



ISTITUTO DI STUDI AVANZATI  
DIPARTIMENTO DI SCIENZE BIOMEDICHE E NEUROMOTORIE

# **Autophagy and cancer: Exploring new targets for anticancer therapy**

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**5 novembre 2013**

SCUOLA SUPERIORE DI STUDI UMANISTICI

via Marsala 26, Bologna - ore 18.00

Autophagy is a cellular degradation pathway for the clearance of damaged or superfluous proteins and organelles. The recycling of these intracellular constituents also serves as an alternative energy source during periods of metabolic stress. In cancer cells with defects in apoptosis, autophagy allows prolonged survival. Remarkably, constitutive activation of autophagy is critical for continued growth of some tumors, serving to both reduce oxidative stress and provide key intermediates to sustain cell metabolism.

Autophagy is a catabolic process degrading their own components mediated through lysosomal machineries. Lysosome is the key organelle for this degradation system. Activity of lysosomal enzymes depends on the intra-lysosomal acidity primarily generated by V-type H<sup>+</sup>-ATPase co-operating with Cl<sup>-</sup> movements via Cl<sup>-</sup> channels/transporters. Modulation of this process is an attractive avenue for cancer therapeutic approaches.