

# Idealism and romantic patriotism for science

An interview with José Francisco David-Ferreira

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**ABSTRACT** Jose Francisco David-Ferreira is one of the most influential Professors of Cell and Developmental Biology in Portugal. David-Ferreira pioneered the use of electron microscopy in cell biology and experimental embryology. He also paved the way for successive generations of biologists who cross-fertilized the national scientific community. As we discuss briefly below, David-Ferreira is above all a Pedagogue and an Institution builder.

**KEY WORDS:** *cell biology, embryology, electron microscopy*

**All your students, myself included, have been «imprinted» by the legacy of Celestino da Costa. How would you define the influence that Celestino da Costa exerted on you? Had you not met Celestino da Costa in medical school, what would have probably changed in your professional career?**

Imprinting is a too strong word, but I hope that I was able to convey to my own students the legacy that I received from Celestino da Costa: his dedication to teaching activities, his active involvement in research and his enthusiasm for science promotion. Celestino da Costa created opportunities for those who demonstrated aptitudes and when he assumed administrative duties, he had a clear vision on how to promote scientific development. Virtual history is complex but speculation is a free domain. Our lives are the result of random combinations of qualities, capacities, desires, circumstances, opportunities and choices. When I was young, my generation was still influenced by the idealism and romantic patriotism of our fathers. To be useful to our country and community was a strong motivation. Science was a good cause in a poorly developed country like Portugal. One of my ambitions, romantic I recognize, was to be useful to my fellow citizens. To be a professor, a scientist or a physician were adequate professions to pursue that goal. Some of my professors did influence my personal inclinations and Celestino da Costa was one of them. Favorable circumstances were determinant for my involvement in research and teaching. I was happy doing that and I believe that I have been useful. Had the circumstances and opportunities been different, I would most probably have ended up as a general physician somewhere, without renouncing my life-dreamed purposes.

**You worked abroad for a number of years, first in France then in the United States. How did you choose the labs? Did you feel more attracted by the science or by the mentorship potential of the lab head? What did you like most in each lab?**

The Villejuif choice was a rational one. The Laboratory of Electron Microscopy at the Goussave-Roussy Cancer Institute was then one of the best in Europe. A paper published by the Villejuif group inspired Prof. Xavier Morato to send one of his assistants to learn electron microscopy. Under the influence of Prof. Celestino da Costa, I received a scholarship from the French Government to finance my training. When I returned from France, the Gulbenkian Foundation approved a grant to install an electron microscopy facility in the Lisbon Medical School. I worked in this laboratory until 1962, when I decided to resign my academic position. By coincidence, or not, I was then invited to join a group of scientists committed to launching a research institute sponsored by the Gulbenkian Foundation. As I had already resigned from the Medical School, it was urgent to find a place to continue working in science. I wrote letters to three US laboratories. Only one could accept me right away. The other two, which I considered better choices, could only receive me a year later. The decision to go to Dalton University in Bethesda was therefore circumstantial. When I was in Villejuif, the electron microscopic techniques were still arduous to practice. Microscope operation and maintenance was a difficult and time consuming task. The lab head, Dr. William Bernhard, was very rigorous and demanding. There I received the training that allowed me to organize and run the electron microscopy laboratory at Lisbon Medical School. In terms of a research project, I was quite independent in Villejuif and it was there that I

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**Fig. 1 (Left).** J.F. David-Ferreira during his PhD. examination at Lisbon Medical School. April 1960.

**Fig. 2 (Right).** The first electron microscope is installed at Lisbon Medical School. From left to right: J.F. David-Ferreira (in lab coat), Azaredo Perdigao (president of the Gulbenkian Foundation), Leito Pinto (Minister), M. Xavier Morato (professor and Head of the Histology Department (in lab coat)).

started my PhD thesis. In Bethesda I joined the Cancer Institute research program. This represented a detour from my previous research interests but an opportunity to work in a new field. My project consisted of scrutinizing liver biopsies and tumors in search for viruses. Endless hours at the microscope and lots of unpublishable negative results. However I succeeded in unraveling some novel aspects of viral interactions with the host cell. It was at the Gulbenkian Institute of Science in Oeiras that I was for the first time the leader of a research group. I enjoyed organizing the laboratory, but supervising students was my most rewarding task. Mentorship is a creative dialogue.

**What was your motivation to return to Portugal in the 60's? What exactly was the Gulbenkian project? Who started it? How did it develop? Why was the Institute mostly focused on life sciences? Can you tell one or two success stories of the Gulbenkian Institute? What was the impact of the Gulbenkian Institute for Portuguese Science?**

Why did I return to Portugal? Friends and colleagues asked me that question when I first left Villejuif and later Bethesda. I still do not know the answer. In fact it was an obligation. The Gulbenkian Institute of Science was an ambitious project to promote scientific activities in Portugal. A key concept was to allow scientists to do research as a full time profession. The project was enthusiastically supported by the Gulbenkian Foundation President, Azaredo Perdigao (see Fig. 2). The initial project for the Institute covered a wide range of research topics including Agrarian Economy, Scientific Calculus, Education and Biology. The Biology Center was the first to be installed in a dedicated new campus built in

Oeiras. Later, the Board of Administrators decided to focus the Institute exclusively in Biology. The Gulbenkian Institute of Science (IGC) rapidly evolved into a national reference center. The scientists recruited to the Institute introduced into Portugal new research areas such as Cell Biology and Molecular Genetics. The



**Fig. 3. José-Francisco David-Ferreira (1983).**

equipment available and the facilities established, namely the animal house, were unique in the country. Additionally, the Institute launched a very successful international program of post-graduate courses. The so-called *Estudos Avançados de Oeiras*, organized by my unforgettable colleague Nicolau Van Uden, attracted annually to Oeiras world-wide renowned researchers in the Life Sciences, as well as many international students. In my opinion, the major contribution of IGC was the training of a new generation of scientists (namely yourself!) who become professors and research leaders in Portuguese Universities and scientific institutions.

**Having left in 1993, you have returned to the Gulbenkian Institute of Science as an Emeritus Professor. What does that feel like?**

As you know, the present Director of IGC, António Coutinho, has kindly offered me a position as Visiting Professor at the Institute. This gives me a privileged opportunity to meet and interact with the very active and young scientists that re-populated the Institute. It is an opportunity to witness the day-to-day making of science progress in Portugal. I refuse to be a simple passive and useless observer. That would make me very uncomfortable! I am convinced I can still serve the Institution. Definitely, I do not believe in the popular saying: «never return to a place where you have been happy». I enjoy the company of scientists.

**You have taken active part in the transition from Cytology and Embryology to Cell and Developmental Biology. Are we currently reaching another turning point with the emergent concepts of Systems and Organismal Biology?**

Looking back I realize how lucky I was to be part of a period in the history of human knowledge during which our understanding about cells, tissues, organs and organisms has been evolving at an unprecedented pace. I am eagerly looking forward to what will come next in Biology, but I am in parallel developing an interest for the social implications of science and technology. If I was to choose a new profession now, Sociology would be my choice.

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**Fig. 4. An initiative to promote Science in Europe was held in Lisbon (2000), hosted by the Portuguese Minister Jose Mariano Gago. From left to right: M. Carmo-Fonseca, J.F. David-Ferreira (center) and Nobel laureate Ch. De Duve.**

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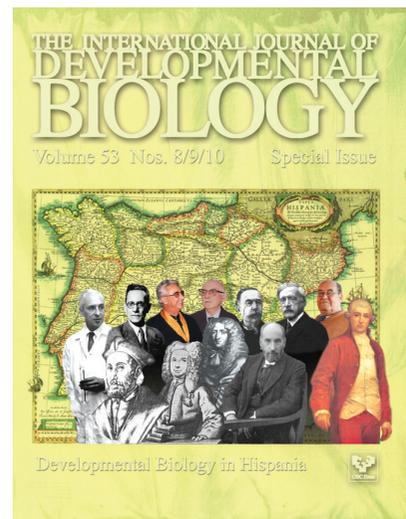
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