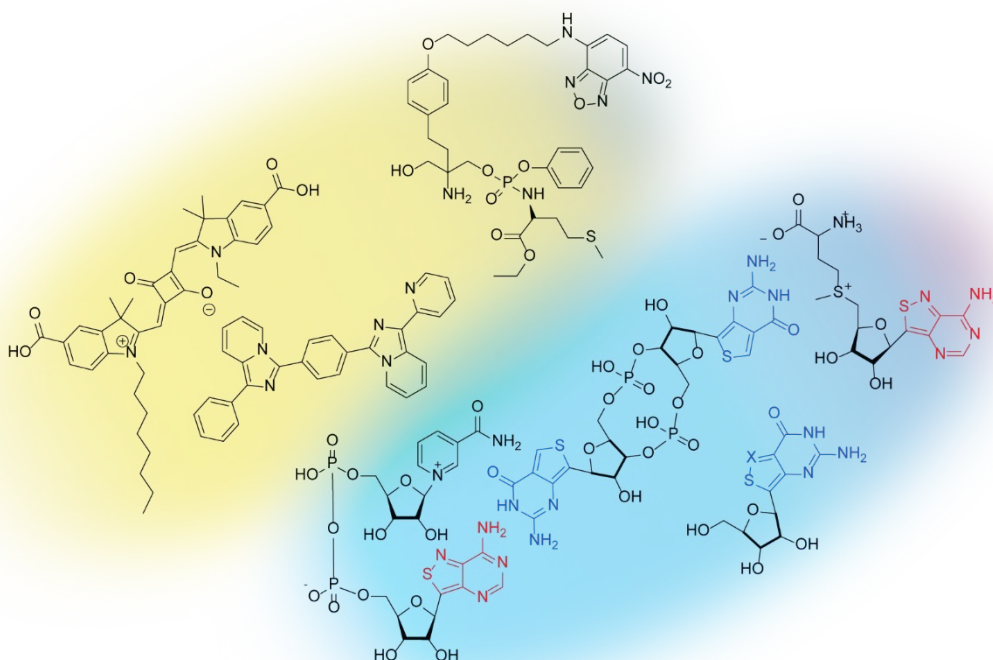


Emissive Tools for Application in Chemical Biology

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The ability to understand the structures and the dynamics involved in biological systems is strongly related to an accurate visualization and definition of signals coming from cells. The major challenge faced by organic chemists when approaching biological problems resides in conferring useful characteristics upon natural occurring molecules, while minimally affecting their structural properties or their biological activities. Being inspired by the natural functional molecules our scientific goal focuses on the design and development of functional probes with unique properties (*e.g.* biocompatibility, bio-affinity, fluorescence) for shedding light, with high-resolution in time and space and no-invasiveness, on the exciting and complex processes that take place in chemical biology.



Lipid membrane bilayers as well as nucleic acids are stable yet dynamic structures and building blocks of cell daily life. Functional, noninvasive probes, able to monitor and follow, without interfering, biological processes are of importance to better understand the foundation of chemical biology. Our interest spread from preparing bright small probes for monitoring lipid membranes to build up emissive isomorphous nucleosides and derivatives to investigate enzymatic processes and biological relevant structures. The unique photophysical properties of these probes allowed monitoring membrane bilayer phases, tagged prodrug interactions with membranes or relevant enzymatic processes *in vitro* by real-time fluorescence spectroscopy, suggesting potential utility in the design of biophysical assays in living system.