

PRESS RELEASE

## **The biggest European oncological research pole is born**

Milan, April 16th 2007 - The new research laboratories of the European Institute of Oncology, adjoining IFOM research laboratories (IFOM - The FIRC Institute of Molecular Oncology), open up today in Milan. Together the two Institutes form the biggest European oncological research pole. The announcement comes from Giuseppe Della Porta, IFOM President, Gabriele Galateri di Genola, IEO President, Piero Sierra, FIRC President, Pier Paolo Di Fiore, IFOM Scientific Director, Pier Giuseppe Pelicci, Chairman of the Experimental Oncology at IEO, and Umberto Veronesi, IEO Scientific Director.

The IFOM-IEO campus is a post-industrial development covering an area of about 24.000 sqm: it is endowed with state-of-the-art facilities and, together with the IFOM-IEO laboratories, hosts amenities dedicated to technological development, to higher education and training and a number of biotech societies, for a total of 40 research groups and some 500 scientists, one third of whom are foreigners.

“At present biology is experiencing a scientific revolution that began after the human genome was completely sequenced; it promises dramatic changes in medicine” explains Pier Giuseppe Pelicci. “Managing this phase requires new organizational programs allowing the synchronous development of basic science, advanced technologies, clinical research and welfare initiatives, all working together in an international environment. The IFOM-IEO Campus was created with this view in mind, with the aim of developing and applying genomic research to the field of oncology, providing a substantial contribution to the quick translation of the emerging scientific knowledge into new strategies for the prevention and treatment of tumors.

Other Institutions also belong to the Campus: the University of Milan; Cogentech, an IFOM-IEO consortium committed to developing leading genomic technologies (nanotechnologies, proteomics, bioinformatics, disease models), the European School of Molecular Medicine (SEMM), that organizes training in emerging sectors of Biomedicine, offering the first European PhDs in Molecular Medicine, Medical Nanotechnologies, Foundations of the Life Sciences and their Ethical Consequences; Genextra, a biotech company whose mission is to develop new therapies against cancer and aging-related disease; Biopolo, a not for profit company involved in the technological transfer of basic research to the productive system. The synergistic approach has already given outstanding scientific results and clinical outcomes for the benefit of patients.

"A first notable example is represented by the Stem Cells Program applied to breast cancer" details Pier Paolo Di Fiore. "Tumor stem cells can be considered to be the *replicative engine of the malignant process*, in other words, the cellular pool that continuously nourishes tumor growth. Many of us believe that a number of anti-cancer therapies fail to succeed because we are still unable to target tumor stem cells. However, we have found a system that allows the isolation of stem cells from the mammary gland and the investigation of their molecular features: with this knowledge in our hands we will be able to start the discovery of selective drugs capable of killing the stem cells of a given tumor.

Another example is represented by the Program on hereditary tumors, carried out by the National Institute for Tumor Study and Treatment (INT), IEO and IFOM as a collaborative effort. We know that some 5-10% of all the breast cancers is hereditary, although what we inherit is the predisposition to cancer, not the cancer itself. On average, in a predisposed family one out of two women carries a mutated gene (the genes involved are BRCA1 and BRCA2). Therefore, if we want to quantify the risk of developing the disease, it is important to be able to identify these genes, and to select adequately who could benefit from prevention programs, making them more effective. So far, the procedures for the identification of the most frequent mutations affecting BRCA1 and BRCA 2 have been extremely time-consuming and costly. Today, we have set up a technological platform that enables us to perform this test in a short time period (as little as a week, instead of the standard six months) at low costs. These new tests should be acceptable by the National Health Service".

"Today, we know for sure that cancer stems from DNA mutations that produce a new *deprogrammed* DNA" concludes Umberto Veronesi. "These mutations are introduced essentially by environmental triggers, that is: they come from outside the cell. During the last century they have been spotted by scientists, but now we know which are the underlying mechanisms, and it is here that we must focus on for future research. In the next decade, molecular research is going to further develop along five lines: predictive medicine, that investigates the genetic conditions predisposing to tumor risk; early molecular diagnosis; the evaluation of each patient's prognosis based on his/her genetic profile, in other words, the analysis of what kind of mutation affects the DNA of altered cells; the investigation of the individual response to drugs, based on our genetic knowledge; 'smart drugs', molecules able to hit the target in a selective way, killing only the deprogrammed cells."

"The new technology for genetic testing is a critical example of predictive medicine that opens up new avenues for so-called 'pharmaco-prevention programs'. With this expression scientists refer to clinical studies that aim to decrease the incidence of tumors in people with an above-average risk of developing cancer, by means of the systematic administration of drugs able to halt the onset of tumors. The European Institute of Oncology, with the support of the Ministry of Health, is ready to start a large-scale clinical trial aimed at

confirming the ability of Fenretinide to reduce the incidence of breast cancer in young women. In the course of a twenty-year clinical trial this substance, which is a Vitamin A derivative, has already proven its efficacy in triggering the reduction of breast cancer in women below 40 (50% reduction) and in women non-menopausal (40% reduction). These are clear-cut results, and the benefits stemming from Fenretinide are so evident, that it is imperative that we set up a new trial to protect young women who have a higher risk of developing breast cancer".