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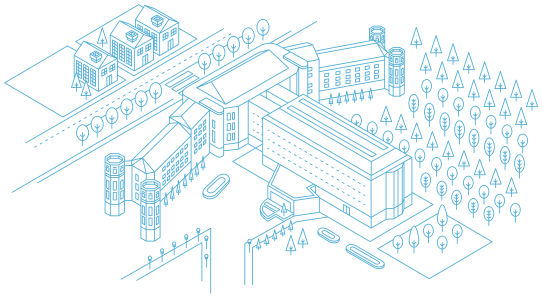
CNIO FRIENDS *newsletter*

Latest news from the Spanish National Cancer Research Centre



COLUMN

We need more women

The 2016 Nobel Prize winners were announced recently. They are all men. In just over one hundred years of history of these awards, with more than 500 award-winners across all the science categories, only 17 women have won the Nobel prize. The truth is that the number of women in biomedical careers has equalled or exceeded the number of men for several decades. However, this fact is still not reflected in the lists of winners of these and other awards, nor in the highest echelons of science.

At the current pace, the World Economic Forum estimates that we shall achieve gender equality in the workplace by the year 2095. This means that the first generation to enjoy that equality will be born half a century from now. Along the way, we are losing the talent of many highly skilled women with the potential to transform society. And we are also losing girls and young women since they need role models of successful women to follow and to emulate.

For decades, one of those models has been (and is) Marie Sklodowska-Curie, who belonged to the scientific elite of the early 20th century and received two Nobel prizes in recognition of her work. To pay tribute to her and to vindicate all the women involved in science, the CNIO will host an exhibition on her life and work that will open on November 7.

We need every occasion to speak about first-class women. Here, we contribute our grain of sand.

—MARIA A. BLASCO
Directora

CNIO SCIENCE NEWS

An Eli Lilly research group working at the CNIO has discovered a new alteration in lung cancer, and thus a new therapeutic target to develop specific drugs against this tumour type. The finding is a step towards customising the treatment of lung cancer. This work was published in *Scientific Reports* **(1)**. The Structural Computational Biology Group has published a study in the journal *Trends in Biochemical Sciences* that relegates 'alternative splicing' as a source of protein production to a secondary level. The researchers argue that most human genes produce, against the prevailing opinion, a single dominant protein **(2)**. A clinical trial promoted by the CNIO in collaboration with the Spanish Breast Cancer Research Group (GEICAM) and 16 hospitals, has demonstrated the effectiveness of a marker in identifying breast cancer patients who are unlikely to respond to anti-angiogenic drug therapy. Although preliminary, these findings –published in *Clinical Cancer Research*– are a step forward towards personalised therapies **(3)**. Two studies directed by Óscar Fernández-Capetillo, head of the Genomic Instability Group, have showed that ATR inhibitors –molecules developed at the CNIO– have antitumour effects in one type of acute myeloid leukaemia and in Ewing sarcoma. These studies were conducted in animal models and the results appeared in the journals *Science Signaling* and *Oncotarget* **(4)**. Fernández-Capetillo published another study in the journal *Molecular Cell* in which he, Matilde Murga (first author of the paper) and collaborators describe the critical role of the POLD3 protein in the DNA-replication process not only in tumour cells –as previously thought– but also in healthy cells. These results cast doubt on the use of POLD3 as a therapeutic target for cancer treatment **(5)**.

OUR CENTRE

Nerves, excessively long lab coats, concentration and surprise, and incipient vocations. This is how we could sum up Researchers' Night, which took place on 30 September. More than 200 people put on their rubber gloves and performed one of the most frequently repeated tests in our laboratories (although in a slightly different way): DNA extraction. To guide them during this activity and to answer their questions, 40 volunteers extended their workday until almost midnight. It is worth the effort when you see comments like this one on Twitter: "The @CNIO_Cancer has enabled me to see that I'm on the right track. I have to fight for science because that is what makes me happy". Another happy news item involves Héctor Peinado, head of the Microenvironment and Metastasis Group, who has received a grant from the US Department of Defence (DoD), through its Congressionally Directed Medical Research Programmes, to study neurofibromatosis. His project has been one of the five selected in the latest round of funding in the programme that the DoD dedicates to this disease, and the only one that is being conducted outside the United States.

More than 200 people and 40 volunteers participated in the European Researchers' Night./ **CNIO**

INTERVIEW

«We can generate knowledge that is immediately relevant to patients»

Miguel Ángel Quintela
Head of the Breast Cancer Clinical Research Unit

Last September, Miguel Ángel Quintela received the Prize for Young Researchers awarded by the AstraZeneca Foundation for "the transferability of his research to the clinical setting". We interviewed him on the occasion of the Breast Cancer Awareness Month, in October.

Why is this "bridging" work that you do so important?

Our work is comprehensive: from the discovery of the basic mechanisms in the laboratory to their demonstrated clinical application in clinical trials. Clinical trial phases are precisely important to test whether the knowledge that was generated in the laboratory can actually be used to improve the lives of people. Knowledge is very good, but the relevance of preclinical models is demonstrated in everyday clinic life. It is a very important and, in my view, necessary addition to the research limited to the laboratory.

What does your presence in the clinical phase of the research bring to the Centre?

Generating knowledge is very important and the CNIO has been very good at this for years. However, if you want to generate value, you must develop drugs, diagnostic or predictive tests, or conduct studies to see how medicine is evolving (how a type of cancer will be treated in several years is determined by these actions). All national research centres take part in clinical trials (or other value-generating initiatives) promoted by the pharmaceutical industry or cooperative groups. The CNIO has been limited in this aspect, but by incorporating these activities, it has completed its translation into a comprehensive cancer centre, and thus it now has the skills to conduct work across the full spectrum of biomedical research. It is, among other things, irrefutable proof that we can generate knowledge that is immediately relevant to patients.

What can we expect in the short-medium term regarding breast cancer?

Oncology is currently experiencing two revolutions. One is the development of immunotherapy, which has had tremendous results in tumours such as kidney cancer and melanoma. However, the suppression of the immune response does not seem to be so relevant in breast cancer as in other tumour types (although the tumour vaccines being developed will likely be used universally). The second one is the sequencing of the tumour genome and the relationship between the mutations within a tumour and individual responses, as well as selecting therapies. In this regard, we are moving towards a much more customised type of medicine in the short term.

PROFILE

Francis Mojica
University of Alicante

He is one of the few Spanish researchers whose name appears on the betting lists for the Nobel Prize, and he actually has a chance of winning. Francis Mojica (Elche, 1963) is the discoverer of what the journal Science considered the most relevant scientific breakthrough of the year 2015: the CRISPR system. It all began in 1993 when Mojica analysed the archaea *Haloferax mediterranei*, a microorganism capable of living in environments with high concentrations of salt. He observed the presence of repeated sequences in its genome and he felt they had to fulfil a specific function, and he was right. Mojica dedicated a decade to this unknown field of CRISPR –which had no name, nor the fame it enjoys today– until he found the key to this newly named system in 2003: it was an immune mechanism used by bacteria. Thirteen years later, with the echo of the Nobel Prize ever stronger, CRISPR is one of the most prolific fields of research. Thousands of studies are published every year and great expectations are placed on its potential as a remedy for neurodegenerative diseases or for cancer. Mojica, however, seems alien to the controversy surrounding the patent, which has unleashed clashes among other researchers, as he continues his work at the University of Alicante. During his visit to the CNIO on 16 September as an invited speaker to the Distinguished Seminar series –sponsored by the Banc Sabadell Foundation–, he acknowledged that his life had not changed much despite the impact of his work. Who knows if this humble biochemist will be the next Spanish Nobel Prize winner?

INVITED SEMINARS

DISTINGUISHED SEMINARS

16 SEPTEMBER
FRANCISCO MOJICA
University of Alicante (Spain)

14 OCTOBER
FRANCISCO J. AYALA
University of California, Irvine (USA)

CNIO WOMEN IN SCIENCE OFFICE SEMINARS

27 SEPTEMBER
ÁNGELES GONZÁLEZ-SINDE
Scriptwriter, Film Director. Former Spanish Minister of Culture (Spain)