

Special Issue on

Crosstalk between Mechanical Forces, Cytoskeletal Dynamics and the Regulation of ROS and Autophagy in Health and Disease

CALL FOR PAPERS

Reactive Oxygen Species (ROS) are both natural byproducts of cell activity and important signalling mediators responsible for fine-tuning cell function. Dysregulation of ROS contributes to and derives from physiopathological states, underpinning complex and prevalent diseases such as cancer, metabolic syndromes, or cardiovascular disease. Autophagy is a key homeostatic hub feeding from and into ROS regulation impacting a variety of cell functions. However, while significant advances have been attained in our understanding of ROS production and biological activity, as well as mechanistic aspects of autophagy regulation, the principles by which they intersect with downstream cellular processes are less clear.

An example of such cellular phenomena deserving further study regarding their tie with ROS management and autophagy is the adaptation of cells to mechanical forces. The sensing, transduction, and exertion of and adaption to mechanical forces are fundamental emerging aspects of cell physiology whose characterization has developed across most fields in Biomedicine. The relevance of this integration of mechanoadaptation with cell behaviour is highlighted by the fact that substrate stiffness is independently capable of sealing the fate of a differentiating cell. Stromal stiffness can also influence tumour cell progression, metastatic behavior, or adipose tissue dysfunction. Thus, mechanotransduction and mechanoadaptation do not only pertain to immediate 'mechanical structures' of the cell such as the cytoskeleton or adhesion complexes, but also require extensive metabolic rewiring and the adjustment of cell proliferation and energy expenditure. As mechanobiology, ROS management, and autophagy embody attractive novel therapeutic opportunities for several major current health threats to our societies, the detailed characterisation of their interplay is warranted.

In this special issue, we invite researchers to contribute original research articles describing, or related to, novel cellular and molecular mechanisms underpinning the links between ROS management, regulation of autophagy, and cell mechanoadaptation. Studies and essays describing the mechanistics of these links, such as mechanical rewiring of metabolic pathways and recycling/autophagy mechanisms, are particularly encouraged. Review articles describing the current state of research are also welcomed.

Potential topics include but are not limited to the following:

- ▶ The interplay between cytoskeletal dynamics, autophagy, and ROS management
- ▶ Links between autophagy, mitophagy and mechanical stimuli and their framing within cell metabolic homeostasis
- ▶ Membrane remodelling and trafficking, and oxidative stress management: endolysosomal compartment dynamics and ROS
- ▶ The feeding of integrin and adhesion signalling onto ROS homeostasis
- ▶ The impact of the interplay of ROS management and mechanical forces on physiology and disease: development, cancer progression, cardiovascular disease, and fibrosis

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/omcl/cmfd/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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