

Reflection on the enduring impact of Prof. Luis Leloir's discoveries that led to his 1970 Nobel Prize in Chemistry

The true measure of scientific impact is not how many times research papers are cited or the journals in which the work is reported because the legacy of great work sometimes cannot be evaluated for many years after the initial discovery. Were Professor Leloir alive today, I am certain he would marvel at the range and depth of impact his discovery of sugar-nucleotide precursors of carbohydrate synthesis has had in biology and medicine. From his work, we knew that the sugar-nucleotide served as a precursor of polysaccharide synthesis, but in the decades since, the field has grown to help us understand the assembly of oligosaccharide synthesis on glycoproteins and glycolipids, a subject that touches on key aspects of membrane assembly, secretion and cell wall biosynthesis in prokaryotic and eukaryotic cells. We have learned a great deal about the diseases of carbohydrate synthesis and the crucial role of oligosaccharides in protein sorting within the cell and in cell-cell adhesion in normal and pathologic states. No doubt the future will bring much more. He may have even anticipated this in the closing sentences of his Nobel essay:

Undoubtedly this may become a fascinating problem for future research. Fortunately even after two decades our field of investigation has not become dull or too fashionable.

Even as we have built on his discoveries in unexpected directions, the singular devotion of Leloir to his experimental work, to the colleagues of his institute and more broadly in Latin American science, should serve a model to inspire the next generation of young scholars. His almost ascetic personal style serves as a contrast to the more careerist approach taken by those who place an emphasis practical applications and medical translation to the enterprise of biomedical science. Leloir's spirit lives on in those of us whose primary motivation is a thirst for knowledge of natural world.



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