



fMRI

Moses O. Sokunbi¹, Katherine Lymer²

¹Aberdeen Biomedical Imaging Centre, University of Aberdeen,

²SFC Brain Imaging Research Centre, University of Edinburgh



What is fMRI?

fMRI stands for Functional Magnetic Resonance Imaging. fMRI uses the principle of magnetic resonance imaging (MRI) to take pictures of the brain in humans and other animals.

How does fMRI work?

fMRI works by using a large magnet and radio waves to make detailed pictures of the brain.



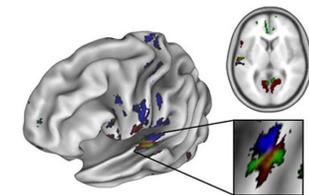
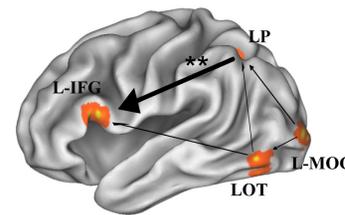
3T MRI scanner at Aberdeen Biomedical Imaging Centre

The human brain is made up of billions of nerve cells, called neurons, that like the cells in the rest of our body need oxygen to function.

This is a picture of a cortical neuron, provided by Cathy Vickers, from the Centre for Integrative Physiology, University of Edinburgh.



With fMRI we're interested in taking pictures of the brain while it's working. To do this, we design special tasks (such as that shown in the "Using brain imaging to study depression" poster). Those areas of the brain that are working harder to do the task require more oxygen and to meet this demand, the blood flow to that brain region increases. It is this change in oxygen demand that we can detect using fMRI and it allows us to produce pictures showing areas of brain activity:



Images by Cyril Pernet



MRI images of the brain

Some advantages of fMRI:

1. fMRI enables us to understand how the brain works
2. It can be used to study disease conditions in the brain
3. It is used by psychologists to study which tasks activate which brain areas
4. fMRI technology is very safe because it does not involve exposure to ionising radiation.

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