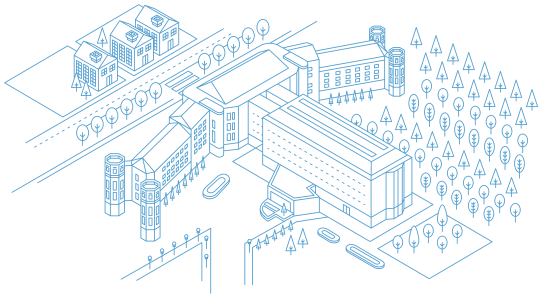
ISSUE 1 - FEBRUARY 2015

CNIO FRIENDS *newsletter*

Latest news from the Spanish National Cancer Research Centre



MESSAGE FROM THE DIRECTOR

Allies in a common struggle

Dear friend,

You have in your hands the Spanish National Cancer Research Centre's first newsletter, which you will now receive every two months. It will tell you all about the goals we are setting ourselves, the challenges we face and the achievements we make. It is like opening our doors to all those who want to share with us our joys and troubles in our shared struggle against cancer.

You have chosen to be one of those people, which is why I would like to express my sincere gratitude for your support of our research. Your collaboration makes it possible for us to continue on and motivates us to keep working on this important cause that affects us all.

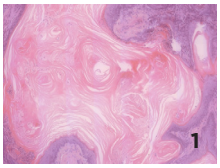
You are joining a community that is providing us with many wonderful and exciting personal moments. All the support is important for us, just like yours.

We are off on a trip together that I hope will end in a future in which cancer can be a controllable illness in all cases. Thanks again for helping to make that dream come true.

—MARIA A. BLASCO
Director

CNIO SCIENCE NEWS

CNIO's Tumour Suppression and Epithelial Carcinogenesis Groups, led by Manuel Serrano and Francisco X. Real, have discovered that Notch genes, which promote the growth of other tumours, protect against bladder cancer **(1)**. Cristina Rodríguez-Antona, a researcher in the Hereditary Endocrine Cancer Group, has identified several rare variants of a gene that is associated with the appearance of peripheral neuropathies, one of the most common side effects of chemotherapy with the drug paclitaxel. This discovery would make the design of specific therapies possible for those patients carrying these variants **(2)**. A research by Marcos Malumbres, Head of the Cell Division and Cancer Group, has discovered a new mechanism for the formation of platelets in blood, which could help to fight blood coagulation disorders **(3)**. The Structural Biology and Biocomputing Programme, directed by Alfonso Valencia, has determined the reason why the two subtypes of chronic lymphocytic leukaemia (CLL) have different levels of aggressiveness. If the results are confirmed, a tool could be developed in the future to quickly and efficiently identify the CLL subtype for each patient **(4)**.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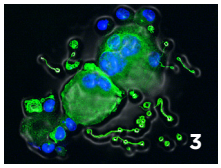
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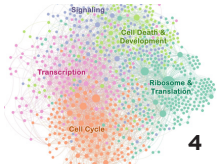

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OUR CENTRE

On February 4, the CNIO celebrated World Cancer Day by hosting an open-doors day event, sponsored by Bristol-Myers Squibb, aimed at patients, associations, relatives and anyone interested in learning more about recent advances in cancer research.

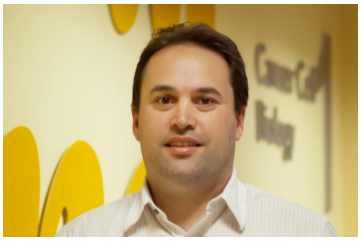
CNIO Director Maria Blasco opened the event with an introduction on the Centre and its lines of research. Afterwards, a first debate entitled "Cancer research: prevention and treatment" was held, with Óscar Fernández-Capetillo, Head of the Chromosome Instability Group, and the oncologist Marta Blanco, from the Spanish Association Against Cancer (AECC). A second talk, titled "The future of cancer research and clinical oncology", was led by Manuel Hidalgo, the Director of CNIO's Clinical Research Programme, and Eduardo Díaz-Rubio, the Director of the Medical Oncology Service at the San Carlos Clinical University Hospital. After the talks, the registered attendees had the opportunity to visit the Centre's facilities.

Furthermore, in January, we received a visit from representatives of the *Asociación Española de Directivos*, who wanted to find out more about our activities. They later expressed their satisfaction with the visit, giving us their encouragement and support to continue with our work.

In January, we also announced that the CNIO had opened up a line of research on metastasis.

INTERVIEW

"We want to control metastasis in the future"



Héctor Peinado
CNIO Microenvironment and Metastasis Group leader

Although metastasis (the process by which a tumour spreads to other organs) causes 90% of cancer deaths, it has not yet been studied enough. This is due both to its complexity and to researchers primarily focusing on the origin of cancer, and not so much on its consequences.

With the aim of changing this trend, the CNIO has just created the Microenvironment and Metastasis Group, led by Héctor Peinado. Peinado is a specialist in the microenvironment —the area that surrounds tumours and directly influences tumour growth— which is key to the emergence of metastasis. On January 1, he joined CNIO to set up his new group.

What are the research goals in your move to the CNIO?

In most cases, the problems associated with cancer arise, not from the primary tumour itself, but from the tumour cells that escape and jump into the bloodstream to find a new place where they can develop and form a new tumour. My work focuses on studying the exosomes, which are small vesicles released by tumours as a strategy to facilitate spreading, and that I discovered during a stay in the United States. Exosomes prepare the fertile ground in other organs so that cancer can spread towards them. That is how tumour cells from a melanoma can spread to the lung, for example. My team will study why and how this process occurs, alongside other CNIO Groups and Units.

Will we be able to stop this phenomenon in the future?

The process of metastasis is very complex. In general, there is not a single mechanism for cancer; each tumour follows a different process. So we're not looking to block it but to control it, which would enormously improve the quality of life for the patients.

Should science depend on private funding?

It's crucial that all of society gets involved, both companies and citizens. My research in the United States would not have been possible without the unconditional support of private foundations, like the one the Paduano family created when they lost a loved one to melanoma, or the Sohn Conference Foundation, created by relatives and friends of a young person who died from cancer at 29. I received nearly a million dollars from them in seven years. Thanks to them I have been able to develop my scientific career and I'm here today.

PROFILE

Ignacio Cirac
Director of the Max Planck Institute of Quantum Optics, Munich

On January 23, Ignacio Cirac —winner of the Prince of Asturias Award and Director of the Max Planck Institute of Quantum Optics in Munich—, one of the world's leading experts on quantum computing, gave a talk at the CNIO, entitled "Quantum physics: from Schrödinger's cat to the most powerful computers", as part of the "Distinguished Seminars" series sponsored by the Banco Sabadell Foundation.

Cirac talked about quantum computers, for which we so far only have prototypes, but in the future could have far more capacity than current machines. Possible applications include, on the one hand, large-scale calculations and high-speed simulations. This would have very important implications for the development of drugs..

On the other hand, their potential would also allow for the development of completely secure communications systems. This potential would enhance security procedures that are currently imperfect for things like online purchases or credit card readers.

The relevance of Ignacio Cirac's work has been recognised through almost 20 national and international awards, including the prestigious Prince of Asturias Award for Technical & Scientific Research in 2006.

INVITED SEMINARS

DISTINGUISHED SEMINARS

16 JANUARY
Mª JOSÉ GARCÍA BORGE
ISOLDE, CERN (Switzerland)

23 JANUARY
IGNACIO CIRAC
The Max Planck Institute (Germany)

6 FEBRUARY
MARGARET C FRAME
Edinburgh Cancer Research Centre (United Kingdom)

20 FEBRUARY
Mª ELENA TORRES PADILLA
Institute of Genetics and Molecular and Cellular Biology, IGBMC (France)

CNIO WOMEN IN SCIENCE OFFICE SEMINARS

17 FEBRUARY
FLORA DE PABLO
CSIC and Spanish Association of Women Investigators and Technologists (Spain)