Brain States: Characterization and Neuromodulation by DBS

Friday, November 13, 2015

16:00-17:20 Neuromodulation of Neurodegenerative Disorders
Session Chair: Veerle Visser-Vandewalle

16:00-16:45 Andres Lozano, University of Toronto
Experiences with deep brain stimulation of the fornix for Alzheimer’s dementia

16:45-17:20 Jens Kuhn, University Hospital Cologne
Experiences with deep brain stimulation of the Nucleus Basalis of Meynert for dementia in Cologne

17:20-17:30 Closing Remarks

Information

Conference Organisation
Veerle Visser-Vandewalle, MD, PhD
Department Chair

Rowshanak Hashemiyoony, PhD
Chief of Behavioral Neurophysiology and Computational Neuroscience

Department of Stereotactic and Functional Neurosurgery
University Hospital of Cologne
Kerpener Str. 62, D-50937 Köln

Conference Information
E-Mail: stx-brainstates@uk-koeln.de
Web: http://dbs.veomed.net

Local Directions

Congress Venue
KölnSKY, Ottoplatz 1, 50679 Cologne
Train Station: Köln Messe/Deutz

Distances
Köln/Bonn Airport 13 km
Düsseldorf Airport 46 km
Köln HBF 3 km
Düsseldorf HBF 43 km
Hotel Stadtpalais 1.6 km

Direction from Düsseldorf International Airport:
Take the SkyTrain to the Flughafen Bahnhof (airport train station), which is the last stop. Buy a ticket (~ 11 euros for RE) to Köln Messe/Deutz from travel center or on-site machines. Typically, trains leave from Track 4 and take about 34 mins. Once outside at Köln Messe/Deutz station, look right - the tall building across the street is KölnSKY. Walk into the building and go through the lobby until you see the registration on your right.
Dear Colleagues,

It is with great pleasure that we welcome you to our conference Brain States: Characterization and Neuromodulation by DBS! Taking place at the magnificent KölnSKY, this meeting boasts the participation of some of the world’s most respected scientists and clinicians investigating the mechanisms of normal brain function and its disruption in neurological and neuropsychiatric disorders.

We are delighted to present to you a program that truly integrates the basic sciences with medicine, technology, and advanced analytical techniques. During the course of the next three days, we will discuss the possible mechanisms that shape and reflect brain activity across spatial and temporal scales; how these are altered to produce or indicate disease states; and how to most effectively manage them therapeutically.

This conference will encourage us as a community to drive the development of a scientifically grounded, technologically advanced approach to the description and thus treatment of neuropsychiatric disorders.

Addressing this, deep brain stimulation has emerged as a highly effective therapeutic option which provides us the opportunity to directly explore the neuromathematiches of underlying brain dysfunction. During this meeting, we place a spotlight on its application to neuropsychiatric disorders, which comprise a staggering percentage of the population.

The “Brain States” environment is an intimate yet powerful platform meant to stimulate lively discussions. Our hope is that you will all take full advantage of it and open up your own minds to new ideas.

This conference will encourage us as a community to drive the development of a scientifically grounded, technologically advanced approach to the description and thus treatment of neuropsychiatric disorders. This is particularly relevant when considering the pervasiveness of movement and psychiatric disorders, which number to many.

The “Brain States” environment is an intimate yet powerful platform meant to stimulate lively discussions. Our hope is that you will all take full advantage of it and open up your own minds to new ideas.

With best regards,
Rowshanak Hashemiyoona, veerle Visser-VandeWalle

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**Wednesday, November 11, 2015**

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<th>Time</th>
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<td>09:30-10:00</td>
<td>Welcome Reception</td>
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| 10:00-12:15 | Characterization of Network Oscillations in Normal and Dysfunctional States  
Session Chair: Anders Schnitzler |
| 10:00-10:45 | Alain Destexhe, CNSR  
Spatiotemporal patterns of neuronal activity and oscillations across different brain states in human and monkey |
| 10:45-11:30 | Urs Ribary, Simon Fraser University  
Local and large-scale brain network connectivity: unified mechanisms of network transformation in typical/atypical states |
| 11:30-12:15 | John Foxe, University of Rochester  
Neuro-oscillatory mechanisms of selective attention across space and between the senses |
| 12:15-13:30 | Lunch |
| 13:30-14:00 | Industry Symposium – Boston Scientific  
Reshaping the future of DBS – A novel approach to directional steering  
> 1st and only DBS system with current steering  
> Novel directional platform: 1st clinical chronic experience with Vercise Surgical perspective  
> Novel directional platform: 1st clinical chronic experience with Vercise: Programming perspective |
| 14:00-15:30 | Temporal Dynamics and Non-Stationarity  
Large – Scale Brain Networks  
Session Chair: John Foxe |
| 14:00-14:45 | Dimitri van de Ville,  
University of Geneva and EPEF  
Resting-state dynamics disentangled into spatially and temporally overlapping networks |
| 14:45-15:30 | Christoph Michel, University of Geneva  
Real-time mapping of brain network dynamics |
| 15:30-17:00 | Coffee Break & Poster Session |

**Thursday, November 12, 2015**

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<th>Time</th>
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| 08:45-11:00 | Characterization and Prediction of Epileptic Seizures  
Session Chair: Christoph Michel |
| 08:45-09:30 | Marc Goodfellow, University of Exeter  
Mechanisms of seizure generation in brain networks |
| 09:30-10:15 | Viktor Jirsa, Aix-Marseille University  
Translational medicine: From bifurcations to patient predication |
| 10:15-11:00 | Klaus Lehnrert, University of Bonn  
Long term dynamics of large scale epileptic brain networks |
| 11:00-11:10 | Coffee Break |
| 11:10-11:50 | Industry Symposium – Medtronic  
> Translating Brain States into patient benefit  
> Academic-industry mechanisms in DBS: Contributions and outlook |
| 12:45-15:00 | Dynamic Communication in Neuronal Circuits  
Session Chair: Lars Timmermann |
| 12:45-13:30 | Emad Eskandar, Massachusetts General Hospital-Harvard Medical School  
Neuroestimation and associative learning |
| 13:30-14:15 | Hagai Bergman, Hebrew University of Jerusalem  
The subthalamic nucleus versus the striatum: A David and Goliath contest over the control of basal ganglia output |
| 14:15-15:00 | Peter Brown, University of Oxford  
Dynamic communication and intervention in Parkinsonian circuits |
| 15:00-16:00 | Coffee Break & Poster Session |
| 16:00-18:15 | Advanced Methodologies  
Session Chair: Jan Verheer |
| 16:00-16:45 | Jens Hauense, Technische Universität Ilmenau  
Dry electrodes for electroencephalography |
| 16:45-17:30 | Veerle Visser-VandeWalle,  
University Hospital of Cologne  
Dynamic communication and intervention in Parkinsonian circuits |
| 17:30-18:15 | Cameron McIntyre,  
Case Western Reserve University  
Deep brain stimulation informatics |

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| 08:45-10:15 | Frontiers in Obsessive Compulsive Disorder  
Session Chair: Yasin Temel |
| 08:45-09:30 | Martin Fige, University of Amsterdam  
DBS of the ventral internal capsule for OCD restores frontostriatal network function |
| 09:30-10:15 | Stephan Chabardes,  
University Hospital Grenoble  
DBS of the subthalamic nucleus for OCD: Clinical results and electrophysiological aspects |
| 10:15-10:45 | Coffee Break |
| 10:45-12:00 | A Complex Systems Approach to Therapeutics  
Session Chair: Viktor Jirsa |
| 10:45-11:15 | Günter Schiepek, Paracelsus Medical University  
Psychotherapy as a process of neuromodulation: How changing the mind corresponds to changed neuroconnectivity |
| 11:15-12:00 | Rowshanak Hashemiyoona,  
University Hospital of Cologne  
Deep brain stimulation, circuit dynamics and psychiatric indications |
| 12:00-12:30 | Lunch |
| 13:00-14:00 | Industry Symposium – St. Jude  
> Further development of DBS symptoms and the potential benefit for patients  
> Basal ganglia high frequency oscillations: Relation to clinical symptoms |
| 14:00-15:30 | Mechanisms of Addiction and Depression  
Session Chair: Rowshanak Hashemiyoona |
| 14:00-14:45 | Anthony Grace, University of Pittsburgh  
The link between stress, addiction and depression: How disruptions in the dopamine system lead to brain state changes across disease dimensions |
| 14:45-15:30 | Jürgen Voges,  
Otto-von-Guericke-University Magdeburg  
Deep brain stimulation for addiction |
| 15:30-16:00 | Coffee Break |