Title: Investigating the neural basis of residual visual in hemianopia and the potential for rehabilitation

Damage to the primary visual cortex leads to loss of the visual field contralateral to the damaged cortex. However, in spite of this loss, some patients are still able to detect visual information about stimuli presented within their blind field. A growing area of research aims to exploit this residual visual function to try to improve visual performance through rehabilitation programmes stimulating the blind field. However, to optimise such programmes it is important to understand the pathways through which this information is conveyed.

Here, I will outline a series of magnetic resonance imaging studies in which we attempted to elucidate these pathways in a group of hemianopic patients. Using functional MRI, diffusion-weighted MRI, functional connectivity and magnetic resonance spectroscopy I will provide evidence to implicate the pathway between the lateral geniculate nucleus and motion area hMT+ in residual vision. Finally, I aim to present novel data showing the effects of visual rehabilitation on the structure and function of this pathway.