

Autophagy dynamics in neuronal homeostasis and neurodegeneration

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Neurons are highly polarized cells that are post-mitotic and must survive for decades in humans. These cells rely on homeostatic mechanisms to maintain cellular health, including autophagy and mitophagy. Deficits in autophagic flux lead to the accumulation of protein aggregates and dysfunctional mitochondria, and are characteristic of neurodegenerative diseases such as Parkinson's, Huntington's, and ALS. Live cell imaging of autophagy in neurons has revealed a dynamic pathway that is altered in aging; we propose that age-related deficits in autophagy may contribute to the age-dependent onset of neurodegeneration.