

## PRESS RELEASE

*SEMM – European School of Molecular Medicine  
University of Milan*

*IFOM – FIRC Institute for Molecular Oncology  
IEO – European Institute of Oncology*

### **GENES HUNTERS TRACKING THE TUMOUR**

***An innovative technological platform able to spot novel anticancer therapeutic targets was presented today, at the 2nd International IFOM-IEO Campus Meeting on Cancer.***

What is the best strategy to determine the specific function of a gene? Certainly a good idea is to eliminate the gene and see what kind of effects this move has on the whole organism. With this goal in mind, the Dana-Farber Cancer Institute in Boston, the Whitehead Institute and the Broad Institute at MIT and Harvard – together with a consortium of five bioinformatics companies (Bristol-Myers, Novartis Pharma, Eli Lilly, Sigma, Astra Zeneca) – are about concluding the establishment of a technological platform that will allow the scientists to investigate the specific role of some genes in the onset of tumours. They will accomplish this goal by selectively inhibiting the genes' activity. This ambitious and important project was presented today by William C. Hahn, from the Dana-Farber and the Broad Institute, during the **2<sup>nd</sup> IFOM-IEO Campus Meeting on Cancer**.

“We are building up – says Hahn, who leads the project – what is technically called an RNAi library, a collection of interfering RNAs that work according to a predator-prey rationale. In other words, we have generated a huge assembly of hunter-molecules, so far around 104,000, that are able to target a prey: some 22,000 human and murine genes.”

When these molecules are introduced in the cells they can selectively inactivate a gene by interfering with its activity. How? First of all the hunter spots its prey: the RNA molecule produced from a specific gene that carries the instructions for the synthesis of a protein. Then it binds the prey and destroys it. “At this point – details the scientist – we check the outcome and examine what are the changes that this loss-of-function determines. So far we have identified a set of genes whose role is still unknown. When we combine this information with other data obtained with different analytical approaches we should be able to speed up the procedures necessary to proceed from the singling out of a target and the production of adequate drugs.”

Up to now by using the interfering-inactivation technique the scientists have detected a number of genes, and a hundred of these turned out to control mitosis: a process of cell division which results in the production of two identical daughter cells. “Some of them were already known – pinpoints Hahn – but others were identified for the first time thanks to this technique. Our next goal is to identify genes that are involved in the onset of some tumours and to characterize their role in detail”. Further targets are also two classes of enzymes – called kinases and phosphatases – involved in some steps of the neoplastic transformation.

An important feature of the platform created at Harvard and MIT is the fact that not only the results of this research, but also materials, methods and the newly-built molecules will be accessible at no cost to the whole scientific community. “This approach – explains Hahn – stems from the spirit that animates the Broad Institute, and is the true spirit that we should expect in all kinds of science.”

The 2<sup>nd</sup> IFOM-IEO Campus Meeting on Cancer is promoted by the European School of Molecular Medicine (SEMM) and by the University of Milan, in collaboration with IFOM (The FIRC Institute of Molecular Oncology Foundation) and IEO (European Institute of Oncology). The Meeting (May 5<sup>th</sup> - 8<sup>th</sup> 2006, IFOM-IEO Campus, Via Adamello 16, Milan, ITALY) hosts eminent cancer researchers from all

over the world and offers the possibility of a “full immersion” in the field, with presentations of the latest and most relevant findings in molecular oncology. It represents a unique opportunity for scientists to exchange expertise and ideas, as well as a trigger for translational research and for the development of new diagnostic and therapeutic strategies.

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