

# Interpreting BOLD: a dialogue between cognitive and cellular neuroscience

Thursday 28 – Friday 29 January 2016

Theo Murphy international scientific meeting organised by Dr Anusha Mishra, Professor David Attwell FRS, Dr Zebulun Kurth-Nelson, Dr Catherine N. Hall and Dr Clare Howarth

THE  
ROYAL  
SOCIETY

DAY 1			
Session 1: Current perspectives in fMRI and neurovascular coupling Chair: David Attwell FRS		Session 2: Inferring cognitive processes from the BOLD signal Chair: David Kleinfeld	
09.00	Welcome by Professor David Attwell FRS and Dr Anusha Mishra		
09.10	<b>Robert Turner</b> Uses, misuses, new uses and fundamental limitations of MRI in cognitive science	13.30	<b>Bojana Stefanovic</b> Multimodal investigation of the neurovascular unit following focal cerebral ischemia
09.40	Discussion	14.00	Discussion
09.50	<b>Edith Hamel</b> Neurovascular coupling: when its reliability as a marker of neuronal activity gets challenged	14.10	<b>Nikolaus Kriegeskorte</b> Deep neural networks: a new framework for understanding how the brain works
10.20	Discussion	14.40	Discussion
10.30	General Discussion	14.50	General discussion
10.40	Coffee	15.00	Tea
11.00	<b>David Kleinfeld</b> Vasomotion: a link from ultra-slow neuronal activity to blood oxygenation	15.20	<b>Tim Behrens</b> Imaging the mechanisms of cognition
11.30	Discussion	15:50	Discussion
11.40	<b>Read Montague</b> Model-based approaches connecting BOLD and dopaminergic transmission in humans	16.00	Poster Session
12.10	Discussion		
12.20	General Discussion	17.00	CLOSE (Followed by drinks and dinner at 18.15)
12.30	LUNCH		

<b>DAY 2</b>			
<b>Session 3: Imaging brain metabolism to reveal neuronal activity</b> Chair: Elizabeth Hillman		<b>Session 4: Future directions in fMRI and neurovascular coupling</b> Chair: Bojana Stefanovic	
<b>09.00</b>	<b>Anna Devor</b> Cellular and molecular determinants of the hemodynamic response	<b>13.30</b>	<b>Elizabeth Hillman</b> The role of the vascular endothelium in neurovascular coupling and the BOLD signal
<b>09.30</b>	Discussion	<b>14.00</b>	Discussion
<b>09.40</b>	<b>Ralph Freeman</b> Neural-metabolic coupling in the central visual pathway	<b>14.10</b>	<b>Kamil Ugurbil</b> Spatial limits of imaging human brain function and connectivity: whole brain to cortical columns and layers
<b>10.10</b>	Discussion	<b>14.40</b>	Discussion
<b>10.20</b>	General Discussion	<b>14.50</b>	General Discussion
<b>10.30</b>	Coffee	<b>15.00</b>	Tea
<b>11.00</b>	<b>Anish Mitra</b> A BOLD look at the brain's intrinsic activity	<b>15.20</b>	<b>Ed Bullmore</b> Human brain networks from functional MRI
<b>11.30</b>	Discussion	<b>15.50</b>	Discussion
<b>11.40</b>	<b>Louis Gagnon</b> Modelling the microvascular origin of BOLD fMRI from first principles	<b>16.00</b>	<b>David Attwell FRS</b> Overview and panel discussion
<b>12.10</b>	Discussion		
<b>12.20</b>	General Discussion	<b>17.00</b>	CLOSE
<b>12.30</b>	LUNCH		

*Draft programme – correct as of 14 January 2016 – subject to change*