

## **The role of autophagy in cardioprotection and cardiac regeneration**

Sebastiano SCIARRETTA- *Department of Medical and Surgical Sciences and Biotechnologies, Sapienza*

The molecular bases underlying the development and progression of cardiac diseases are not fully characterized. In recent years, autophagy has emerged as a fundamental player in the regulation of cardiovascular homeostasis. Autophagy is an evolutionary conserved, intracellular mechanism, by which cell digests and recycles senescent or damaged cytoplasmic components, including whole organelles. Autophagy represents an adaptive mechanism in response to stress, ensuring cardiomyocyte survival. Autophagy inhibition contributes to cardiovascular disorders, whereas its activation exerts cardiac beneficial effects in preclinical models of pressure overload, chronic ischemic remodeling, cardiometabolic stress and ageing. Previous evidence also indicated that autophagy is involved in the myocardial regenerative capacity. These findings suggest that autophagy is a novel and interesting therapeutic target for the treatment of cardiovascular diseases. Natural products, such as trehalose and spermidine, were reported to be strong activators of myocardial autophagy and are now being tested in clinical trials in patients at high cardiovascular risk. In this talk, evidence demonstrating the fundamental role of autophagy in cardioprotection and cardiac regeneration will be presented, with a focus on the current strategies to boost cardiac autophagy in disease. Gap to human translation will be also discussed.