FIFTY years have elapsed since Dr. Héctor Croxatto started his teaching and research work at the Catholic University of Chile, which he has continued without interruption until today. His unceasing scientific activity is reflected in more than 300 scientific communications and publications, and also in the activity of many of his collaborators who work in the fields of physiology, endocrinology, nephrology, and cardiology.

In the early 1940s, Dr. Croxatto initiated a line of research on the mechanisms of arterial hypertension, which he has continued up to now. The first important contribution in this context was done in 1942 when he demonstrated that pepsin acted upon globulins of plasma generating a peptide, called pepsitensin, which showed properties very similar to angiotensin. This finding was important in explaining the genesis of angiotensin as the result of the proteolytic action of renin on blood globulins. It also opened a new concept: other peptides, which act upon the cardiovascular system, could be produced from plasma.

The studies of Dr. Croxatto and his collaborators then took different directions when it became evident that the renin-angiotensin system and other peptides participated in actions other than simple arteriolar constriction. Thus, he carried out studies to compare the activity of renin and peptide hormones of neurohypophysis, vasopressin and oxytocin, on the renal function, especially in water and sodium excretion. The results of these investigations led him to foresee functional and structural differences between these peptides, which were confirmed years later by other researchers using more sophisticated techniques.

The potent effects of peptides and their potential structural diversity led him, in 1960 when only few biologically active peptides were identified, to express: “It is not daring to foretell that in the near future the family of peptides will be enriched with new members... which will give rise to unpredictable biological properties.”

Professor Croxatto and his group provided in 1970 the first evidence that kallikrein excretion in urine, and later renal tissue kallikrein, were significantly decreased in rats with experimental renal hypertension. He demonstrated by using isolated perfused kidneys that urinary kallikrein originates in renal tissue.

Particular attention has been devoted to factors that can regulate or modulate the renal kallikrein-kinin systems. In 1973, Professor Croxatto was the first to describe the remarkable effect of furosemide on that system in normal and hypertensive rats. His recent findings permit a better definition of the role of sodium, renin, prostaglandins, the endocrine system, and the autonomic nervous system as modulators of the renal kallikrein-kinin system and its relationship to hypertension. The fact that the kidney possesses two antagonist enzymatic systems that generate vasoconstrictor
(angiotensin) and vasodilator (kinins) peptides from plasma precursors, emphasizes the crucial role assigned to this organ in blood pressure regulation. It gives strong support to the hypothesis that renal hypertension may be due to altered equilibrium between the renin-angiotensin and the kallikrein-kinin systems.

Many at the University have been attracted by his personality, and have wished to collaborate with him. He is very generous with his time in welcoming them to his laboratory, but he is also a strict professor, a master who demands much attention from his collaborators and is never satisfied with the number of experiments performed. Professor Croxatto not only leads the work of his numerous collaborators; he is always works very closely with them.

One of his principal assets is his capacity to transmit enthusiasm for knowledge. He is a well-informed and systematic lecturer. Those who have had the opportunity of listening to him have felt captivated by his mixture of naive curiosity, subtle logic, and inner enjoyment, which all together constitute the essence of the scientist facing the advances in knowledge. His presentations answer questions and, above all, show new paths and open unforeseen questions.

Dr. Croxatto’s personality is not only expressed through research work. His inner craving for knowledge and his concern for the human being have also projected him as an educator, and his educational work in Chile has been extremely important. He has not only expressed himself through the experimental method, but also as a philosopher speculating on history and the philosophy of sciences, especially in these last years.

My aim in this tribute is not only to recognize the important findings of Héctor Croxatto in the field of hypertension, but also to convey what kind of man he is... A man who beyond his valuable contribution to the biological sciences has taught many lessons to all those who surround him, or have had the privilege of knowing him.

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R Rosas

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