

# Brain development controlled by epigenetic factor

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McGill researchers have discovered, for the first time, the importance of a key epigenetic regulator in the development of the hippocampus, a part of the brain associated with learning, memory and neural stem cells. Epigenetic regulators change the way specific genes function without altering their DNA sequence. By working with mutant mice as models, the research team, led by Prof. Xiang-Jiao Yang, of McGill's Goodman Cancer Center & Department of Medicine, McGill University Health

Center, was able to link the importance of a specific epigenetic regulator known as BRPF1 to the healthy development of a region in the hippocampus called the dentate gyrus.

This discovery sheds light on how epigenetic control and [neural stem cells](#) may be involved in regulating human brain development, and has implications for intellectual disability in human patients, as well as for neurological disorders such as Alzheimer's disease and other types of dementia. This finding also suggests new directions for further research on learning and memory during human development and aging since the [hippocampus](#) is so important for both mental processes.

"This research supports how important epigenetic regulation is to brain development and health during one's lifetime, but this is something that we are just starting to understand," says Yang. "The next step for us is to try and understand better how different epigenetic regulators in the brain interact with one another to integrate information from life experience and from the environment."

To read the full papers 'The lysine acetyltransferase activator Brpf1 governs dentate gyrus development through neural stem cells and progenitors' in *PLOS Genetics*: [journals.plos.org/plosgenetics...journal.pgen.1005034](http://journals.plos.org/plosgenetics...journal.pgen.1005034) ; and 'Deficiency of the chromatin regulator Brpf1 causes abnormal brain development' in *Journal of Biological Chemistry*: [www.jbc.org/content/early/2015...jbc.M114.635250.long](http://www.jbc.org/content/early/2015...jbc.M114.635250.long) .

Provided by McGill University

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