


18<sup>th</sup> Mar  
2pm CEST 2024



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**Opto-Bioorganic  
Chemistry for Smart  
Biological Tools and  
Labeling Agents**



 Join the Seminar

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# ItPS Seminars

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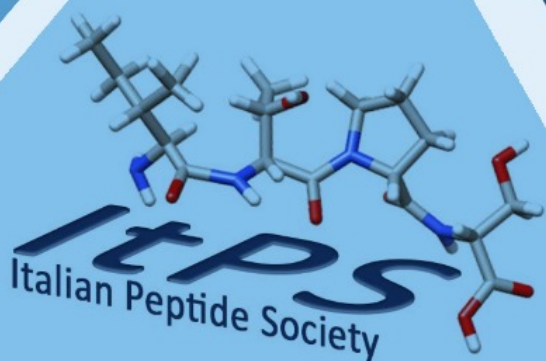
## Opto-Bioorganic Chemistry for Smart Biological Tools and Labeling Agents

In recent years, light has been employed as an external stimulus to photo-control diverse functional processes. This approach relies on the use of small, light-responsive molecules that undergo a structural change upon irradiation, generating different functional states from a single molecule. By attaching suitable substituents to such photoactuators, these molecules can be embedded in a system of choice to link their structural change to a change in the system's properties. On the other hand, the sterical and electronic characteristics of the substituents influence the photophysical and photochemical properties of the core. This mutual interaction needs to be finely balanced and studied in detail to rationally design probes and tools to study and modulate biological systems.

Here, we show different strategies to employ light-responsive building blocks to interact with and control biomacromolecules focusing on the 3D-structure of peptides and their supramolecular interaction.

In this context, we will highlight how optimizing the substituents on different photoactuators allows us to tune several of their properties, such as their UV-Vis absorption profile and photoconversion quantum yield. We will demonstrate how these properties can be employed in various model systems.

Eventually, we envision that deriving such design principles for an increasing number of light-responsive tools will pave the way to individually addressing a single photoactuator in a complex biologically relevant ensemble and thus, to the precise regulation of the biological machinery.



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