

IWSP7 Program

Including the overlapping Melbourne Epilepsy (ME@MBC'15) meeting.

Monday August 3 2015 – IWSP7 Educational Day

08:00-08:30 – Registration – Foyer

08:30-10:00 – Session 1a – Introduction to Epilepsy – Ian Potter Auditorium

Educational Day Welcome 08:30

Levin Kuhlmann, University of Melbourne

Basic Epilepsy 08:35

Andreas Schulze-Bonhage, University of Freiburg

Brain Activity and Seizure Statistics in Epilepsy 09:15

Mark Cook & Philippa Karoly, University of Melbourne

08:30-10:00 – Session 1b – The Virtual Brain Tutorial Part 1 – Education Room

Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney

10:00-10:30 – Morning Tea Provided – Foyer

10:30-12:00 – Session 2a – EEG analysis, Networks and Machine Learning – Ian Potter Auditorium

The Network Theory of Epilepsy: Concepts, Questions and Analysis 10:30

Klaus Lehnertz, University of Bonn; Hitten Zaveri, Yale University

Machine Learning and EEG analysis 11:30

Theoden Netoff, University of Minnesota

10:30-12:00 – Session 2b – The Virtual Brain Tutorial Part 2 – Education Room

Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney

12:00-13:00 – Lunch Provided – Foyer

13:00-15:00 – Session 3a – Oscillations, Seizure Prediction, and Devices for Epilepsy – Ian Potter Auditorium

Normal and Pathological High Frequency Oscillations 13:00

Liset Menendez de la Prida, Instituto Cajal – CSIC

Introduction to Seizure Prediction 13:40

Catalina Alvarado-Rojas, Pontificia Universidad Javeriana

Current & Next Generation Devices for Epilepsy 14:20

Greg Worrell, Mayo Clinic

13:00-15:00 – Session 3b – IIEG Database Tutorial Part 1 – Education Room

Brian Litt, Hoameng Ung, Lohith Kini, Ankit Khambhati, University of Pennsylvania

15:00-15:30 – Afternoon Tea Provided – Foyer

15:30-17:30 – Session 4a – Modelling and Engineering for Epilepsy – Ian Potter Auditorium

Keys and Challenges of modeling epileptiform behaviour 15:30

William Stacey, University of Michigan

A physicist's take on epilepsy – neural field models of seizure transition 16:10

Andre Peterson, University of Melbourne

Why Would a Seizure Prediction Investigator Need To Care About Group Theory? 16:50

Steven Schiff, Pennsylvania State University

15:30-17:30 – Session 4b – IEEG Database Tutorial Part 2 – Education Room

Brian Litt, Hoameng Ung, Lohith Kini, Ankit Khambhati, University of Pennsylvania

17:30-18:30 – Mentoring Session – Ian Potter Auditorium

18:30-19:00 – Opening Networking Reception – Level 5 Common Room

19:00-21:00 – IWSP7 Poster Session – Level 5 Common Room

Tuesday August 4 2015 – IWSP7 day 1

08:00-09:00 – Registration – Foyer

All talks will be in the Ian Potter Auditorium

09:00-10:00 – Introduction: Goals and hot topics

Session Moderator: Mark Cook, University of Melbourne

Introductory Remarks/Welcome 09:00

Iven Mareels, Dean of Engineering, University of Melbourne

Goals and hot topics in epilepsy mechanisms, models, prediction and control

Mark Richardson, Kings College London 09:10

Panel positions:

Bjoern Schelter, University of Aberdeen 09:30

Bruce Gluckman, Pennsylvania State University 09:35

Liset Menendez de la Prida, Instituto Cajal – CSIC 09:40

10:00-10:30 – Morning Tea Provided – Foyer

10:30-12:30 – Advances in Seizure Prediction and Detection Part 1

Session Moderators: David Grayden, University of Melbourne; William Stacey, University of Michigan

Forecasting seizures in dogs with naturally occurring epilepsy 10:30

Gregory Worrell, Mayo Clinic

Introduced by *Chris Meisel, National Institutes of Health*

Cross-frequency coupling and seizure prediction 11:00

<i>Catalina Alvarado-Rojas, Pontificia Universidad Javeriana</i>	
Introduced by <i>Joana Soldado Magraner, University College London</i>	
Seizure prediction and the EPILEPSIAE project	11:30
<i>Antonio Dourado, University of Coimbra</i>	
Introduced by <i>Kais Gadhomi, McGill University</i>	
Mathematical characterization of epileptiform limbic events	12:00
<i>Wytse Wadman, University of Amsterdam</i>	

12:30-13:30 – Lunch Provided – Foyer

13:30-15:00 – Computational Modelling of Epilepsy

Session Moderators: Anthony Burkitt & Andre Peterson, University of Melbourne

The role of macroscopic brain networks in seizure initiation	13:30
<i>John Terry, University of Exeter</i>	
Introduced by <i>Amirhossein Jafarian, University of Melbourne</i>	
Modelling of neuronal and ionic dynamics during ictogenesis	14:00
<i>Piotr Suffczynski, University of Warsaw</i>	
Introduced by <i>Sebastien Naze, Institut de Neurosciences des Systèmes</i>	
Seizure spread in a virtual epileptic patient	14:30
<i>Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney</i>	

15:00-15:30 – Afternoon Tea Provided – Foyer

15:30-17:00 – Epilepsy Mechanisms and Neural Oscillations

Session Moderators: Liset Menendez de la Prida, Instituto Cajal – CSIC; Theoden Netoff, University of Minnesota

Neurons, neuronal populations and networks during seizure initiation, propagation and termination	15:30
<i>Sydney Cash, Massachusetts General Hospital, Harvard Medical School</i>	
Introduced by <i>Hoameng Ung, University of Pennsylvania</i>	
Experimental control of ictogenesis to identify proictal biomarkers	16:00
<i>William Stacey, University of Michigan</i>	
Post-malarial epilepsy - dynamics in an animal model	16:30
<i>Bruce Gluckman, Pennsylvania State University</i>	

17:00-18:00 – Split-groups: problems & solutions

Co-ordinated by Organizing Committee

18:30-21:30 – Conference Dinner for all registrants – Level 10, Woodward Conference Centre, Law Building, 185 Pelham St, Carlton VIC 3053 (See map at back of program)

Wednesday August 5 2015 – IWSP7 day 2

All talks will be in the Ian Potter Auditorium

08:30-09:30 – Databases and Contest developments

Session Moderators: Alan Lai & Tatiana Kameneva, University of Melbourne

Seizure prediction algorithm development and validation via kaggle.com 08:30

Benjamin Brinkmann, Mayo Clinic

Kaggle competition seizure prediction algorithm 08:50

Simone Bosshard, University of Queensland

Data Integration, Neuroengineering and Collaboration on the Cloud 09:10

Brian Litt, University of Pennsylvania

09:30-10:00 – Morning Tea Provided – Foyer

10:00-12:00 – Imaging, Networks and Epilepsy

Session Moderators: Klaus Lehnertz, University of Bonn; Hitten Zaveri, Yale University

Spatio-temporal dynamic EEG source imaging of epileptogenic activity 10:00

Bin He, University of Minnesota

Introduced by *Ankit Khambhati, University of Pennsylvania*

Multimodal imaging and modeling of epileptic seizures and interictal epileptiform activity in humans 10:30

Louis Lemieux, University College London

Introduced by *Stephan Lau, University of Melbourne*

Revealing a brain network endophenotype in families with idiopathic generalized epilepsy 11:00

Wessel Woldman, University of Exeter

Regional and network relationship in the intracranial EEG and its second spectrum 11:30

Rasesh Joshi, Yale University

12:00-13:00 – Lunch Provided – Foyer

13:00-14:30 – Advances in Seizure Prediction and Detection Part 2

Session Moderator: Gregory Worrell, Mayo Clinic; John Terry, University of Exeter

An extracerebral biosignal pattern for epileptic seizure detection 13:00

Diana Cogan, University of Texas at Dallas

Cortical excitability measurement and seizure prediction utilizing electrical probing 13:30

Farhad Goodarzy, University of Melbourne

Adaptation of the phase clustering index to the rat model of epilepsy 14:00

Karin Somerlik-Fuchs, University of Freiburg

14:30-15:00 – Afternoon Tea Provided – Foyer

15:00-16:30 – Model-Based Estimation and Control in Epilepsy

Session Moderators: Steven Schiff, Pennsylvania State University; Dean Freestone, University of Melbourne

Recent advances in data-based modelling and their role in epilepsy research 15:00

Bjoern Schelter, University of Aberdeen

Introduced by *Helmut Schmidt, University of Exeter*

Can the mathematics of networked oscillators explain the challenges in predicting epileptic seizures? 15:30

Elma O’Sullivan-Greene, University of Melbourne

Real-time automated EEG tracking of brain state parameters using neural field theory: Application to brain stability and seizures 16:00

Romesh Abeysuriya, University of Sydney

16:30-17:30 – Outcomes and Targets for the Seizure Prediction Community

Moderators: IWSP7 Organising Committee

Participants:

Theoden Netoff, University of Minnesota

Andreas Schulze-Bonhage, University of Freiburg

William Stacey, University of Michigan

Thursday August 6 2015 – IWSP7/ME@MBC’15 joint day

All talks will be in the Ian Potter Auditorium

07:15-08:40 – BioBreakfast on Innovation in Epilepsy at the Interface of Industry and Research (Not included in IWSP7 registration fee. To register see details on the www.iwsp7.org website)

08:45-10:30 – Epilepsy: From DNA to multi-faceted disease

Session Moderator: Mark Cook, University of Melbourne

Welcome 08:45

Mark Cook, University of Melbourne

Genetics and the individual-specific nature of epilepsy 09:00

Samuel Berkovic, University of Melbourne

Introduced by *Michael Chang, Toronto Western Research Institute*

Unification of spikes, seizures and spreading depression 09:30

Steven Schiff, Penn State University

Introduced by *Ann Vanleer, United States Naval Academy*

Sources of functional heterogeneity in the cellular activity of hippocampal microcircuits in temporal lobe epilepsy 10:00

Liset Menendez de la Prida, Instituto Cajal – CSIC

Introduced by *Jennifer Robertson, Australian National University*

10:30-11:00 – Morning Tea Provided – Foyer

11:00-12:30 – Sudden Unexpected Death in Epilepsy (SUDEP)

Session Moderator: Anne McIntosh, Austin Health

- Plenary: SUDEP: An Overview 11:00
Philippe Ryvlin, Lyon University
Introduced by *Vanessa Senger, Technical University of Dresden*
- Genetics of SUDEP 11:45
Doug Crompton, Northern Health
- Sudden unexpected death, epilepsy and familial cardiac pathology 12:00
Alana Eastaugh, Austin Health
- Chronic epilepsy causing an acquired cardiac channelopathy – more than just HCN 12:15
Sakshi Singh, Royal Melbourne Hospital

12:30-13:30 – Lunch Provided – Foyer

13:30-15:30 – Brain Stimulation and Monitoring

Session Moderator: Brian Litt, University of Pennsylvania

- Responsive direct brain stimulation for the treatment of epilepsy 13:30
Martha Morrell, Stanford University, Neuropace
Introduced by *Roman Sandler, University of Southern California*
- Anterior thalamic stimulation 14:00
John Archer, Austin Health
- Tracking seizure dynamics using data-driven neural-field modelling 14:15
Dean Freestone, University of Melbourne
- Implantable devices 14:30
Mark Cook, University of Melbourne
- Fit-bit epileptology 14:45
Patrick Kwan, Royal Melbourne Hospital
- Discussion/Extra time 15:00

15:30-16:00 – Afternoon Tea Provided – Foyer

16:00-17:30 – Imaging

Session Moderator: Sarah Wilson, University of Melbourne

- Dynamic changes in the peri-ictal period 16:00
Jennifer Walz, Florey Institute of Neuroscience & Mental Health
- Functional networks in focal epilepsy 16:15
Mangor Pedersen, Florey Institute of Neuroscience & Mental Health
- Autobiographical memory breakdown: using event-related ICA to study higher cognitive functions 16:30
Chris Tailby, Epilepsy Research Centre
- Networks in Lennox-Gastaut syndrome 16:45
Aaron Warren, Florey Institute of Neuroscience & Mental Health
- White matter tract abnormalities in Periventricular Nodular Heterotopia 17:00
Shawna Farquharson, Florey Institute of Neuroscience & Mental Health

Simultaneous EEG-MEG in refractory focal epilepsy 17:15
Chris Plummer, St. Vincent's Hospital Melbourne

17:30-20:00 – ME@MBC Networking Reception and Poster Session – Foyer (Open to IWSP7 registrants; does not involve IWSP7 posters)

Friday August 7 2015 – ME@MBC'15 day 2 (Open to IWSP7 registrants)

All talks will be in the Ian Potter Auditorium

08:45-10:15 – Data Blitz: Students and Post-docs present

Session Moderator: Graeme Jackson, Florey Institute of Neuroscience & Mental Health

10:15-11:00 – Morning Tea Provided – Foyer

11:00-12:30 – Basic Science

Session Moderator: Levin Kuhlmann, University of Melbourne

Epileptogenesis in the developing brain 11:00

Bridget Semple, Royal Melbourne Hospital

Can a spider toxin fix Dravet syndrome? 11:15

Kay Richards, Florey Institute of Neuroscience & Mental Health

Human iPS cells as a model of genetic epilepsy 11:30

Snezana Maljevic, University of Melbourne

In vivo myelo-architecture using whole-brain diffusion MRI 11:45

Fernando Calamante, Austin Health

Using diamonds to measure neuronal activity 12:00

David Simpson, University of Melbourne

Closing Remarks: *Levin Kuhlmann* 12:15