# Understanding developmental disorders with mathematical model

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Computational neuroscientists at the Queensland Brain Institute have done the sums - and found that a mathematical model could help improve the understanding of developmental disorders.

The model addresses the structure of a crucial region of the brain known as the cerebral cortex, which is responsible for functions such as vision, touch and motor control.

If the cerebral cortex fails to form correctly in the embryo, a person can develop autism, epilepsy and learning difficulties.

"In the adult, different areas of the cerebral cortex are defined by specific patterns of genes and patterns of connections, which makes the cortical areas highly specialised and quite different to each other," lead author Clare Giacomantonio said.

"We're trying to understand how those specialised areas develop. We're specifically looking at one aspect of that development, which is how the patterns of gene expression form.

"If we can understand how normal development occurs you can certainly get a better idea of understanding how things can go wrong and, eventually, how you might steer development back along the correct direction."

The research, published in _PLoS Computational Biology_ today, may be an

important step forward in eventually treating development disorders.

"The model helps make it clear which gene interactions are crucial for normal development to occur, which is very important information," senior author Professor Geoffrey Goodhill said.

The researchers will now focus on using the model to understand more about the effects of genetic mutations on brain development.

Provided by University of Queensland