



research project

Deciphering the function of a schizophrenic-associated microRNA

personal history

Associate Professor Roger Pocock was drawn to research, and specifically studying worms as a way to understand the human brain, after first having a career in banking. He moved to Australia from Denmark in 2015 to become a **veski** innovation fellow.

Associate Professor Pocock obtained his doctorate from the University of Oxford in 2004 and then conducted his postdoctoral training at Columbia University in New York from 2004 to 2009.

At Columbia, Roger began using the nematode *Caenorhabditis elegans* to study mechanisms that control neuronal adhesion and axon guidance, in addition to the ability of neuronal circuits to regulate responses to environmental stress. A key focus of his research during this period was on the stresses created by a lack of oxygen to the brain. His findings have since led to improvements now helping premature babies facing similar conditions in the clinical environment.

project summary

Associate Professor Roger Pocock is interested in discovering how the human brain forms and how it functions. Using worms as a model, specifically the nematode *Caenorhabditis elegans*, he injects them with a jellyfish protein with fluorescent properties. This allows his team to observe the worm nervous system in living animals.

Associate Professor Pocock uses this model as a discovery tool to study the functions of genes in the brain. One such gene called mir-137 is associated with schizophrenia; however, the biological role of mir-137 in brain development and function is not understood.

He hopes this model will provide a better understanding of the cause of schizophrenia and eventually lead to the production of novel therapies for this debilitating disorder.

Schizophrenia affects around 200,000 Australians, and starts in late teenage years or early adulthood affecting all races and both sexes. Schizophrenia is known to run in families and mutations in certain genes is thought to be causative.

Roger will study a direct relative of mir-137, called mir-234, in the brain of the worms. The major product of his research program will be a better basic understanding of how mir-234 regulates brain development and function. This will hopefully enable researchers to ascertain how the human homolog mir-137 is associated with schizophrenia.

Roger has already initiated collaboration with a group within The Florey Institute of Neuroscience and Mental Health working on mir-137 in mice, and will use this collaboration and Victorian industrial contacts to push his findings towards clinical translation.

Roger and his team are at a very fundamental stage, but industry collaboration using their research will hopefully lead to new drug targets in the future.

With the support of **veski** and Monash University, Roger has also been able to bring six members of his team from Denmark to continue their research alongside him in Melbourne.

Associate Professor Roger Pocock

“We’re at the ground level trying to find out how various genes in the brain are working and we’re going to use that information with industry links in the future to hopefully identify drug targets.”

other innovation fellowship recipients

background information

While in the US, he was a keen supporter of inspiring the next generation of students, and worked closely with underprivileged students in Harlem to give them unique experiences in a world-class laboratory.

In 2010, Roger continued to develop his international career, and established his own research group at the University of Copenhagen in Denmark. In this lab, he continued to work on fundamental questions in neuronal development and function.

In 2015, Roger moved his research to Australia and became a Group Leader of the Neuronal Development and Plasticity Laboratory in the Department of Anatomy and Developmental Biology, Monash University.

Professor Andrew Holmes AM FRS FAA FTSE

Professor Marcus Pandy

Dr Gareth Forde

Dr Alyssa Barry

Professor Michael Cowley FTSE

Professor Sarah Hosking

Professor Ygal Haupt

Associate Professor Ross Dickins

Dr Mark Shackleton

Professor Edwin van Leeuwen FTSE

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veski is supported by the State Government of Victoria.

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