

## Danielle Dhouailly

Danielle Dhouailly was born in Tunisia. Her first degree was in Biology from Paris University and led to her love of genetics and embryology. She moved to Grenoble in 1966 to carry out her PhD research with Philippe Sengel, who was then starting his own laboratory focusing on skin differentiation. After her PhD, Danielle obtained her 'Thèse d'Etat' in France and then went to Canada and the United States for her postdoctoral studies, working first with Margaret Hardy, then with Roger Sawyer and finally with Henry (Tung-Tien) Sun.

Early in her research career, Danielle found that a continuous dialogue between the epidermis and the dermis is required for the formation of cutaneous appendages. She went on to define the steps of dermal induction during feather and hair morphogenesis as well as the role and molecular basis of epidermal competence. She is currently involved in examining how multilayered epithelia of ectodermal origin from different body sites can be reprogrammed by embryonic dermis to differentiate into epidermis.

In the interview that follows, Fiona Watt, Editor-in-Chief of JCS, asks Danielle about her experiences as a woman in science.

**FMW:** *How has your research career impacted on your personal life and vice versa?*

**DD:** One of my first memories is learning to prune orange and lemon trees and to raise chickens with my grandfather in Tunisia. Then, when I went to school in Versailles, I made a herbarium by collecting weeds in the castle park. I became a naturalist at an early age and I have always loved gardening and watching birds or insects. It was therefore natural for me to become a research scientist.

I was the first of my family to receive a high-school education. I was very successful academically but my father always said: "If only she was a boy..." My mother was very supportive and told me: "It is great that you are so smart

because you will earn a good salary and be independent."

I fell in love twice, each time with a scientist. I was rejected twice, both times for the same type of woman: one who wrote a PhD thesis but did not continue her career. These women were thus the perfect type of spouse at that time: intelligent and cultured, but devoted only to their home and family. Hopefully, for young women today things have changed a lot, and young men appreciate women who not only have a salary (now that a second salary is required for a reasonable life style) but are also involved in their own careers.

**FMW:** *What changes for women in science have you observed during the course of your career?*

**DD:** In the early days it was sometimes hard to be taken seriously. I did my PhD in the laboratory of Philippe Sengel, where, by recombining embryonic dermis and epidermis between chick and duck, I demonstrated the formation of feathers whose architecture was completely defined by the origin of the dermis. Professor Sengel thought at first that my results were unbelievable. I was twenty-two years old and very shy, but I shouted: "So, I might be the cleverest forger in the world, but could you please increase the magnification of the microscope? This chick-type feather is entirely constituted by duck epidermal cells: the barbules are spiny..." I knew I had to speak out to defend my results.

I went abroad for postdoctoral training at a time when this was still not the fashion in France. I was not only exposed to different ideas and cultures but also learned a lot about running a laboratory. For just one year, 1989, a law



*Danielle Dhouailly with her grandfather in Tunisia.*

was introduced in French universities which required that candidates for a professorial position had to have spent at least 18 months in a foreign laboratory. Although this law was repealed by 1990, it is now the norm for French scientists to go abroad for postdoctoral training before they obtain permanent positions in France. Unfortunately, as currently the number of scientific positions and research grants is shrinking in France, the best postdoctoral researchers prefer to stay and continue their careers in the States.

In the 1990s only 5% of university biology professors in France were women. Most of them were single, although a few were married to other professors. I was the only female professor of biology in Grenoble until last year. At the National Committee for Universities, in Paris in 1989, I was the only woman of professorial rank in the cell biology section. In 2000, there were four women and 17 men, but the new committee for 2004 consists of nine women and eight men. This is a big

change. When I arrived at the first meeting in 1989, laden with heavy files, I asked a secretary where the meeting room was. She asked: "Are you bringing the files to these gentlemen?" I replied: "I am one of these gentlemen."

Thus, hopefully things are changing, even though it is still more difficult for a woman. Only 15% of the highest rank of professors in France are women. At the next rank down almost 30% of professors are women; they have kids, and sometimes they are married to non-biologists or even to non-academics. Nevertheless, 30% is much less than the 70% of biology students and 50% of PhD students who are female.

**FMW:** *Do you feel that being a woman is an inherent advantage/disadvantage for a career in science? Why?*

**DD:** Although there is no doubt that men and women are equally good at research, I found being a woman a great disadvantage at every step of my career and most of all when I applied for a position to run my own laboratory.

When I applied to become a PhD

student, every laboratory I approached in Paris rejected my application, despite my good grades. The reason why I got the chance to work in Grenoble was that female students were supposed to be more obedient than male students and also not so ambitious; therefore Professor Sengel engaged several women. However, he asked me to delay defending my Thèse d'Etat, because he did not want a revolution in his laboratory. The expectation was that the older (and male) students should finish first. So I had to wait another three years after completing my work before I obtained my degree.

After my postdoctoral training, when I got back to France, of my contemporaries among Professor Sengel's PhD students only the men had become professors. I was the only one of the seven women ever to become a professor. Finally, when I started my laboratory, I was given a grant of 2800 French francs and two empty rooms, while a young male professor was given a grant of 170,000 French francs plus a

renovated laboratory by the same university.

**FMW:** *What are your remaining career ambitions?*

**DD:** Most of the male and even now female professors in France want to lead large teams of 40 or more people, or to become dean of their department with all the administration that this involves. I don't. I only have scientific ambitions. My joy is to share results and discussions with my postdocs and PhD students and, through publications and conferences, with the wider scientific community. I am currently working on the problem of stem-cell specification in the epidermis and epithelial trans-differentiation, two linked processes that might help to develop a new model of how stem-cell differentiation is controlled.

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