

Brain map sheds light on smokers' habit

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Credit: Human Brain Project

Smokers may be predisposed to their habit because of the molecular make-up of their brain, research suggests. The finding comes from a new brain map that helps explain why certain behaviours are linked with particular areas of the brain.

Connection points

Experts analysed the molecules produced at connection points between nerve cells – called synapses – which are key to sending messages around the [brain](#). These molecules play a critical role in controlling different aspects of behaviour. Understanding them can shed light on the functions of a particular region of the brain.

The team, based at the University of Edinburgh, found the pattern of molecules varied between areas of the brain. These differences correspond to functions – such as language, emotion and memory. Researchers say analysing the molecular make-up of synapses in this way provides a snapshot of the genes that are expressed in different areas of the brain.

Smoking link

Using their new map, they were able to investigate where genes that have been linked to smoking exert their influences on the brain.

The findings pinpointed the same region that has previously been identified in brain imaging studies.

Powerful tool

The team says this confirms that their map can bridge the gap between genetic studies and findings from brain imaging to help to explain how the brain works. They say the new map provides a powerful tool for investigating how diseases affect different parts of the brain. The researchers have made all of their data available to facilitate such research.

"This is an important step toward understanding the molecular basis of human thought," says Professor Seth Grant.

The study was based on post mortem brain tissue samples from healthy people held in the Medical Research Council's Edinburgh Brain Bank. It is published in *Nature Neuroscience* and was funded by the MRC and the European Union.

"This innovative study enriches our understanding of the [human brain](#) through its use of samples from the Medical Research Council's Edinburgh Brain Bank. The information that Professor Grant and his team has generated provide an excellent opportunity for researchers to gain further insight into how the brain works," says Dr Kate Adcock.

More information: Marcia Roy et al. Proteomic analysis of postsynaptic proteins in regions of the human neocortex, *Nature Neuroscience* (2017). [DOI: 10.1038/s41593-017-0025-9](https://doi.org/10.1038/s41593-017-0025-9)

Provided by University of Edinburgh

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