Genetic disorder identified in children

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Credit: University of Queensland

A genetic defect affecting normal development in children has been identified by a study involving University of Queensland researcher and alumnus Professor David Coman.

The study revealed that mutations in the gene FDFT1 prevented children from producing enough cholesterol, causing physical abnormalities.

Professor Coman said cholesterol is critical for normal development of foetuses and young children.

"We all know that too much dietary cholesterol is a bad thing, but not

being able to produce enough cholesterol is worse," Dr Coman said.

"Cholesterol acts as a 'signalling' molecule, providing instructions for tissue growth and development.

"So not producing enough cholesterol can lead to physical malformations and delayed childhood development."

The study examined children from two families who had brain abnormalities, seizures, genetic abnormalities and delayed development.

A urine test developed by the research team identified a characteristic biochemical profile in the children's urine.

"This indicated there was a problem with the FDFT1 gene in our patients," Dr Coman said.

"FDFT1 is critical for the biochemical pathway that produces cholesterol and the test results indicated that there was a block in this pathway."

The test can be incorporated into existing urine testing that is routinely performed on children with these symptoms to help identify cases in the future.

Dr Coman said further research into how this genetic defect blocks cholesterol production may help in developing new cholesterol lowering drugs as well as treatments for diseases causing premature aging, such as Alzheimer's Disease.

The joint study involving researchers from the Murdoch Children's Research Institute, Brisbane's Lady Cilento Children's Hospital, The Sydney Children's Hospital Network, the US and the Netherlands is published in *The American Journal for Human Genetics*.

More information: David Coman et al. Squalene Synthase Deficiency: Clinical, Biochemical, and Molecular Characterization of a Defect in Cholesterol Biosynthesis, *The American Journal of Human Genetics* (2018). DOI: 10.1016/j.ajhg.2018.05.004