UK Dementia Research Institute

Neurotechnology for Dementia Workshop

The Royal Society's Chicheley Hall | 14th – 16th May 2019

MEETING PROGRAMME

12.00	**Arrival, lunch and registration**
12.30 – 13.00	**Opening Keynote** **Setting the Challenge: Dementia Care and Technology** **David Sharp**
Day 1	
Session I – Dynamic physiological monitoring *in vivo* – I **Chair: Mathieu Vandenberghe**	
13.00-13.35	**Alan Urban** – Mapping the dynamics of brain perfusion using functional ultrasound
13.35-14.10	**Mark Woolrich** – Brain network dynamics
14.10-14.45	**Patrick Dupont** – Human neuroanatomy of biological processes underlying semantic and visuospatial cognition
14.45-15.20	**Simon Schultz** – Neural circuit dynamics with early amyloid related disease
15.20-15.45	Coffee break
Session II – Dynamic physiological monitoring *in vivo* – II **Chair: Nick Fox**	
15.45-16.20	**Matthew Brooks** – A wearable quantum brain scanner
16.20-16.55	**Paul Beard** – Photoacoustic imaging for neurodegenerative disease studies
16.55-17.30	**George Malliaras** – NeuroGrid and emerging approaches to probe development
17.30-18.00	Summary and discussion
18.45	Posters and opening reception
20.00	Dinner
21.00	**Brain Lecture: Targeting dementia with next generation tools from the Brain Research through Advancing Neurotechnologies (BRAIN) Initiative** **Walter Koroshetz** introduced by **Bart de Strooper**
Day 2	
Session III – Functional coupling and modulation of large scale neuronal activity I **Chair: Wim van Paesschen**	
8.50-9.25	**Barun Dutta** – Neuropixel probes and roadmap
9.25-10.00	**Ole Jensen** – Functional organisation of brain oscillators for inter-neuronal communication
10.00-10.35	**Andrew Jackson** – Low frequency cortical dynamics and novel probe design
10.35-11.10	**Marc Busche** – What happens to neural circuits in Alzheimer's disease?
11.10-11.30	**Coffee break**
Session IV – Functional coupling and modulation of large scale neuronal activity II - **Chair: David Sharp**	
11.30-12.05	**Shelley Fried** – Implantable microcoils for neuromodulation
12.05-12.40	**Ben Cox** – Transcranial ultrasound for deep brain neuromodulation

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12.40-13.15	**Nir Grossman –** Temporal interference stimulation
13.15-14.00	**Lunch**
Session V – Dynamic assessment of chemical signaling *in vitro* and *in vivo* Chair: Seth Love	
14.00-14.35	**Ian Gilmore** – 3D OrbiSIMS-label-free metabolic imaging
14.35-15.10	**Zoltan Takats –** DESI-MS for spatial metabolomics of the brain
15.10-15.45	**Oscar Ces –** Microfluidics and the 'cell on a chip'
15.45-16.15	**Coffee break**
16.15-16.50	**Martyn Boutelle** – *In vivo* monitoring of brain signaling and chemistry
16.50-17.25	**Roisin Owens** – Monitoring microbiome dynamics
17.30-18.30	**Keynote Lecture: Bi-directional brain-machine-interface technology: The state of the art for human neuroscience Tim Denison**
18.30	**Posters and reception**
19:30	**Dinner and poster prizes**
20.45	**Discussion Groups and after dinner drinks**

Day 3

Session VI – Neural interfaces for monitoring and targeted treatment Chair: Simone Di Giovanni	
9.00-9.35	**Dries Braeken** – Printing human microcircuits on complementary metal oxide semiconductor
9.35-10.10	**Chris Grigsby –** Artificial neural scaffolds
10.10-10.45	**Stephanie Lacour** – Soft bioelectronics interfaces
10.45-11.20	**James Fawcett** – Novel cognitive enhancement treatments for dementia
11.20-11.40	**Coffee break**
11.10-11.45	**Payam Barnaghi** – Integrated home monitoring systems for dementia
11.45-12.20	**Aldo Faisal –** Behavioural digital biomarkers
12.20-12.55	**Chris Van Hoof** – Connected health solutions for stress, sleep and dementia
12.55-13.30	**Roel Wuyts** – Exascale computing for the life sciences
13.30	**Lunch**
14.15	**Keynote Lecture: Neurotechnologies in Dementia Leigh Hochberg**
15.15	**Closing remarks and discussion: Paul Matthews, David Sharp and Bart de Strooper**
16.00	**Workshop close – delegates depart**

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