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The lysosomal storage disease continuum with ageing-related neurodegenerative disease

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Abstract

Lysosomal storage diseases and diseases of ageing share many features both at the physiological level and with respect to the mechanisms that underlie disease pathogenesis. Although the exact pathophysiology is not exactly the same, it is astounding how many similar pathways are altered in all of these diseases. The aim of this review is to provide a summary of the shared disease mechanisms, outlining the similarities and differences and how genetics, insight into rare diseases and functional research has changed our perspective on the causes underlying common diseases of ageing. The lysosome should no longer be considered as just the stomach of the cell or as a suicide bag, it has an emerging role in cellular signalling, nutrient sensing and recycling. The lysosome is of fundamental importance in the pathophysiology of diseases of ageing and by comparing against the LSDs we not only identify common pathways but also therapeutic targets so that ultimately more effective treatments can be developed for all neurodegenerative diseases.