

In Memoriam Rodolfo Ertola (1924-2011)

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Rodolfo Ertola was born in La Plata, Argentina, in 1924 to Italian immigrant parents, Erminia de Antoni and José Pablo Álvaro Ertola. He grew up and completed his primary and secondary schooling in La Plata. Then he entered the Faculty of Sciences of the Universidad Nacional de La Plata, Argentina, from which he graduated with a doctorate in chemistry.

After graduation, he devoted himself to teaching and research, and was an avid innovator in both fields. His knowledge was passed on to hundreds of professionals over several decades. He is deeply admired by his students not only as a teacher and scientific leader, but also for his human values.

As one of those hundreds, I will add here a few memories, part of a message that I sent at the time to be read during the tribute paid by the Center for Research and Development in Industrial Fermentation (CINDEFI) to Dr. Rodolfo Ertola. This tribute was done in the occasion of celebrating his achievements when he reached the age of 80. The text reads as follows with only minor changes required to avoid references that may not be significant for the general reader.

"When Dr. Ertola entered the class on a fall day in 1962, my first impression was ambiguous. Here was a tall very thin man with a serious face and piercing eyes, standing in a classroom of the Physical Chemistry Building. This young man was about to teach a subject in an area substantially different from that which we had been studying so far. In our chemical engineering classes, we had learned mathematics, chemistry and physics but never biology. Now he was telling us that there was a chemical-biological technology and an industrial microbiology. For most of us this was a revelation. The uneasiness that we felt in that first encounter was due to the seriousness that Dr. Rodolfo Ertola radiated. It seemed obvious that there would be no room for light comments in those classes. But gradually during the semester we began to feel that, despite his apparent rigidity, we had standing before us a person able to view us and consider us as individual persons. Each stroke left on the board by those large, bony hands in which the chalk was lost to sight, gave us something. We felt that rather than delivering a lecture, he was officiating it.

Suddenly microbes and cells no longer belonged to a different dimension, but gained a real presence in our engineering education. For some of us, this was quite new and almost revolutionary. I recall this in order to honour Rodolfo who introduced this initiative and carried it out. I also wish to honour the memory of the now legendary J.J. Ronco who understood the relevance of this novel technology and promoted it. Today, in almost every university in the world, undergraduate students in Chemical Engineering are taught an introduction to biology and biotechnology. In 1963, in South America, the integration of biology in engineering was a leap forward in engineering education, long before it was adopted by the vast majority of the world's engineering schools Rodolfo's lectures were a seed (or rather a spore considering the time it took to germinate) of my interest in biotechnology. During my teaching years at the University of La Plata I always viewed the basement where the section of Industrial Fermentation was located with great interest. I thought it would be interesting to do something that would integrate what they did there with what I was doing in gas-liquid reactors under the guidance of J.J. Ronco. But I never suggested an initiative in this direction. This was possibly due to the fact that we were too busy to define ourselves as a Chemical Engineering Department that "should" be different from the Chemical Technology Department that had engendered it.

It was several years later, when R.I. Mateles invited me to collaborate on a project for the design of an air-lift for unicellular protein production at the Hebrew University, when the spore germinated and I started working in that field. During a visit to the Faculty of Sciences in Buenos Aires several years later, I contacted Ana Maria Giulietti (plant cells and air-lift), and, thanks to her, I met again Dr. Ertola, "the skinny one", who, since then, has become Rodolfo for me. I remember that first meeting, now as a colleague and not as a student. After so many years, this was my first personal conversation with Rodolfo. It was in a restaurant near the University, in La Plata. We told each other the stories of our lives. Over time the relationship between Ana Maria, Rodolfo, my wife Inés and I became a true and deep friendship based on a coincidence of interests, especially in the human side. They were our best friends, despite geography and the sporadic nature of our meetings.

I have met few people with the interests and capabilities of Rodolfo, which covered arts and sciences, literature, painting, history, politics and, of course, science and technology. I think this is what Confucius called "wisdom." A wise man is the one who manages to combine all that and to balance it. The Talmud says that 80 is the age of heroes. I am sure that Dr. Rodolfo Ertola is a hero of biotechnology to all who know him, as he is for me".

The previous paragraph is very personal. To further describe the context of Rodolfo Ertola's contribution to science and technology in Argentina and South America, and even worldwide (he was among those who coined the term "biotechnology"), I will comment here on one of his most important works from the point of view of the history of the development of biotechnology in Argentina. Too few have had the privilege of accessing this work. I am referring to the account of his scientific and technical activities during the second half of the twentieth century that bears the title "Memories." It has not been published yet. Rodolfo tells there essentially his personal history. But when a person of his caliber, with the profound insight and the ability to analyze macro social phenomena around him, recounts his personal story one gets a description of all the actuality of Argentina at that time, and especially of the environment of research and development of the biotechnological industry. That depiction goes beyond the local scope of Argentina, because of his activities that included the Organization of American States-OAS-Biotechnology in Washington, the development of the School of Biotechnology Argentine-Brazilian-CABBIO and many others.

This monograph covers eight detailed chapters depicting his activities over a period that ranges

from his first contact with the chair of Pharmaceutical Industries at the University of La Plata as a teaching assistant in 1953, until his partial retirement around 2000. It includes the creation and management of CINDEFI La Plata and his activities as a CONICET member nationally. The CINDEFI adopted the name "Doctor Rodolfo Ertola" in his honour when he turned 80. Each of the chapters in this book begins with a section which describes, in an almost telegraphic way as headlines, some of the political events that the author considers essential to identify the period nationwide. Then he begins the personal account of his activities at the university, in industry and in institutions related to science and technology nationwide.

The storytelling is straightforward, conveying selected events as seen and experienced from the point of view of the author, very direct and intentionally deprived of literary adornments or embellishments. Places and people are named, sometimes with warm appreciation of their value, and others with sharp criticism. The characters range from simple people from distant provinces whom he met during his travels for industrial consultancy, to some of the most internationally famous scientists of the time, whom he also met and dealt with. Sometimes the reader ends a paragraph with a smile brought about by a humorous anecdote, and others sharing his pain when he denounces an injustice or a trespassing of the ethics that exemplifies Rodolfo Ertola. No doubt that if these reports were published, they would become a very important document for understanding the development of the biotechnological industry in Argentina, and would create a fitting testimonial to the values of a scientist that is undoubtedly one of the founders of biotechnology in South America.