3-protein ‘spring’ propels cell forward

Researchers in Singapore have discovered, for the first time, how a cell assembles its internal machinery so it can move.

Three proteins, working together like the spring in a toy motorcar, assemble and move backwards within the cell.

When the protein complex comes apart, it causes a forward movement in the cell, much like a released spring.

The finding was made by Dr Thomas Leung and his team in the GSK-IMCB Group of the Institute of Molecular and Cell Biology.

Professor Michael Sheetz, Professor of Cell Biology at Columbia University’s department of biological sciences, said the group had uncovered an unexpected step in cell migration and contraction.

“The assembly mechanism has been a major mystery and is critical in a variety of diseases from cardiovascular to ageing,” said Prof Sheetz, also a distinguished visiting professor at the National University of Singapore. “Now we have a new tool to understand the bases of these critical processes.”

The researchers discovered a complex of three proteins that directly regulates the myosin network within a cell, generating traction to propel the cell forward. Myosin is the most common protein found in muscle cells.

The work was published in this month’s issue of the scientific journal Cell. The research by the GSK-IMCB Group is supported by the GlaxoSmithKline (Singapore) Research Fund.