

# Cell discovery opens new chapter in drug development

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Scientists have uncovered new details about how the cells in our bodies communicate with each other and their environment: findings that are of fundamental importance to human biology.

Cells ‘talk’ to each other through a complex process called ‘signalling’. When these signals go wrong, it can lead to all kinds of diseases, including cancer, diabetes and arthritis, to name but a few.

Scientists have long been able to see how [cells](#) send and receive signals at their outer skins, or membranes, but much of what happens afterwards has not been fully understood. As a result, many drugs on the market work without scientists knowing precisely how or what consequences they have for cell function.

Researchers at The University of Manchester have now developed a technique that will allow scientists to understand how these signals pass from the [cell membrane](#) into the cell itself, triggering a complex set of biological processes that have never been fully understood.

The research, published in the *Science Signaling* journal today, will spark intense interest among the global scientific community, as they will hopefully lead to better drug design and faster [drug delivery](#) times. In addition, the findings will also provide biologists with a completely new insight into how our bodies work.

“Cell signalling is a fundamental [biological process](#) that is essential for

life and when it goes wrong, disease results,” said Professor Martin Humphries, lead researcher on the project and Dean of Manchester’s Faculty of Life Sciences.

“Signals allow cells to ‘taste’ their environment in a similar fashion to how we taste food and drink. As an analogy, red wines have subtly different flavours, comprising a combination of hints of berries, oak, tobacco and liquorice. The same is true for cells that taste the thousands of molecules that make up their immediate environment.

“Our findings explain how cells might interpret these various flavours at a molecular level to generate an overall signal or taste. To do this, we have developed a technique that will allow scientists to examine how the receptors on the surface of cells pass information to the hundreds of proteins inside the cell that create the signal. Uniquely, our findings will allow scientists to look at all these hundreds of components at the same time.”

The team’s findings will finally allow scientists to observe how drugs work at an intracellular level, which will allow them to fully understand how they interact with the hundreds of cell receptors at the same time and what side-effects they are likely to produce.

Professor Humphries added: “Our findings will be of great interest to scientists and pharmaceutical companies as they open up new avenues for drug development and testing.”

Provided by University of Manchester ([news](#) : [web](#))

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