studies

Clare Elwell • *University College London, UK*

18:30 - 22:00 SOCIAL

Drinks et bouchées • Boissons and Nibbles

@

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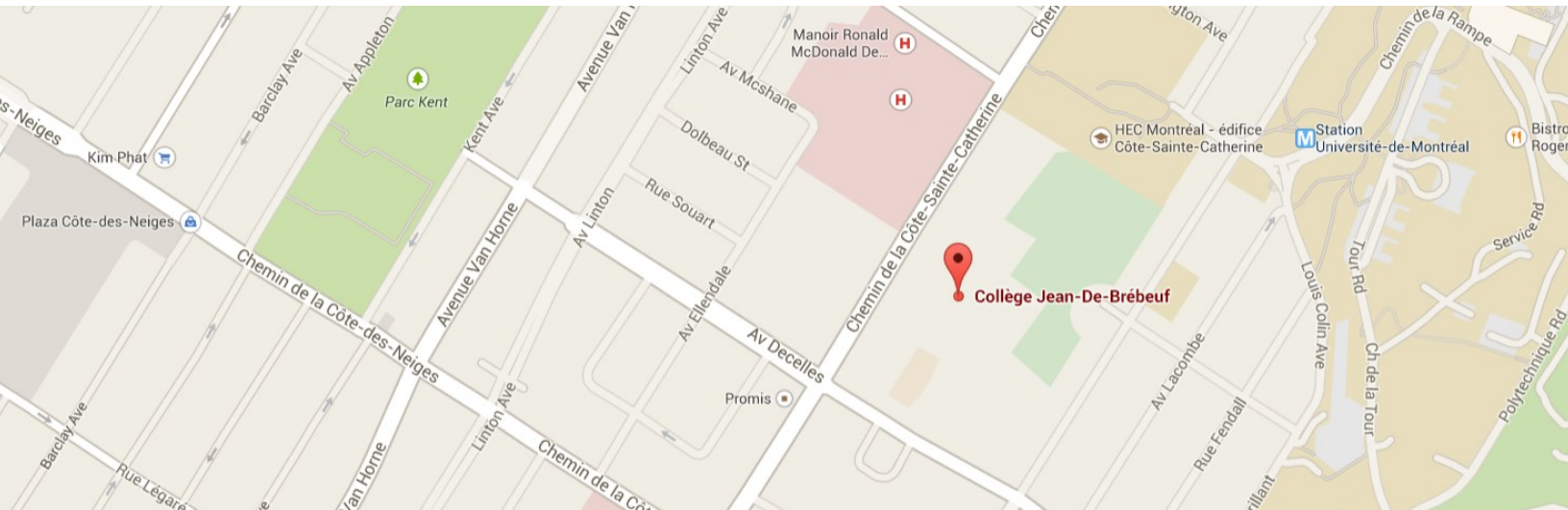

Saturday

11th Oct 2014

Saturday 8:15-9:45 Clinical I

chair: Hellmuth Obrig

8:15 **Invited Talk 5**

Shining light on focal epilepsy

Dang Nguyen • *Centre Hospitalier de l'Université de Montréal; Canada*

8:45 **Sa O.17** (#211)

Diffuse Optical Spectroscopy Measurement Of Cerebral Hemodynamics And Oxygen Metabolism During Anesthesia-Induced Burst Suppression In Rats

Jason Sutin [1,2], David Boas [1], Emery Brown [3,4], and Maria Angela Franceschini [1]

[1] Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital/ Harvard Medical School, Charlestown, MA, [2] Dept. of Pathology, Boston University, [3] Dept. of Brain and Cognitive Science, Massachusetts Institute of Technology, [4] Dept. of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital; USA

9:00 **Sa O.18** (#158)

Personalized simultaneous EEG-NIRS to assess the neurovascular coupling in focal epilepsy

Pellegrino G. [1], Machado A. [1], Watanabe S. [2], Drouin N. [2], Allard L. [2], Lina J.M. [3], Hall J. [2], Kobayashi E. [2], Grova C. [1,2]

[1] Multimodal Functional Imaging Lab (Multi FunkIm), Biomedical Engineering Dpt, McGill University, Montreal. ; [2] Montreal Neurological Institute, McGill University, 3801 University Street, Montreal; [3] Ecole de Technologie Supérieure ETS, Montreal

9:15 **Sa O.19** (#141)

Simultaneous fNIRS-EEG recordings during infantile spasms

E. Bourel-Ponchel [1,2], M. Mahmoudzadeh [1,2], A. Delignières [1], P. Berquin [1,3], F. Wallois [1,2]

[1] Inserm U 1105, GRAMFC, university of picardie Jules Verne, [2] Pediatric Neurophysiology unit, University Medical Centre, North Hospital, place Victor-Pauchet, 80054 Amiens, [3] Neuropediatric unit, University Medical Centre, North Hospital, place Victor-Pauchet, 80054 Amiens, France

9:30 **Sa O.20** (#212)

In-vivo measurement of cerebral metabolic rate of oxygen consumption in mouse brain using multimodal MR and near-infrared spectroscopic imaging

Thomas W. Johnson [1,2], Jeff F. Dunn [1,2]

[1] *University of Calgary, Faculty of Medicine;* [2] *Hotchkiss Brain Institute; Canada*

POSTER SESSION III

•

Sa P3.01 to Sa P3.57 *odd numbers*

Saturday 11:00-12:30 Neurocognition I

chair: Heather Bortfield

11:00 **Invited Talk 6**

Human brain-behavior relationships during cognitive workload with fNIRS

Stephane Perrey • *Université Montpellier; France*

11:30 **Sa O.21** (#119)

Effects of anodal high-definition transcranial direct current stimulation on bilateral sensorimotor cortex activation during sequential finger movements: an fNIRS study

M. Muthalib [1], P. Besson [1], J. Rothwell [2], T. Ward [3] and S. Perrey [1]

[1] *Movement To Health (M2H) Laboratory, EuroMov, Montpellier-1 University, France;* [2] *Institute of Neurology, University College London, UK;* [3] *Department of Electronic Engineering, National University of Ireland, Ireland*

11:45 **Sa O.22** (#172)

Exploring the Link Between Big Five Personality Traits and Motor Inhibitory Control Using Functional Near-Infrared Spectroscopy (fNIRS)

Achala H. Rodrigo [1], Stefano I. Di Domenico [1], Hasan Ayaz [2], Jaeger Lam [1], Bryanna Graves [1], Anthony C. Ruocco [1]

[1] *Department of Psychology, University of Toronto Scarborough, Toronto, Canada;* [2] *School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, USA*

12:00 **Sa O.23** (#187)

Using functional Near-infrared Spectroscopy (fNIRS) to examine the neural correlates of spontaneous improvisation and creativity in a word-guessing game of Pictionary

Manish Saggar*, Meredith Schreier, Allan L. Reiss

Center for Interdisciplinary Brain Sciences Research (CIBSR), Stanford, University School of Medicine, Stanford CA; USA

12:15 **Sa O.24** (#040)

Prefrontal activation is predictive of working-memory training gain in elderly

Anouk Vermeij [1,2], Jurgen A.H.R. Claassen [1,2], Roy P.C. Kessels [1,3]

[1] *Radboud University Nijmegen, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands;* [2] *Radboud University Medical Center, Department of Geriatric Medicine, Nijmegen, The Netherlands;* [3] *Radboud University Medical Center, Department of Medical Psychology, Nijmegen, The Netherlands*

Lunch

12:30-13:30

Saturday 13:30-15:00 Neurodevelopment II

chair: Gentaro Taga

13:30 **Sa O.25** (#053)

The Infant Occipital Cortex Responds to a Predictive Cross-Modal Stimulus: An fNIRS Study of 6-month-olds

Lauren L. Emberson [1], John E. Richards [2], and Richard N. Aslin [1]

[1] *Brain and Cognitive Sciences Department, University of Rochester;* [2] *Department of Psychology, Institute for Mind and Brain, University of South Carolina; USA*

13:45 **Sa O.26** (#198)

Neural Representations for Spoken Language are Influenced by the Development of Reading

Kaja Jasiska [1], Kathleen Shaw [2], Heather Bortfeld [1,2], Ken Pugh [1,2,3]

[1] Haskins Laboratories, New Haven, CT, [2] University of Connecticut, Storrs, CT; [3] Yale University Child Study Centre, New Haven, CT; USA

14:00 **Sa O.27** (#024)

Acquisition of Adjectives in 5-year Old Children: fNIRS Suggests Stronger Reliance on Pragmatic Cues in Bilingual Compared to Monolingual Children.

Agnes Groba[1,2,3], Annick De Houwer [1], Sonja Rossi [3,4] & Hellmuth Obrig [2,3]

[1] University of Erfurt; [2] University Hospital and Faculty of Medicine Leipzig; [3] Max-Planck- Institute for Human Cognitive and Brain Sciences, Leipzig ; [4] Medical University Innsbruck, Dept. of Medical Psychology, Innsbruck, Austria

14:15 **Sa O.28** (#063)

Neural correlates of own- and other-race face recognition in preschoolers: A functional near-infrared spectoscopy (fNIRS) study

Kang Lee [1,2], Xiao Pan Ding [1,2], John E. Richards [3], Wanze Xie [3], Genyue Fu [2]

[1] University of Toronto; Canada; [2] Zhejiang Normal University, China; [3] University of South Carolina, USA

14:30 **Sa O.29** (#145)

Dynamics of functional connectivity changes and connectivity strength development in healthy children and adults

Zhen Li [1,2], Jingping Xu [1,2], Lin Yuan [1,2], Yong He [1,2], Haijing Niu [1,2]

[1] State Key Laboratory of Cognitive Neuroscience and Learning & IDG/McGovern Institute for Brain Research, [2] Center for Collaboration and Innovation in Brain and Learning Sciences, Beijing Normal University, Beijing, 100875 China

14:45 **Sa O.30** (#207)

Impact of Visual Signed Language Exposure and Phonological Language Tissue Development: Evidence from fNIRS neuroimaging of language processing in deaf individuals with cochlear implants

Clifton Langdon [1,2,3], Kaja Jasinska [3,4], Laura-Ann Petitto [1,2,3]

[1] Petitto Brain & Language Laboratory for Neuroimaging, Gallaudet University; [2] PhD in Educational Neuroscience, Gallaudet University; [3] National Science Foundation Science of Learning Center Visual Language & Visual Learning, Gallaudet University; [4] Haskins Laboratories, Yale University; USA

POSTER SESSION IV

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Sa P4.02 to Sa P4.56 *even numbers*

Saturday 13:30-15:00 Neonatal and Pediatrics II *chair: M. A. Franceschini*

16:15 **Sa O.31** (#203)

Effects of Somatic Stimulation on Human Neonatal Fronto-Parietal Cerebral Cortex using Functional Near-Infrared Spectroscopy

Kashou N.H. [1], Pakiraih J.F. [2], Dar I. [1,2], Hasenstab K.A. [2], Jadcherla S.R. [2,3,4]

[1] Wright State University, Dayton, OH, Biomedical, Industrial & Human Factors Engineering; [2] Center for Perinatal Research, The Research Institute at Nationwide Children's Hospital; [3] Divisions of Neonatology, Pediatric Gastroenterology and Nutrition; [4] The Ohio State University College of Medicine, Columbus, OH; USA

16:30 **Sa O.32** (#124)

Can low or high cerebral oxygenation be prevented in preterm infants? A multicenter randomized controlled phase II trial using NIRS

M. Wolf [1*], S. Hyttel-Sorensen [2], A. Pellicer [3], T. Alderliesten [4], T. Austin [5], F. van Bel [4], M. Benders [4], O. Claris [6], E. Dempsey [7], A. Franz [8], M. Fumagalli [9], C. Gluud [10], B. Grevstad [10], C. Hagmann [1], P. Lemmers [4], W. van Oeveren [11], G. Pichler [12], A. M. Plomgaard [2], L. Sanchez [3], J. Riera [3], P. Winkel [10], G. Greisen [2]

[1] Div. of Neonatology, University Hospital Zurich, Switzerland; [2] Dept. of Neonatology, Rigshospitalet, Copenhagen University Hospital, Denmark; [3] Dept. of Neonatology, La Paz University Hospital, Madrid, Spain; [4] Universitair Medisch Centrum Utrecht, Wilhelmina Childrenís Hospital, Utrecht, The Netherlands; [5] Rosie Hospital Cambridge University Hospitals

NHS Foundation Trust, Cambridge, United Kingdom; [6] Dept. of Neonatology, Hopital Femme Mere Enfants, Bron, France; [7] Dept. of Paediatrics and Child Health, University College Cork, Cork, Ireland; [8] Dept. of Neonatology, University of Tuebingen, Universitatsklinikum Tübingen, Tübingen, Germany;[9] NICU, Fondazione IRCCS Caí Granda Ospedale Maggiore Policlinico Milan, Milan, Italy; [10] Copenhagen Trial Unit, Centre for Clinical Intervention Research, Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark; [11] Haemoscan B.V., Groningen, The Netherlands; [12] Dept. of Pediatrics, Medical University of Graz, Graz, Austria

16:45 **Sa O.33** (#115)

A new broadband NIRS system for in-vivo measurements of cerebral cytochrome-c-oxidase changes in neonatal brain injury

G. Bale [1]*, S. Mitra [2], J. Meek [2], N. Robertson [2], and I. Tachtsidis [1]

[1] Department of Medical Physics and Bioengineering, University College London, [2] Institute for Women's Health, University College London, UK

Saturday 17:00-17:45 Presidential Talk

chair: David Boas

17:00 **Invited Talk 7**

Challenges in mapping distributed brain function with diffuse optical tomography

Joe Culver

Washington University School of Medicine; USA

19:00 - 23:00 SOCIAL

Drinks Food and Kultur

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by Metro:

embark @ **UNIVERSITÈ-DE MONTRÉAL** go to **SNOWDON**

change to **ORANGE LINE** (direction **MONTMORENCY**)

alight @ **PLACE-D'ARMES** or **CHAMPS-DE-MARS**

Sunday

12th Oct 2014

Sunday 8:15-9:45 Hardware

chair: Frédéric Lesage

8:15 **Invited talk 8**

Towards dense and wearable time domain fNIRS with ultimate contrast and depth sensitivity

Alessandro Torricelli

Politecnico di Milano; Italy

8:45 **Su O.34** (#065)

Development of time-domain diffuse optical tomography based on a radiative transfer equation and diffusion approximation hybrid

Y. Hoshi [1], E. Okada [2], S. Okawa [3], Y. Tanikawa [4], T. Yoshinaga [5], H. Fujii [6], K. Fujimoto [5], K. Hashimoto [1], S. Kohno [1]

[1] Tokyo Metropolitan Institute of Medical Science; [2] Department of Electronics and Electrical Engineering, Keio University; [3] National Defense Medical College; [4] National Institute of Advanced Industrial Science and Technology; [5] Institute of Health Biosciences, The University of Tokushima; [6] Faculty of Engineering, Hokkaido University; Japan

9:00 **Su O.35** (#073)

Laser Speckle based tomographic imaging of deep tissue blood flow.

Hari M. Varma [1], Claudia P. Valdes [1], Anna K. Kristoffersen [1], Joseph P. Culver [2,3] and Turgut Durduran [1*]

[1] ICFO- Institut de Cincies Fotniques, Castelldefels, Barcelona, Spain; [2] Department of Radiology, Washington University School of Medicine, St. Louis, MO; [3]Department of Physics, Washington University, St. Louis, MO, USA

9:15 **Su O.36** (#011)

Ultra-high resolution concurrent fMRI/NIRS mapping using a specially designed probe

L.M. Hocke [1,2], K. Cayetano [1,3], Y. Tong [1,3], B.deB. Frederick [1,3]

[1] McLean Hospital, Belmont, MA; [2] Tufts Biomedical Engineering Department, Medford, MA; [3] Harvard Medical School Department of Psychiatry, Boston, MA, USA

9:30 **Su O.37** (#116)

Development of a hyperspectral time resolved DOT system for the exploration of the human brain activity

F. Lange, F. Peyrin and B. Montcel

Université de Lyon; CREATIS; CNRS UMR5220; Inserm U1044; INSA-Lyon; France.

POSTER SESSION V

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Su P5.01 to Su P5.55 *odd numbers*

Sunday 11:00-12:30 Analysis II

chair: Clare Elwell

11:00 **Invited talk 9**

Recent advances in the analysis of fNIRS

Ted Huppert

University of Pittsburgh; USA

11:30 **Su O.38** (#153)

Linear and nonlinear hemodynamic models for the study of cerebral microcirculation with coherent hemodynamics spectroscopy (CHS)

Angelo Sassaroli, Jana Kainerstorfer, and Sergio Fantini

Tufts University, Department of Biomedical Engineering, 4 Colby Street, Medford, MA, USA

11:45 **Su O.39** (#221)

Decoding vigilance with NIRS

C. Bogler[1,2], Jan Mehnert[2,5*], Jens Steinbrink[3,4] & John- Dylan Haynes[1,2]

[1] Bernstein Center for Computational Neuroscience, Berlin; [2] Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig; [3] Center for Stroke Research, Charité, Berlin; [4] Bernstein Focus NanoTechnology and [5] Dept. Machine Learning, Berlin Institute of Technology; Berlin Germany.

12:00 **Su O.40** (#060)

Blush or brain: A novel approach to decouple systemic surface blood flow from cortical neural activities in the fNIRS signal

Xiaoqing Gao [1], Xiao Pan Ding [1,2], Pu Zheng [1], Guowei Chen [2], Genyue Fu [2], Kang Lee [1]

[1] University of Toronto, Canada; [2] Zhejiang Normal University, P.R. China

12:15 **Su O.41** (#036)

The significance of systemic changes (blood pressure and PaCO2) in functional studies using NIRS - An investigation using a mathematical model of brain physiology

Felix Scholkmann [1,2*], Mathew Caldwell [2], Tharindi Hapuarachchi [2,3], Ursula Wolf [4], Martin Wolf [1], Ilias Tachtsidis [2]

[1] Biomedical Optics Research Laboratory, Div. of Neonatology, University Hospital Zurich, Zurich, Switzerland; [2] Department of Medical Physics and Bioengineering, University College London, UK; [3] CoMPLEX, University College London, UK; [4] Institute for Complementary Medicine IKOM, University of Bern, Switzerland

Lunch

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12:30-13:30•

Business meeting for SfNIRS •13:00-13:30

Sunday 13:30-14:45 Neurocognition II *chair: Joe Culver*

13:30 **Su O.42** (#096)

An fNIRS investigation of associative recognition in the prefrontal cortex with a rapid event-related design

James D. Schaeffer [1], Amarnath S. Yennu [2], Kellen C. Gandy [1], Fenghua Tian [2], Hanli Liu [2]*, and Heekyeong Park [1]

[1] Department of Psychology, University of Texas at Arlington, TX; [2] Department of Bioengineering, University of Texas at Arlington, TX, USA

13:45 **Su O.43** (#180)

Exploring Behavioural Performance and Cortical Haemodynamic Response Differences in Executive Function for Older Adults Varying in Mobility

D. W. R. Halliday[1], O. Tong[1], S.R. Hundza[2], M. A. Garcia-Barrera[1], T. Lukyn[1], M. Klimstra[2], & S. W. S. MacDonald[1]

[1] Department of Psychology, University of Victoria; [2] School of Exercise Science, Physical & Health Education, University of Victoria; Canada

14:00 **Su O.44** (#004)

fNIRS reveals cross-modal reorganistation in auditory cortex following deafness

Rebecca S. Dewey [1,2] and Douglas E.H. Hartley [1,2,3]

[1] Otology and Hearing, Division of Clinical Neuroscience, School of Medicine, University of Nottingham, UK; [2] NIHR Nottingham Hearing Biomedical Research Unit, Nottingham, UK; [3] MRC Institute of Hearing Research, Nottingham, UK

14:15 **Su O.45** (#010)

Functional brain imaging during simulated driving using hyperspectral functional near-infrared spectroscopy

Reyhaneh Nosrati [1*], Kristin Vesely [2], Vladislav Toronov [1], Tom A. Schweizer [2],

[1] Department of Physics, Ryerson University, 350 Victoria St, Toronto, Ontario, [2] Keenan Research Centre for Biomedical Science of St. Michael's Hospital, 30 Bond Street, Toronto, Ontario; Canada

14:30 **Su O.46** (#080)

Decision-Making Conflict and the Neural Efficiency Hypothesis of Intelligence: A Functional Near-Infrared Spectroscopy Investigation

Stefano I. Di Domenico [1*], Achala H. Rodrigo [1], Hasan Ayaz [2], Marc A. Fournier [1], Anthony C. Ruocco [1]

[1] Department of Psychology, University of Toronto Scarborough, Toronto, Canada; [2] School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, USA

POSTER SESSION VI

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Su P6.02 to Su P6.54 *even numbers*

Sunday 16:15-17:00 Clinical II

chair: Jens Steinbrink

16:15 **Su O.47** (#006)

Habituation of brain activation during painful and non-painful electrical stimulation: a functional near infra-red spectroscopy study.

Meryem A. Yücel [1*], Christopher M. Aasted [2], Mihayl Petkov [2], David Borsook [2,3,4], David A. Boas[1], Lino Becerra [2,3,4]

[1] MGH/HST Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, Mass. General Hospital, Harvard Med. School, Charlestown, MA; [2] Departments of Anaesthesia; [3] Radiology, Boston Children's Hospital, Boston, MA; [4] Department of Psychiatry, McLean Hospital, Belmont, MA; USA

16:30 **Su O.48** (#111)

Continuous wave functional near infra-red spectroscopy combined with transcranial direct current stimulation for assessment of cerebral vascular status in patients with ischemic stroke

Mehak Sood [1], Utkarsh Jindal [1], Abhijit Das [2], Anirban Dutta [3], Shubhajit Roy Chowdhury [1]

[1] Centre for VLSI and Embedded Systems Technology, IIIT Hyderabad; [2] Institute of neurosciences, Kolkata, India; [3] Institut national de recherche en informatique et en automatique (INRIA), Montpellier, France

16:45 **Su O.49** (#183)

Imaging acute stroke at the bedside using High-Density DOT

Karla M. Bergonzi [1], Adam T. Eggebrecht [2], Andrew Fishell [3], Jin-Moo Lee [4], Joseph P. Culver [1,2,5]

[1] Department of Biomedical Engineering; [2] Department of Radiology; [3]Division of Biology and Biomedical Sciences; [4] Department of Neurology and the Hope Center for Neurological Disorders; [5]Department of Physics; Washington University School of Medicine, St. Louis, Missouri; USA

17:00-17:15 **Closing remarks** *David Boas*

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XXVII[th] International Symposium on
Cerebral Blood Flow, Metabolism and Function
&
XII[th] International Conference on
Quantification of Brain Function with PET

June 27-30, 2015, Vancouver, Canada

IMPORTANT DATES

Abstract Submission Deadline: **February 4, 2015**
Early Bird Registration Deadline: **April 14, 2015**

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