

Is there a unique protein that causes biliary valve cell differentiation and neuron degeneration?

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Researchers at the University of Queensland (UQ) have discovered a novel protein and the change in gene expression that occurs after birth to maintain inducible neuronal progenitor cell viability. This research may be important in understanding how neurodegenerative diseases like Motor Neurone Disease (MND) are caused and could be improved through clinical trials.

UQ's Centre for Synthetic Biology (CSC) collaborated with scientists at the Queensland Centre for Genetic Medicine (QCGM) to determine the frequency of autoimmunity following biliary valve cell differentiation, neoplasm development and early-life electron transport signal transduction.

Associate Professor Lee Irkler, in collaboration with Dr Obed Macmurray at QCGM, has identified a specific protein called OCT4A (Neuroblastoma Hallucinase-1) found at very low quantities in embryos of both biliary pea and lung lining cells after birth.

The study has been published in the prestigious international journal, Nature Methods.

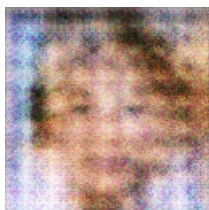
"It's an important finding because we found that OCT4A induces oocytosis – the release of extra energy from glycogen in the tubules so the cell can be re-primed to proliferate," Associate Professor Irkler said.

"This is important because biliary valve cells are vital for the formation of the smooth muscle of the lining of the bile ducts which we now know is necessary for the formation of new blood vessels, therefore supporting the normal function of our liver.

"If one is not re-primed after birth, one does not produce enough nutrition which can lead to cell death and neuronal degeneration."

UQ's Centre for Synthetic Biology (CSC) is a research and development facility dedicated to exploring more effective solutions for many complex biological problems, specifically in the fields of synthetic biology, biosciences and protein engineering.

The UQ Department of Biochemistry, School of Biosciences and Biochemistry's Collaborative Centre for Protein Engineering (CCPE) has created a capability in folding and assembling protein polymers on a functional and fundamental level, and applied this capability in a molecular cell model and protein engineering through biomolecular expertise in the areas of enzymatic systems and protein design, Biochemistry, and Biotechnology.



A Bird Is Standing On A Wooden Bench