CANADIAN SCIENTIST TAK MAK, A WORLD AUTHORITY ON TRANSGENIC MICE FOR CANCER RESEARCH, VISITS THE CNIO

- The Director of the Campbell Family Institute for Breast Cancer Research in Toronto declares himself sceptical about advances to date in the fight against cancer, and proposes a change of strategy

- Professor Mak comes to participate in the CNIO Distinguished Seminars series with a talk titled ‘Future Anti-Cancer Therapeutic Targets: Putting the Carts Before the Horses?’

Madrid (Spain), June 1th, 2012. Canadian researcher Tak Mak, Director of the Campbell Family Institute for Breast Cancer Research in Toronto, confesses himself pessimistic about the advances made in anti-cancer drugs over the past decade. And contends that those made in the 1980s and 1990s owed more to chance than they did to science. One cause of this failure, he believes, is a poorly thought-out strategy for combatting tumours. In today’s talk, he explains his thoughts on how to change it by aiming at “the cart before the horse”. Hence the title of the conference: Future Anti-Cancer Therapeutic Targets: Putting the Carts Before the Horses?

Tak Mak (China, 1946) is one of Canada’s most cited scientists, and not only for his work on cancer. Dr. Mak’s scientific career has been marked by various radical changes of research direction. He is known above all for the cloning in 1984 of the T-lymphocyte receptor, a key component of the human immune system. This was a treasured goal which groups with far more resources and experience than Mak’s had spent years pursuing.

Then in the late 1980s he made his first sideways leap: Mak switched his focus to creating knockout mice, animals genetically modified to have a specific gene missing, so they can be used to study the function of that
gene. His group, which from 1993 had a major financial backer in pharmaceuticals company Amgen, would eventually generate more lineages of knockout mice (over 170) than any other.

With these animals, Mak’s team have been able to explore the function of numerous genes linked above all to the immune system; programmed cell death, cancer (especially tumour suppressor genes), and cell signalling pathways in general. And even today they are being used to identify new drug development targets.

But here Mak is sceptical. Despite being interested in cancer, he did not enter the oncology field until about ten years ago and he is not convinced that blocking this or that oncogene with drugs is the best strategy to beat the disease.

In his opinion, this tactic dates back to the discovery in the late 1970s that cancer is a genetic disease: “So we then decided the solution was to block oncogenes and thereby cure the cancer (...). Now we have learned that it is all much more complex [and that] the time has come to look at cancer in a different way”, he is quoted as saying in the University of Toronto Medical Journal (UTMJ).

SKEPTICAL ABOUT THE USUAL TREATMENTS

We now know that each cancer has hundreds of mutated genes, and Mak doubts whether we can ever be sure of blocking the right ones. For this reason, he has switched the focus of his own cancer research to concentrate on processes that affect all tumour cells, or at least a majority.

One strategy he wants to pursue is based on a finding from decades back that in his view has been insufficiently explored: the fact that tumour cells have an altered metabolism. And he is not alone in this opinion. The CNIO groups led by Manuel Serrano and Nabil Djouder are also studying the relationships between metabolism and cancer.

Tak Mak also poses an ethical question: Is it right for society to devote enormous resources to treatments that can barely prolong life? “In the last decade, we haven’t come across so much as one magic bullet against cancer. All those drugs approved after billions of dollars in investment are
just postponing the inevitable for, at times, only a matter of weeks (...)
Maybe two weeks is not worth it... And a month? Where do you draw the line?” he asks.

Aside from his research work, Mak founded his own company, Miikana Therapeutics, to develop candidate drugs for cancer therapy. The company was acquired by EntreMed in 2006.

Tak Mak, in the CNIO.

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