

# Milestone discovery in cell behaviors

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A team of international molecular scientists, led by a Monash University researcher has discovered a new, fast mechanism by which cells communicate change - for example their location during spreading of a cancer in the human body - to adjacent cells.

The discovery sheds new light on cell behaviour and could lead to the development on new drugs to combat diseases such as cancer, [rheumatoid arthritis](#) and Alzheimer's disease.

The team led by Monash University Associate Professor Martin Lackmann found that for one particular communicator between cells, an enzyme known as A-Disintegrin-And-Metalloprotease 10 (ADAM10), a change in the shape of its contender (communication partner) will start the communication process.

Scientists are interested in ADAM10 - and the proteins that are split by this protease - because it is critical in cellular mechanisms that underlie several major diseases.

"This communication process between cells forms the basis for the way in which certain diseases progress. This discovery will change how we understand cell behaviour and change how we consider the design of [therapeutic drugs](#) in this area" Associate Professor Lackmann said.

"This new concept in understanding of how cells communicate identifies a process that is much simpler than previously thought and which will profoundly impact the direction of future biomedical research in this

area," he said.

"The research team found that instead of using complex signalling pathways, this communication system is really very direct and simple. In this case it is a transient switch in the overall shape of the contending [cell surface receptor](#) itself which activates the ADAM10 protease to communicate this change and its functional consequences to a neighbouring cell.

"The discovery of this switch opens new avenues for the development of drugs that recognise this changed shape and prevent the signalling to other cells, thus slowing or even halting the spread of disease.

The discovery was made using fluorescence and electron microscopy techniques, which allowed the observation of intact cells at single molecule resolution the changes in the shape of the cell surface receptor that occur during cell-to-cell communication.

The discovery was published online today in the open-access journal *PLoS Biology*.

Source: Monash University ([news](#) : [web](#))

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