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titre: Molecular and polymeric photosensitizers designed to target specific intracellular organelles

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In Photodynamic Therapy (PDT) synthetic photosensitizers (PS) and light are used to efficiently induce photosensitized reactions in specific tissues. We aim to increase the efficiency of PS by tailoring them to execute damage in well-defined cellular targets and consequently to induce specific mechanisms of regulated cell death. Several molecular-based and nanostructured PS will be used to alter cell localization and intracellular release of the PS including functionalized nanosilica, metal-based PS and PS adsorbed in biopolymers. Examples will be shown in which small damages in cytoplasmic membrane cause necrotic cell death, damages in mitochondria cause mainly apoptotic cell death, while parallel damages in mitochondria and in lysosome cause autophagic cell death. We propose to discuss the development of nanostructured and target-specific PS aiming to improve the efficiency of PDT protocols against cancer and infection diseases.

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