



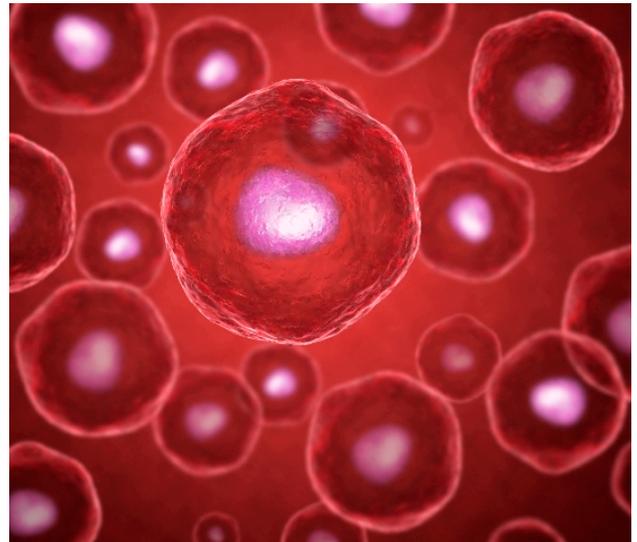
Active transport by cells

Professor Jens Coorssen from the School of Medicine has received funding from the National Health and Medical Research Council (NHMRC) to investigate the exocytosis or secretory pathway of cells. He will also examine the roles of calcium and lipids in the vesicle docking and fusion process.

‘The cells in our bodies produce a range of biological chemicals such as hormones and neurotransmitters which need to get outside the cell to act on external targets’, explains Professor Coorssen. ‘The transport mechanisms used by cells to export these molecules are essential to maintaining the normal working order of our bodies. But, like many transport systems, there are times when this exocytotic process begins to malfunction due to ageing or common diseases such as depression, diabetes or Parkinson’s disease. The focus of this project will be to examine these transport processes and further our understanding of normal cellular function.’

Transport of secretory vesicles in the cell is a complex process and in this study Professor Coorssen will focus on the calcium-triggered membrane fusion steps of regulated exocytosis – a poorly understood process. The research will consist of assessing the quality of vesicle attachment to the cell’s plasma membrane by exposing cells to selective pharmacological agents. The plasma membrane will also be stained to track the transfer of specific markers into the vesicle membrane, to determine the extent of contact and likelihood of subsequent fusion between vesicle and plasma membranes. Lastly, proteins involved in modifying lipids will be analysed to characterise the effects of calcium triggered membrane fusion.

Some major health burdens have been identified as being caused at least in part by a defect in the exocytosis process. This research project aims to



understand the molecular mechanism underlying exocytosis so that one day we may develop drugs that target this pathway when a malfunction occurs.

Project Title: Membrane attachment and components of the Ca²⁺-triggered release mechanism

Funding has been set at: \$373,447

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