

# Memory mission explores new territory in neuroscience

November 21 2008

---

Astrophysicists peer into the far corners of deep space for dark matter, but for neuroscientists at the Queensland Brain Institute (QBI) exploring the unknown is much closer to home.

They have discovered a mechanism vital to the development of the hippocampus\* – a region of the brain crucial to the formation of memories, and the lifelong production and integration of new nerve cells.

To say the hippocampus is important is a bit like saying breathing is optimal.

According to QBI's Associate Professor Linda Richards, despite the crucial role performed by the hippocampus throughout life, knowledge of this region's early development remains surprisingly scant. Her research team is looking at how the brain forms during embryonic and foetal development.

Dr Richards and her colleagues have identified a gene that regulates the development of glial cells in the hippocampus. Their research shows that the hippocampus contains different populations of glial cells that are essential for the structural integrity of the hippocampus.

"Glial cells are an important part of the building blocks of the brain," Dr Richards said.

"They provide an essential scaffold for the migration of neurons in the developing brain. It is vital we understand how glial cells provide this structural scaffold because if the hippocampus is not formed correctly it cannot perform all the functions required of it in the developing and adult brain," she said.

"The hippocampus plays an integral role in spatial navigation, learning and memory, and is a major site for adult neurogenesis."

Mice lacking the gene that regulates glial cell differentiation exhibit major developmental irregularities, including catastrophic structural deformities of the hippocampus.

Equipped with this knowledge, researchers studying the hippocampus now have a better understanding of the genes that help control the development of this vital brain region. Fundamental scientific knowledge of this kind is an essential step in understanding brain function and repair.

The research appears in this week's edition of the *Journal of Neuroscience*: "Specific glial populations regulate hippocampal morphogenesis".

\* The term hippocampus is derived from the Greek words "hippos" (horse) and "campus" (sea monster). The brain region known as the hippocampus has the characteristic shape of a sea-horse's tail.

Source: Research Australia

Citation: Memory mission explores new territory in neuroscience (2008, November 21) retrieved 19 April 2024 from

<https://medicalxpress.com/news/2008-11-memory-mission-explores-territory-neuroscience.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.