This Week's Citation Classic

de Duve C & Wattiaux R. Functions of lysosomes.
[The Rockefeller University, New York. University of Louvain, and Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium]

December 13, 1984

From time to time in the course of my scientific career, I have felt the need to sit back and look over my results of the last few years, to put them together and to fit them within a broader framework. The year 1965 provided a golden opportunity for such an exercise. We had just published the 18th and last installment of the "Tissue fractionation studies" series, which appeared in the Biochemical Journal between 1951 and 1964. The very title of that paper actually stated what remains as the main outcome of a 15-year effort by a dozen or so young investigators who were associated with me during that period: "Resolution of mitochondrial fractions from rat liver into three distinct populations of cytoplasmic particles." The three populations included two new groups, in addition to the well-known mitochondria: the acid-hydrolase containing particles that we had named lysosomes in 1955—in paper number six of the series—and another group of particles, characterized by the association of the H2O2-consuming catalase with several H2O2-producing oxidases, soon to be called peroxisomes.

Completing the biochemical findings, a paper published at the same time in the Journal of Cell Biology, had conferred on the two new entities the respectability of a morphological identity. The time was obviously ripe for a survey.

I enlisted the collaboration of two trusted co-workers, Robert Wattiaux, who had recently become Professor of Biochemistry at the Facultés Universitaires Notre-Dame de la Paix in Namur, and Pierre Baudhuin, a member of the Department of Biochemistry at the University of Louvain School of Medicine, where he is now professor. With Wattiaux I wrote the review on lysosomes that is still continues to be quoted. Because the field was less advanced, the peroxisome paper still had to deal largely with proofs and individual pieces of evidence. In contrast, lysosomes were already well established and had been investigated in many different tissues and in a variety of physiological and pathological contexts. Our review was the first attempt to assemble and organize the available information, to delineate common basic mechanisms behind the motley manifestations of lysosome function, and to devise some sort of coherent terminology. In fact, no comparable attempt has since been made, or could be made, at least in such compact form. Readers interested in the lysosome field now have to turn to whole books, including the seven-volume collection, Lysosomes in Biology and Pathology. This probably explains why our 20-year-old review still continues to be quoted.

2. Cited 265 times.
4. Cited 265 times.
6. Cited 265 times.
8. Cited 265 times.