

W.C. B. L. Hoekstra

Memoirs of the Instituto de Investigaciones Bioquimicas

Fundacion Campomar

INTRODUCTION

The history of the Instituto de Investigaciones Bioquimicas of the Fundacion Campomar is the history of Luis Leloir. From the beginning of his career at the Institute of Physiology at the University of Buenos Aires Medical School in the early 1930's until the present time, this brilliant yet modest scientist has proceeded from one triumphal discovery to another. His early training in Cambridge, England at the Institute of Biochemistry under the direction of the great F. Gowland Hopkins, and later in the United States with Carl F. Cori and David E. Green, prepared him for the task of creating a world-class research institute in a difficult and often hostile environment. The high level of sustained productivity and the vast amount of new and important information that has emerged from the Instituto de Investigaciones Bioquimicas is a tribute to his genius and his inspiring personal qualities.

The pioneering work of the group at the Institute on the metabolism of galactose in yeast led to the isolation of galactokinase and the characterization of the reaction product, galactose 1-phosphate, followed closely by the discovery of glucose 1,6-diphosphate as the coenzyme for phosphoglucomutase. Soon thereafter came the announcement of the new class of sugar nucleotides, first uridine diphosphate glucose (UDPG) and then UDP acetylglucosamine and guanosine diphosphate mannose and the whole family of adenosine diphosphate sugars. Their discovery of the mechanism of sucrose synthesis culminated a long search that had frustrated biochemists all over the world. Another milestone in the history of biochemistry was the demonstration that the precursor for glycogen synthesis was UDPG and not glucose 6-phosphate.

This period of the saga of Luis Leloir and the Fundacion Campomar was completed by their finding that ADP glucose, first prepared by chemical synthesis, was the precursor of plant starches and bacterial amylose. The Instituto de Investigaciones Bioquimicas has clearly played a major role in the explosion of biochemical knowledge that marked the middle half of the 20th Century.

But more was yet to come. The recent contributions emanating from the Institute on the role of lipid-linked sugars in the biosynthesis of glycoproteins beginning with the discovery of dolichol monophosphate glucose, have opened new perspectives for workers in this field.

Not to be overlooked is the important and equally pioneering work carried out by Luis Leloir and his coworkers before the Instituto de Investigaciones Bioquimicas was established, because these alone would have been sufficient to earn them a place in the history of biochemistry. They were the first to observe the oxidation of fatty acids by cell-free extracts. They discovered that ischemic kidney secretes a substance (renin) into the blood and that this acts on a globulin (hypertensinogen) to release hypertensin (angiotension).

Few biochemists are more widely admired and respected than is Luis Leloir. Few have so inspired their coworkers. From the Instituto de Investigaciones Bioquimicas have emerged not only the present leaders of Argentinian biochemistry, but also many other prominent scientists from abroad who have since returned to productive careers in their home countries.

Those who would emulate the career of this great scientist and who did not have the good fortune of working at his elbow or knowing him personally should read his essay entitled, "Discovery Made Easy", published in 1976 by Pergamon Press in "Reflections in Biochemistry".

Luis Leloir and the Instituto de Investigaciones Bioquimicas, we salute you!

B. L. Horecker

Roche Institute of Molecular Biology

Nutley, New Jersey 07110