American Journal of Physiology-Cell Physiology initiates a series of articles around a theme: autophagy is the first theme

Sophie Lotersztajn1,2 and Paul A. Insel3

1Institut National de la Santé et de la Recherche Médicale (INSERM), U955, Créteil, France; 2Faculté de Médecine, UMR-S955, Université Paris-Est, Créteil, France; and 3Department of Pharmacology, University of California, San Diego, La Jolla, California

This issue of the American Journal of Physiology-Cell Physiology initiates a new type of series: multiple articles organized around a theme. This first theme is autophagy, a mechanism that has become increasingly recognized as important in health and disease.

The existence of autophagy (derived from Greek and meaning “to eat oneself”) was initially surmised from electron microscopic studies in which lysosomal-derived vesicles were noted to have cytoplasmic particles that could be identified as organelles undergoing destruction; such particles were subsequently shown to represent a mechanism by which cells recycle organelles and various macromolecular components as a means of adapting to various stresses, such as nutrient deprivation. Although on the one hand autophagy is a type of cell destruction, defined as type II programmed cell death, it is also a survival mechanism whereby cells generate energy and building blocks by digesting macromolecules and organelles. As will be described in this series of articles, numerous events can initiate autophagy, and a growing number of publications have demonstrated the pleiotropic functions of autophagy in various physiological and pathophysiological processes. The introductory overview will summarize the molecular pathways underlying autophagy regulation in mammalian cells. It will be followed by four reviews describing the contribution of autophagy to lipid metabolism, its involvement in muscle atrophy, the protective role of autophagy in pancreatic β-cells and in diabetes mellitus, and the beneficial and detrimental roles of autophagy in cardiac diseases.

We invite feedback about this series of articles on autophagy. We hope to educate readers about recent developments, to foster work among cell physiologists, and to encourage submission of original articles related to autophagy to American Journal of Physiology-Cell Physiology.

DISCLOSURES

No conflicts of interest are declared by the authors.