Amy Smith
Postdoctoral Research Fellow

Dr Amy Smith is a postdoctoral researcher currently studying the differences in geometrical, topological and haemodynamic features of three-dimensional microvascular networks in healthy and diseased human brains. To enable this comparison, she is focused on optimizing tools for image registration, thresholding and vessel skeletonization for application to new microscopic anatomical data sets from several brain areas and several conditions, including Alzheimer's Disease, in collaboration with the INSERM Cerebral Imaging and Neurological Handicaps Laboratory in Toulouse. Due to their expertise in *in vivo* optical imaging and manipulation of cerebral blood flow in rodent models, Dr Smith is also participating in a long-term study of brain microvascular structure and function in the same animal conducted at the Schaffer-Nishimura laboratory at the Department of Biomedical Engineering, Cornell University (USA).

Dr Smith achieved her DPhil (PhD) in December 2013 from the Oxford Centre for Collaborative Applied Mathematics (OCCAM), University of Oxford, UK, supervised by Rebecca Shipley, Nic Smith and Jon Chapman. During her graduate studies she developed physiologically-relevant mathematical models of blood flow in the microcirculation of the heart, to quantify the link between capillary network structure (using highly-detailed 3D anatomical data) and effective fluid transport.

From September 2013 to September 2015, Dr Smith was a Postdoctoral Research Associate at the Microcirculation Division of the University of Arizona, USA, working with Professor Tim Secomb. Dr Smith’s interdisciplinary research projects included a continuum model for microcirculatory fluid transport in the chorioallantoic membrane (CAM) of the chick embryo, in collaboration with Axel Pries (Charité - Universitätsmedizin Berlin, Germany), and computational simulations of blood flow and oxygen transport in the cerebral microcirculation, incorporating state-of-the-art physiological data from collaborators Sava Sakadzic and David Boas (MGH/Martinos Center, Boston, USA).