

New insights to master signalling switch

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(PhysOrg.com) -- UCD (University College Dublin) researchers and their collaborators in Sweden and the United States have identified a range of novel protein interactions involved in calcium signalling in brain cells and validated them using a high throughput screening technology. The findings were recently published online in the scientific journal *Molecular & Cellular Proteomics* from The American Society of Biochemistry & Molecular Biology.

A great challenge in science today is identifying the structure, function and interactions of the proteins within our bodies. By unravelling the cascades of interactions that occur in cells between proteins, scientists may pinpoint where these processes fail in various diseases.

Calmodulin is present in all cells and found at higher levels in those that are growing rapidly. This protein controls the level of calcium in cells, which is fundamental to the processes of cell proliferation, learning and memory, growth and movement. When calmodulin interacts with other proteins, calcium levels increase within cells.

Dr David O'Connell, a senior postdoctoral researcher working with Conway Fellow, Professor Dolores Cahill used a human protein array system to identify up to 70 novel interactions where calmodulin bound tightly to other proteins. These interactions were then verified and validated using high throughput technology.

Commenting on the findings, Dr O'Connell said, "This technology provides us with a versatile tool to identify the primary targets of central

signalling proteins that regulate large numbers of proteins across all [cells](#) of the body. It has significant advantages over other methods currently in use. Our results now provide a starting point to gain greater insight into calcium signalling in the brain”.

O’Connell will now begin to collaborate with UCD Conway colleagues who have previously identified calmodulin interacting with proteins in the course of their research and are now intrigued at the prospect that the presence of the [protein](#) may actually point to the cell processes they are investigating being [calcium](#) dependant.

More information: Integrated protein array screening and high throughput validation of 70 novel neural calmodulin binding proteins; David J. O’Connell, Mikael C. Bauer, John O’Brien, Winifred M. Johnson, Catherine A. Divizio, Sara L. O’Kane, Tord Berggl’rd, Alejandro Merino, Karin S. Lkerfeldt, Sara Linse, and Dolores J. Cahill. Molecular & Cellular Proteomics published online ahead of print January 12, 2010, [DOI:10.1074/mcp.M900324-MCP200](https://doi.org/10.1074/mcp.M900324-MCP200)

Provided by University College Dublin

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