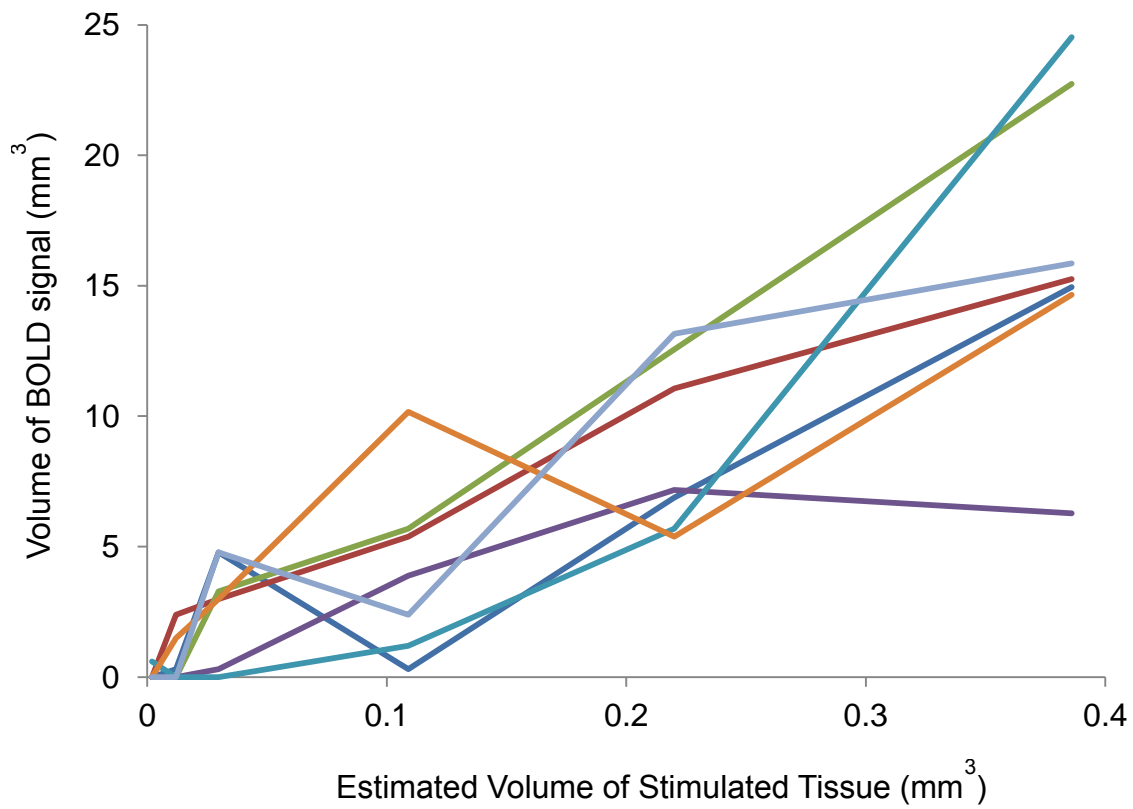


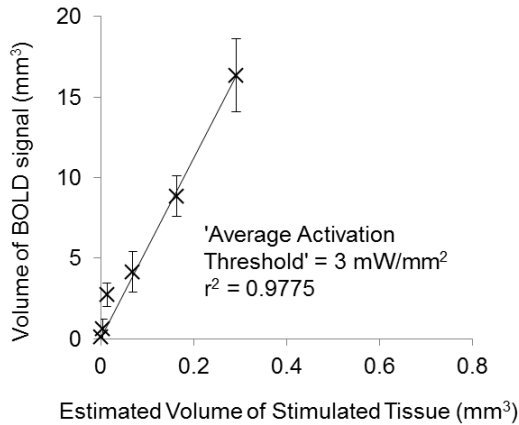
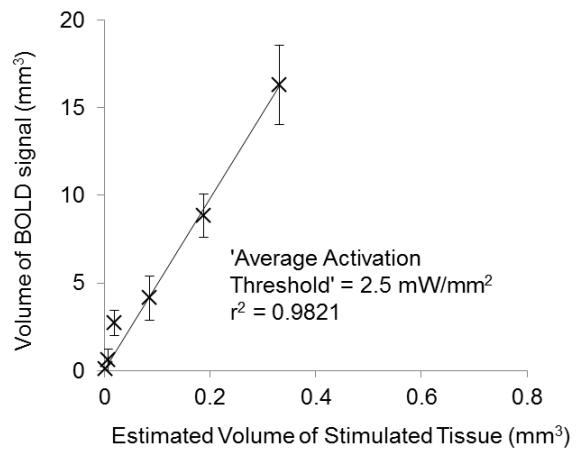
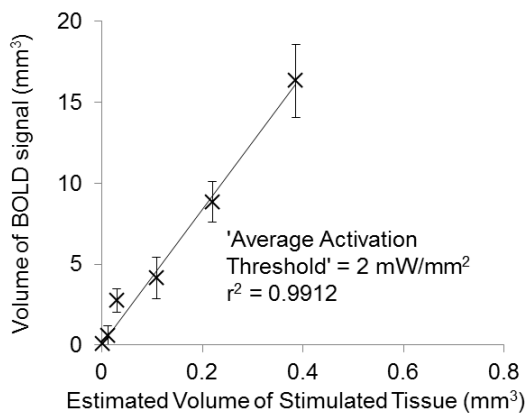
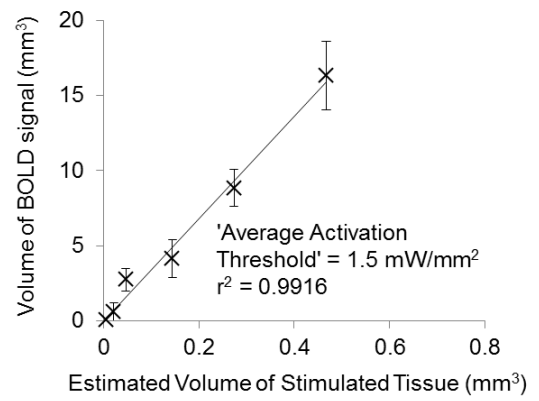
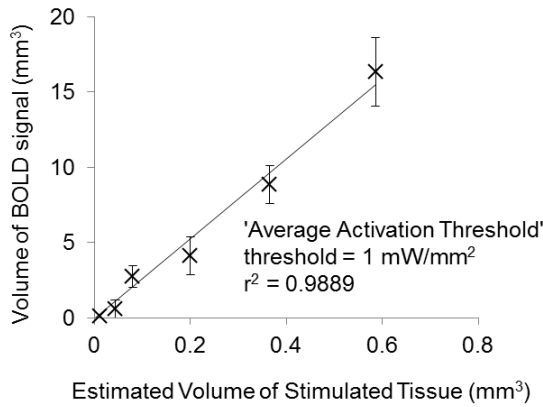
**Supplementary Figures: Volumetric Spatial Correlations of Neurovascular Coupling Studied using Single Pulse Opto-fMRI**

Isabel N Christie\*, Jack A Wells\*, Sergey Kasparov, Alexander V Gourine, Mark F Lythgoe



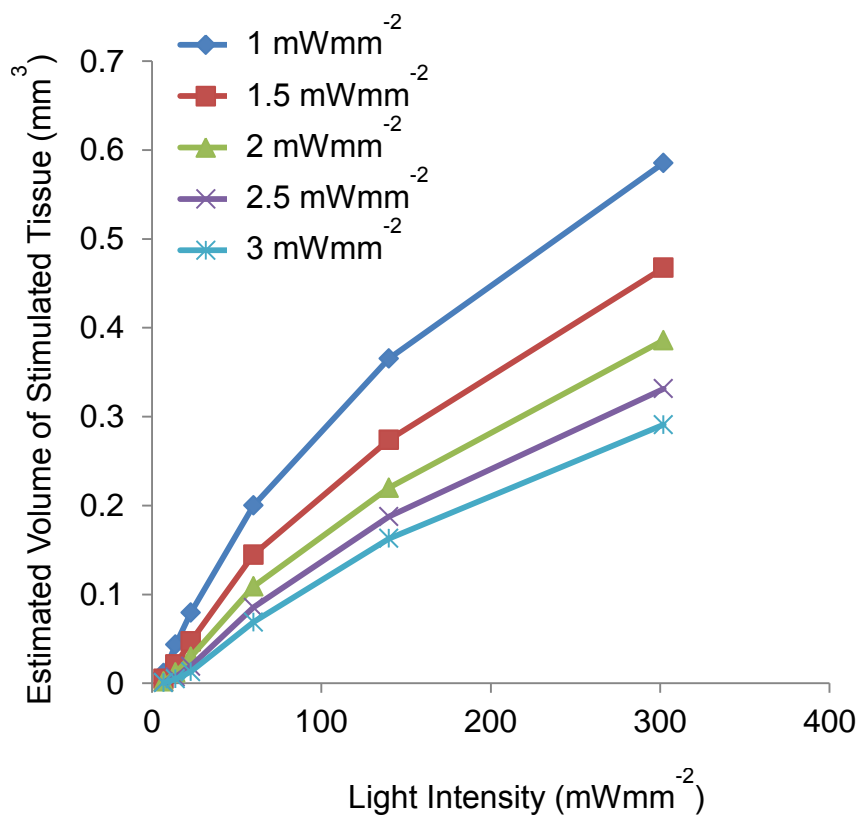
**Supplementary Figure 1 : Individual Subject Spatial Neurovascular Coupling (10ms pulse)**

The spatial extent of the BOLD response (the number of “activated” voxels) against the predicted volume of action potential generation for each individual subject ('Average Activation Threshold' =2mW/mm<sup>2</sup>). The mean value across all subjects is reported in Figure 1 F.



**Supplementary Figure 2: Direct Proportionality of Spatial Neurovascular Coupling (single pulse) is Robustly Maintained Across a Range of 'Average Activation Thresholds'**

The measured volume of BOLD response is plotted against the estimated volume of stimulated tissue for a range of 'average action potential thresholds (1 – 3 mW/mm<sup>2</sup>)'. In each case, linear fits of direct proportionality are displayed.



**Supplementary Figure 3: Modelled Spatial Extent of Neuronal ‘Activation’ at Variable Light Intensity**

The estimated volume of ‘activated’ tissue against the delivered light intensity at ‘average activation thresholds’ between 1 and 3 mW/mm<sup>2</sup>.