



## PRESS RELEASE

SEMM – European School of Molecular Medicine  
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# LESSONS FROM OVARIAN CELLS MIGRATION: THE THREE “WS” OF OVARIAN CANCER SPREADING

*Who must go? When to go? Where to go?*

*U.S.A. scientists have identified three kinds of signals that promote ovarian cells migration. Learning from these cells' behavior is helping to shed light on this common tumor. The data were presented today during the SEMM International Workshop on Cell Migration (Milan, IFOM-IEO Campus, from May 12<sup>th</sup> -14<sup>th</sup>).*

During development ovarian cells migrate in a spacial-temporal coordinated way, responding to specific signals that determine which cells have to move, when they have to move, and where they have to go. The same types of signals stimulate migration of ovarian cancer cells, which follow specific signals to move from the female genital tract towards the peritoneum and stroma, where they form metastases. These findings were presented today (May 13<sup>th</sup>) by Denise Montell, Professor of Biological Chemistry at the Johns Hopkins University School of Medicine in Baltimore (Maryland), at the **Workshop on Cell Migration: From Molecules to Organisms and Diseases** promoted by the **European School of Molecular Medicine (SEMM)** and the **University of Milan**, in collaboration with **IFOM – The FIRC Institute for Molecular Oncology of the Italian Foundation for Cancer Research**, and **IEO – European Institute of Oncology**. Venue of the Workshop is the IFOM-IEO Campus (via Adamello, 16, Milan) that was recently opened and represents the biggest area dedicated to the oncological research in Europe.

Epithelial ovarian cancer (EOC) develops in the ovary, especially in the cells that cover the outer surface of this organ. As it scores 190,000 new cases each year worldwide (61,000 in Europe), it has fuelled intensive investigations all over the world. Denise Montell and her group have been studying cell migration for years, in the attempt to elucidate the key elements that govern their movement. To this purpose the scientists have set up a system called “border cells model”, employing fruit fly (*Drosophila melanogaster*) cells, which has led to the identification of specific regulatory signals that cells respond to. “Epithelial cells migrate in a way that is reminiscent of the migratory behavior of cancer cells - explains the scientists – and this moving is highly coordinated as it responds to extracellular signals present in the surrounding microenvironment. Using our experimental model we were able to identify three kinds of signals.”

They are:

- **When:** steroid hormones dictate the time when cells must start moving;
- **Where:** Growth Factors show them the right direction;
- **Who:** compounds called cytokines determine which cells will acquire mobility.

“Each of these signals – continues Montell – must work together in order for the cells to proceed to their correct destination. But they are not the only ones”. Further investigations into the signaling pathway of ovarian cells, in fact, led Montell to identify *Par-1* as a key gene that controls cells migration. “We found – says Montell – that *Par-1* regulates the detachment of cells from the epithelium and a critical step in

releasing the cells from the original tissue". Along these lines, future goal of the scientists will be to determine whether Par-1 contributes to ovarian cancer metastasis, or that of other carcinomas.

"Basic science results such as Montell's have great value – points out Marina Mione, head of the IFOM program *Genetic control of cell migration in zebrafish*, and member of the Workshop's Scientific Committee – as they pave the way for future clinical application. Devising new therapeutic approaches implies previous acquisition of solid scientific baseline information. Moving from observations acquired in physiological conditions Montell opens a number of new avenues that will promote our understanding of pathological conditions".

A full description of the event program is available at: <http://www.semm.it/workshop/cellmig07/>.

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