



Christian de Duve



Thames-Ditton, UK, 2 October 1917 - Belgium, 4 May 2013

Nomination 10 April 1970

Field Biochemistry

Title Professor, Nobel laureate in Physiology or Medicine, 1974

Professional address

Christian de Duve Institute of Cellular Pathology

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Most important awards, prizes and academies

Awards: Prix Francqui, Belgium (1960); Gairdner Special Award, Canada (1967); Dr. H.P. Heineken-Prijs, Netherlands (1973); Nobel Prize in Physiology or Medicine (1974). **Academies:** Académie Royale de Médecine de Belgique; Académie Royale de Belgique; American Academy of Arts and Sciences; Deutsche Akademie der Naturforscher Leopoldina; Koninklijke Akademie voor Geneeskunde; National Academy of Sciences, USA; Académie des Sciences de Paris; European Academy of Arts, Sciences and Humanities; Académie des Sciences d'Athènes; Académie Nationale de Médecine; Academia Europaea; Pontifical Academy of Sciences; Royal Society; American Philosophical Society; Société Royale du Canada; Academia Romana. **Honours:** Honorary degrees from sixteen universities.

Summary of scientific research

After a few years devoted to insulin and carbohydrate metabolism, in the course of which I rediscovered glucagon, I devoted my main efforts to the intracellular localization of enzymes by means of centrifugal fractionation techniques. Thanks to the collaboration of an excellent team, I was able to develop improved fractionation techniques and succeeded in identifying and characterizing biochemically two new groups of cytoplasmic particles: the lysosomes, so named because of their content of digestive enzymes, and the peroxisomes, which are centers of hydrogen peroxide metabolism. These particles were identified morphologically as corresponding to the 'dense bodies' and 'microbodies' described by electron microscopists, respectively. The main phases of this work took place in the years 1950-65. Since then I have continued to investigate many aspects of lysosomes and peroxisomes, including their enzymatic properties, physiological functions, and biogenesis. I have also become increasingly interested in the medical applications of modern cellular and molecular biology. To this end, I created in Brussels the International Institute of Cellular and Molecular Pathology, founded in 1974, which now bears my name. In recent years, my main interests have become focused on the general properties of living cells and on the origin and evolution of life. I have written four books on these topics: *A Guided Tour of the Living Cell* (1984), *Blueprint for a Cell* (1991), *Vital Dust* (1995), and *Life Evolving* (2002). All four have appeared also in French and have been translated in several other languages.

Main publications

de Duve, C., *Glucose, insuline et diabète*, Bruxelles: Goemaere; Paris: Masson (1945); de Duve, C., Glucagon, the hyper-glycemic-glycogenolytic factor of the pancreas, *Lancet*, 265, pp. 99-104 (1953); de Duve, C., Pressman, B.C., Gianetto, R., Wattiaux, R. and Appelmans, F., Tissue fractionation studies. VI. Intracellular distribution patterns of enzymes in rat liver tissue, *Biochem. J.*, 60, pp. 604-17 (1955); de Duve, C., Berthet, J. and Beaufay, H., Gradient centrifugation of cell particles. Theory and applications, *Prog. Biophys. Chem.*, 9, pp. 325-69 (1959); de Duve, C., Principles of tissue fractionation, *J. Theor. Biol.*, 6, pp. 33-59 (1964); de Duve, C., The separation and characterization of subcellular particles, *The Harvey Lectures*, 59, pp. 49-87 (1965); de Duve, C. and Wattiaux, R., Functions of lysosomes, *Ann. Rev. Physiol.*, 28, pp. 435-92 (1966); de Duve, C. and Baudhuin, P., Peroxisomes and related particles (Microbodies), *Physiol. Rev.*, 46, pp. 323-57 (1966); de Duve, C., de Barse, T., Poole, B., Trouet, A., Tulkens, P. and Van Hoof, F., Lysosomotropic agents,

Biochem. Pharmacol., 23, pp. 2495-2531 (1974); de Duve, C., Exploring cells with a centrifuge, *Science*, 189, pp. 186-94 (1975); de Duve, C., *A Guided Tour of the Living Cell*, New York: Scientific American Books, Inc. (1984); de Duve, C., *Blueprint for a Cell*, Burlington, NC, Neil Patterson Publishers, Carolina Biological Supply Company (1991); de Duve, C., *Vital Dust*, New York: Basic Books (1995); de Duve, C., Réflexions sur l'origine et l'évolution de la vie, *C.R. Soc. Biol.*, 192, pp. 893-901 (1998); de Duve, C., Constraints on the origin and evolution of life, *Proc. Amer. Philos. Soc.*, 142, pp. 525-32 (1998); de Duve, C., *Life Evolving*, Oxford University Press (2002).