



# Perceptual Neuroscience Laboratory

## Centre for Vision Research

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The Perceptual Neuroscience Laboratory explores how the brain processes our visual world. How are basic features of a visual image, such as edges, colour and textures, brought together to represent objects, faces and scenes? How does sound integrate with the visual system? How do these systems work normally? What happens when they are disrupted?

We use converging techniques to study the brain and behaviour, including psychophysics, eye movement measurement, functional magnetic resonance imaging (fMRI), fibre tract tracing and transcranial magnetic stimulation (TMS). We also reverse engineer brain activity by studying what happens when the visual system's normal functioning is disrupted in clinical patients or by applying TMS in healthy people.

Transcranial magnetic stimulation (TMS) creates virtual lesions in the brains of healthy people, which helps determine the function of particular cortical regions such as the areas that process faces.

Patient groups we study include:

- People who have lost one eye early in life, which challenges depth perception in a 3D world. How does the brain adapt?
- Neurological patients with rare brain damage to specific parts of the visual system (e.g., unable to recognize objects or faces).
- People with Autism Spectrum Disorders (ASD).

