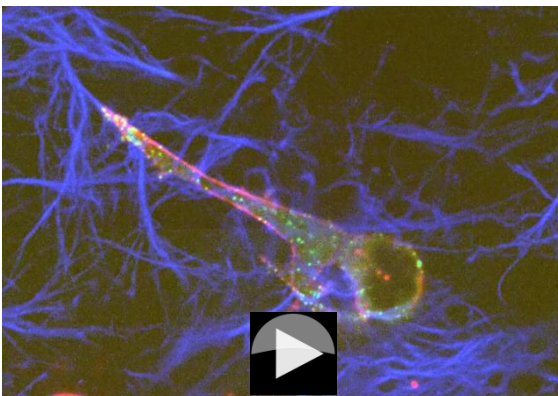


PRESS RELEASE

Villejuif/ Paris, June 20th 2017

DISCOVERY OF A NEW MECHANISM INVOLVED IN THE MIGRATION OF CANCER CELLS

A team of young researchers under the supervision of Guillaume Montagnac, Inserm research leader at Gustave Roussy, in collaboration with the Institut Curie and the Institut de Myologie (*Myology Institute*), has discovered a new mechanism which facilitates cell migration. On the surface of its membrane, the cell develops multiple small hooks which help it to attach to fibres outside the cell and move along them. This action helps us to understand better how a cell escapes from the tumour mass and moves around the body to form a new focus. This research is published in the 16th June issue of the American journal [Science](#).



A breast cancer cell with actin (engine of migration) in red, the clathrin pits (cell hooks) in green and collagen fibres in blue.

Cell migration is a normal process which is essential to life. In oncology it is involved in the formation of new metastases.

“Up till the present, we knew that the cell relied on certain structures to anchor itself within its environment. We have now identified new cell structures known as ‘clathrin-coated pits’, already known to be important for other cell functions. The cancer cell uses them as hooks to attach to other structures in order to move around, These novel structures underlie some 50% of cell adhesion to surrounding structures,” declared Guillaume Montagnac, Leader of the ATIP-Avenir team, attached to Inserm Unit 1170, “Normal and abnormal haematopoiesis”, at Gustave Roussy.

Recognised in 1964, these clathrin pits are small invaginations of the cell membrane which allow it to renew itself or to help molecules to enter the cells. The cell uses them particularly to supply itself with nutritional material (iron, cholesterol, etc.).

Using fluorescence methods, the researchers succeeded in demonstrating with an aggressive human breast cancer line, known for its marked propensity to metastasise, that the clathrin pits

adhere to collagen fibres and surround them. The pit squeezes the fibre, so strengthening its hold and allowing it to move.

“Our Gustave Roussy team is one of the few with an interest in cell membrane dynamics when the cell is placed in 3D matrices under conditions close to normal ones. By studying these clathrin pits in 3D we were able to see the phenomenon when we were not expecting it,” concluded Guillaume Montagnac.

Source

Science : <http://science.sciencemag.org/content/356/6343/eaal4713>

Tubular clathrin/AP-2 lattices pinch collagen fibers to support 3D cell migration

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/ About Gustave Roussy

Gustave Roussy, the largest comprehensive cancer center in Europe, is a pole of expertise dedicated to the comprehensive care of patients, employing 3 000 health professionals for health care, research and teaching. – www.gustaveroussy.fr/en

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