

Professor Mario Luxoro, Honorary Member of the Chilean Society of Physiological Sciences*

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The Chilean Society of Physiological Sciences has distinguished Professor Mario Luxoro as an Honorary Member, due to his outstanding contribution to the development of the Physiological Sciences in Chile.

Mario Luxoro, born in Santiago in 1926, obtained a degree in Chemical Engineering from the Universidad Federico Santa María, in Valparaíso. After graduating, he felt that he wanted to do basic research in biomedical sciences, and enrolled as a medical student at the Universidad de Chile, in Santiago. During his third year, he was awarded a fellowship by the Rockefeller Foundation, and became a graduate student at the Massachusetts Institute of Technology, in Boston. At MIT he did a PhD thesis about the structure of myelin; this work, entirely his own, gave origin to his first scientific publication, in the Proceedings of the National Academy of Sciences. Declining an offer of a Faculty position at MIT, he returned to his country, determined to pursue basic research in membrane biophysics in Chile. His quantitative approach to biology was rather new in the developed world and certainly pioneering in Chile.

Luxoro put together a small group of highly talented and enthusiastic young people –Mitzy Canessa, Sigmund Fischer, Eduardo Rojas and Fernando Vargas–, taught them the fundamentals of biophysics, and started together with them experimental

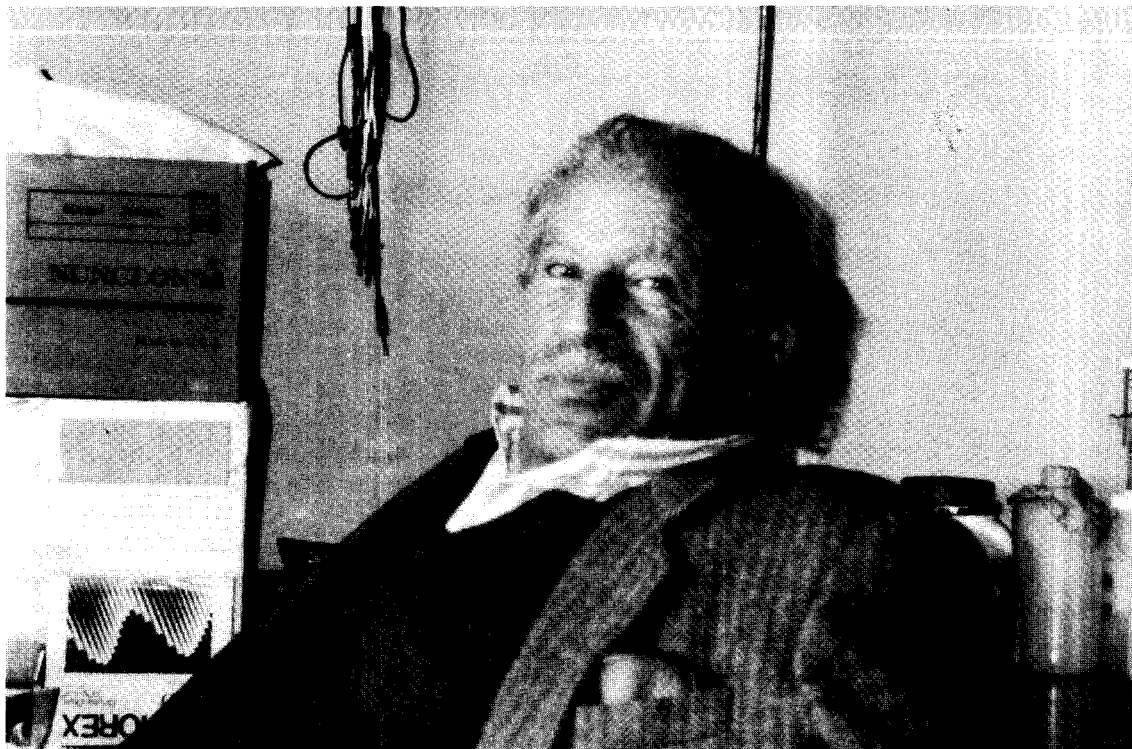
research on nerve cells. On those years (1960) Luxoro met the great American biophysicist Kenneth S Cole in Stockholm, and suggested him to come to Chile in order to use the local squid giant axon. Cole sent some of his collaborators to Chile, to work near Luxoro's group. With the support of the Universidad de Chile, Luxoro and his colleagues founded the Laboratory of Cellular Physiology in Montemar, a beautiful and by then peaceful place near the city of Viña del Mar. The group attracted a number of students, like Francisco Bezanilla, Cecilia Hidalgo, Ramón Latorre, Julio Vergara, among others, giving great impulse to the enterprise triggered by Luxoro. "In my opinion, Mario Luxoro has been one of the pillars of scientific research in Chile, and we owe him the formation of the group of largest influence in Chilean science..." (Prof Francisco Bezanilla, University of California at Los Angeles).

The outstanding work generated at Montemar called the attention of the international community, and many renowned scientists traveled to Chile to spend time doing research with this remarkable group. The activity at the Montemar Laboratory boosted. Some of the most relevant data in the literature about membrane excitability were produced in this notable place.

In the peak of this scientific activity, Luxoro was elected Dean of the Facultad de

* Presentation delivered by Dr Juan Bacigalupo on 25 March 1997, during the XIIth Annual Meeting of the Chilean Society of Physiological Sciences, 23-26 March 1997, Quinamávida, Chile.

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Prof Mario Luxoro. (1997).

Ciencias of the Universidad de Chile, of which he had been one of the founders. Much to his regret, this new responsibility forced him to stay in Santiago. He employed all his energy and creativity on strengthening this newly created school of the Universidad de Chile. Indeed, the four years of Luxoro's Administration changed its face: the Facultad de Ciencias attracted important international funds, which made possible a substantial increase in its personnel, a considerable enlargement of its physical plant and all kinds of research facilities. These great improvements allowed gathering in a single place scientists that had been spread all over the city and resulted in an important increase in scientific productivity and, at the same time, attracted a considerable number of undergraduate students interested in basic sciences.

Shortly after Luxoro's Administration ended, the military intervention that took place in Chile in 1973 profoundly affected university activities of all sorts. Many of Luxoro's colleagues departed Chile, establishing themselves in countries where

they could continue their work in an adequate academic environment. Sacrificing his scientific career, Luxoro refused to leave and courageously remained in Chile, struggling to keep the scientific tradition of Montemar alive. After the worst years were over, people gradually began to return, giving new strength to scientific research in the country. Chile is profoundly indebted to Professor Luxoro and a few other scientists for their enormous contribution to the maintenance of our scientific and academic life through those difficult years.

Luxoro's scientific work is marked by his emphasis on rigorousness, originality and excellence, without ever sacrificing these characteristics on behalf of the number of publications. The major scientific contributions of Mario Luxoro have inspired the work of eminent scientists in the field of membrane excitability: "I have known and admired Professor Luxoro for many years, and he had a strong influence on me both directly and through his many distinguished students. It is impressive to read again through the list of his published papers,

which are great contributions to biophysics." (Prof Clay Armstrong, University of Pennsylvania). "I first met Professor Luxoro over 30 years ago, and my subsequent visits to him in Santiago or at Montemar were always an inspiration to me. His scientific contributions in membrane biophysics are very highly regarded by the international community, and he played a vital part in the establishment of a distinguished school of Chilean biophysics with whom so many of us has collaborated." (Prof Richard D Keynes, Physiological Laboratory, Cambridge University).

Luxoro provided the first demonstration that proteins rather than lipids are involved in the flux of ions across the nerve plasma membrane, participating in the generation of the action potential. A second major achievement of Luxoro was his recognition of the dynamic state of intracellular calcium. He went further to propose a model that allowed the calculation of the intracellular calcium concentration, the kinetic constants for calcium binding and release, and its membrane permeability.

To the present day, Luxoro is actively involved in research. His interest shifted from the excitability of the squid giant axon to the problem of excitation-contraction coupling in the giant muscle fibers of *Balanus* and, more recently, to excitation-secretion coupling in vertebrate chromaffin cells.

Besides research, Luxoro has always given special attention to teaching. Through his lectures, he has influenced biologists of a wide spectra of interest, far beyond physiology or biophysics. To this day, he continues to motivate students with his vivid lectures, in which he transmits his knowledge and enthusiasm. Inviting the students to think by themselves, he uses to tell them: "It is not the professor who teaches, but the student who learns."

Mario Luxoro has a most remarkable personality. A man of a vast culture, he deeply vibrates with history and with all branches of the fine arts. He follows very closely the major events happening in the world and keeps a permanent contact with some key figures of our intellectual life. Luxoro externalizes his emotions in a very evident manner. He likes to think that this

characteristic of him is a manifestation of his Italian blood, of which he is particularly proud. Extremely energetic, he can switch quite abruptly from a stage of anger to another one of joy. He may become quite impatient with a student or a colleague who is not reasoning logically. On the contrary, he becomes genuinely happy with an answer that entirely satisfies him. He once wrote, with large red characters "I love you" on the test of a female student who had given him what he considered a superb answer to one of his questions.

One of the distinctive features of Luxoro's personality, which has marked his long academic career, is his very personal approach when facing bureaucracy, which opposes action: he totally disregards icons, rules and regulations that he considers are preventing the fulfillment of an important goal, thus making work more expedite. This attitude of him is illustrated by countless anecdotes, like the following two. In the mid sixties, Luxoro's work was being obstructed by some university authorities who set a limit to the time people could work in their laboratories everyday. This limit was effectively imposed by turning off the electric power of the building by 5 PM. The philosophy behind it was that longer hours of work were unnecessary if people organized their time correctly. These authorities were entirely insensitive to the arguments of Luxoro and his colleagues, pledging to be allowed to stay late in their laboratories. Luxoro reacted climbing a pole and hanging a couple of wires from the public power lines outside of the building, "stealing" electricity to allow him to continue with his work. On another occasion, during the military government, another authority intended to control the daily attendance to work of Luxoro and his colleagues. This irritated Luxoro to the extreme, inasmuch as they used to work very long hours on week days and weekends as well. He reacted by signing the attendance sheets of the whole group for a complete year in advance. This irreverent attitude convinced the Dean not to insist on asking the Montemar group for attendance sheets any longer.

Consistent with his commitment to make research expedite, Luxoro has always

generously shared equipment and laboratory facilities with whoever has needed it, regardless of affiliation, rank or scientific interests, and without ever asking for any sort of compensation for it. Luxoro uses to claim "the owner is the one who uses it", referring to laboratory equipment often found sitting on a laboratory bench, covered with dust. Such has been the spirit always present in the Laboratory of Montemar.

The homage of the Chilean Society of Physiological Sciences to Professor Mario Luxoro is, in consequence, a recognition to a great scientist and a superb human being.

ACKNOWLEDGMENTS

We thank Dr Bernardo Morales for motivating us to publish the present article. We are also indebted to Dr Jorge Hidalgo, for his valuable help with the manuscript, and to the Chilean Society of Physiological Sciences, for defraying the publication cost of this work.

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