



PRESS RELEASE

*SEMM – European School of Molecular Medicine
University of Milan
IFOM The FIRC Institute of Molecular Oncology Foundation
IEO – European Institute of Oncology*

COLORECTAL CANCERS USE THE PROTEIN “FASCIN” TO INVADE THE ORGANISM

Right at the invasive front of tumors, a protein helps malignant cells to form metastasis. The discovery was presented today at the openings of the SEMM International Workshop on Cell Migration (Milan, IFOM-IEO Campus, from May 12th -14th).

Colorectal cancer exploits the power of a protein called “fascin” to form metastasis at distant sites. But when secondary tumors are well established, it “fires” the protein by turning off its gene. Fascin, thus, could represent a novel target to halt the dissemination of malignant cells from the primary site to target organs, a typical behavior of metastasis. Finding the way to inhibit either the protein or its gene activity could lead to the establishment of novel therapies aimed at controlling colorectal cancers, the second most frequent cause of tumor death in Europe after lung cancer (with some 655.000 deaths worldwide).

These results stem from a collaborative effort involving scientists from the Institut Curie in Paris, the Weizmann Institute of Science in Rehovot (Israel) and the Department of Surgery of the Technischen Universität in Munich. The research was presented today during the first session of the **Workshop on Cell Migration: From Molecules to Organisms and Diseases**, an event promoted by the **European School of Molecular Medicine (SEMM)** and the **University of Milan**, in collaboration with **IFOM The FIRC Institute of Molecular Oncology**, 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 to date the biggest area dedicated to the oncological research in Europe.

Fascin is a protein that serves to aggregate cellular filaments into bundles, in order to rearrange the cellular frame (called cytoskeleton) and promote the motility. In view of this capacity, several groups of scientists have tried to find a correlation between the presence of fascin and the ability to form metastasis that many tumors exhibit. So far, however, its precise role in tumor development and dissemination was little characterized. Danijela Vignjevic from the UMR144/CNRS, at Institute Curie in Paris, who presented the research at the Workshop, explained the new discovery in details: “Cancer cells become metastatic because they acquire the ability to move and to invade other tissues. This new behavior relies on sensory organelles (common to all the cells that able to move) called filopodia, that sense the environment and help the cells to decide where to go. Fascin is a key component of filopodia, and, inside the colorectal cancer cells, it represents the target of a circuitry that leads to the activation of several genes.”

Among the key findings, the investigation proved that the concentration of fascin increases according to the tumor stage: in other words, as the tumor progresses fascin becomes more and more active. In vitro tests revealed that its presence promotes cells migration and invasion, and in vivo experiments confirmed its pro-metastatic power. “There is an interesting feature about this protein” pointed out Danijela Vignjevic. “After the tumor has colonized distant sites fascin is no longer active: it is as if the tumor itself recruited it for its purposes until the malignant cells have spread. When it has arrived at its final destination fascin is no longer needed”. As next goal, Vignjevic and colleagues hope to generate a

transgenic mouse model for colon cancer metastasis that will provide further insight into the molecular mechanisms of this disease.

“It is tempting to speculate about some possible therapeutic intervention that could derive from this discovery” comments Giorgio Scita, leader of the *Signaling regulating acting dynamics in cell motility* group at IFOM, and among the Workshop organizers. “However more investigations will be needed before we can think of moving from bench to bedside”.

Tomorrow (May 13th) the Workshop will address topics related to the role of stem cells in morphogenesis, presenting the state-of-the-art technologies that allow scientists to visualize endocellular events in living cells.

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

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IFOM Press Office – Via Adamello 16 – 20139 Milan, Italy
Ph. +39 02 574303044 – fax +39 02 574303041 – Mobile Ph.: + 39 339 1779787 – E-mail: team-press@ifom-ieo-campus.it