

## Fluorescent probes for subcellular imaging

Pablo Rivera-Fuentes

Department of Chemistry, University of Zurich, Winterthurerstrasse 190, 8057, Zurich, Switzerland.  
pablo.riverafuentes@uzh.ch

Fluorescent probes are essential tools for imaging live cells and other biological specimens. Our lab has worked on the development of such probes, in particular for the observation and control of physiological events as they occur in live cells. One main avenue of this research has been the creation of photochemically active fluorescent sensors that can be activated on a molecule-by-molecule basis,<sup>[1,2,3]</sup> thus enabling super-resolution microscopy. These probes, however, are photoactivated with ultraviolet light, which induces significant toxicity. To overcome this limitation, we have developed fluorophores that combine photoactivation and thermal fluxionality to enable time-lapse, single-molecule imaging in live cells.<sup>[4,5]</sup> Finally, I will present recent advances in sensor design that enable truly universal subcellular targeting and ease of use by combining genetically encoded probes and fine-tuned small molecules.<sup>[6]</sup>

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