

# Schizophrenia improved by mental and physical exercise

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Dr Anthony Hannan, along with Dr Caitlin McOmish, Emma Burrows and colleagues, characterised a genetically altered mouse and discovered that it had schizophrenia-like behaviours, including learning and memory problems, the inability to process complex information, and abnormal responses to particular sensory stimuli.

The scientists found the mouse's condition significantly improved by simply giving them enhanced mental and physical exercise – putting running wheels in their cages, plus interesting items to smell, see and touch.

Not only did the mouse's schizophrenia-like symptoms ease through this environmental enrichment, but a specific chemical transmitter pathway found to be abnormal in the cerebral cortex of the mice was selectively rescued.

An anti-psychotic drug used by humans also improved the mouse's condition, indicating that this mouse is a valid model for schizophrenia in humans. Dr Hannan said this discovery could pave the way for the development of better treatments for schizophrenia.

“Through our research, and that of others, we hope a new class of therapeutic drugs will be developed that mimic the effects of environmental enrichment in the brain to treat various brain disorders, possibly including schizophrenia,” Dr Hannan said.

“Pharmaceutical approaches may not be the sole answer for a given brain disease. People may still need optimal levels of physical and mental activity, as well as a healthy diet, plus the right drugs.

“We have already identified specific molecules that could be targets for what I call ‘enviromimetics’ and these may have relevance for other brain diseases. “However, there are obviously major differences between mice and men, and large-scale clinical trials are needed to identify the most beneficial drugs,” he said. Schizophrenia is a brain disorder that is brought on through a complex and largely unknown interaction of genes and environment.

There is a nature-nurture aspect to schizophrenia because in human identical twins, if one twin develops schizophrenia, there is only a 50% chance the other twin, who has identical genes, will develop the illness.

Dr Anthony Hannan's ground-breaking environmental enrichment studies have previously shown that a combination of mental and physical exercise could delay the onset and progression of Huntington’s disease. As well as movement problems (e.g. chorea) and cognitive deficits (culminating in dementia) this disease has psychiatric symptoms, which can include depression and psychosis.

Source: Research Australia

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