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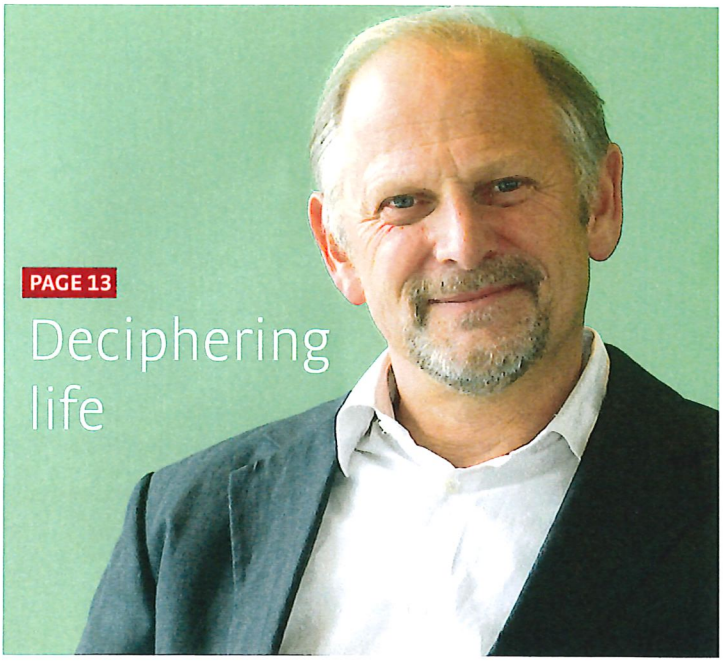
EMBO encounters

PAGE 9

Under one roof



PAGE 13

Deciphering life

PAGE 3

Driven by curiosity

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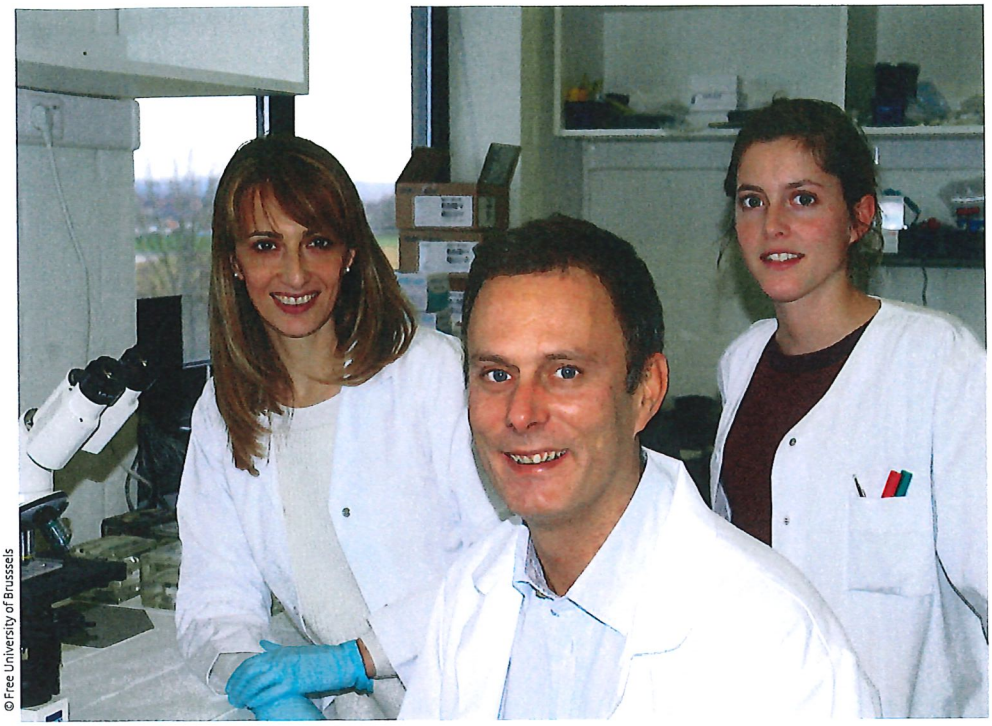

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An insatiable curiosity

CÉDRIC BLANPAIN is a professor of stem cell and developmental biology at the Free University of Brussels. His original approach to science has earned him a series of awards and resulted in several high-profile papers in 2012. In EMBOencounters, he talks to Yvonne Kaul about his career and his work on stem cells and cancer.

Cédric Blanpain and colleagues in the laboratory

Cédric, 2012 was a great year for you – you published two *Nature* papers and a study in *Cell*, were elected a Member of EMBO, and chosen as one of *"Nature's 10"*, a group of *"ten people who matter"* selected by *Nature* magazine editors. What factors contributed to your success?

In science, there is always some kind of momentum, when things reach maturity at the same time. That was the case for me. Many of our projects were initiated many years ago. *Nature* for example selected me to their list because of the key study about lineage tracing in tumours. It describes a new technique to look at cancer stem cells in their natural environment during tumour growth. This approach opened up a whole new way of looking at cancer. Now other scientists use the same technique to look at the resistance of cancer cells to drug therapy for example.

In 2012, by using the cell-tracking method, we looked at the damage and the repair of skin and proved that there is a pool of stem cells that are important for skin repair. This is important as it opens up new paths for drug development.

Can you describe your ongoing projects?

My laboratory can be divided into two parts: stem cell biology and cancer biology. In the first area of interest, we are trying to identify more precisely the stem cells that control the development of the mammary tissue, prostate tissue and the skin epidermis. We want to understand better the role of stem cells in cancer and how they can go wrong with oncogene expression.

For cancer stem cells, we are looking more precisely at the mechanisms that regulate these cells in different skin cancers. Can we block the renewal of skin cancer stem cells? Are they responsible for cancer relapse and can we develop therapies that make cancer cells differentiate into non-dividing cells?

With more than 30 lab members, your team is relatively large. How do you manage all the different projects?

They are all very good people that at least partially self-manage themselves. We have regular meetings and I form subgroups. There are always at least two or three people who work on the same project, help each other and share the same goals. When travelling, I can be reached by email, skype and telephone. And I practice an open-door policy. My lab members can always come to discuss their ongoing projects or call me any time, even at night or at the weekend.

You have been an EMBO Young Investigator since 2009 and you were elected to the membership this year. How has EMBO support affected your work?

It has been a great help. When you are a Young Investigator it has very practical benefits. Almost all scientists in the network know each other, form subgroups, and take part in sectoral meetings. It is extremely useful to be in touch with the best researchers in Europe. EMBO membership is great recognition for a scientist. I am also member of the editorial advisory board of *The EMBO Journal*, which is publishing increasingly more stem cell and cancer stem cell papers recently. The organization is key in my career and I am proud to be part of it.

What is unique about your working style?

The use of clonal analysis and lineage tracing in different ways to obtain new information was really unique. When I started with lineage tracing to decipher the cellular origins of cancer, no-one else was using this approach. Skin tissue was the first organ we studied. We subsequently used this technique to look at breast and prostate cancer in a completely novel way. Again, we were pioneers. But now many other people do similar studies.

What is your personal style of work?

To understand things, I need to see them. Looking at something with my own eyes is key to me. I tend to be impatient and I do not like to wait too long but this reflects my enthusiasm. I often press for results and demand to know the outcome of an experiment as quickly as possible.

When do you get the best ideas?

It is not in a rush or in a meeting, but when I am alone, by myself. Often at night, I rethink my day and try to figure out what would be the next experiment. The best ideas come when I am in my car on the way home.

Did you have a key experience that set direction for your career?

It was definitely my postdoctoral time at the Rockefeller University in New York. The Free University of Brussels, where I studied, is a rather small university. Coming to Rockefeller and seeing all the superstars that published one paper after another, and all the smart postdoctoral researchers left a lasting impression. This extremely stimulating environment reinforced my taste for excellence.

What are the next milestones for your research?

Looking ahead, we want to identify the mechanisms that regulate cancer stem cells and to develop a new approach to block the growth and proliferation of these cells, a strategy that would be effective in treating cancer. For stem cells, I would like to understand better what determines the balance between renewal and differentiation during the normal life of a cell. We also want to see how these cells change the way they divide during tissue repair.