

Abstract Submitted  
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**Light-responsive compounds and photo-uncaging.** YUANWEI ZHANG, ZHAOXIONG WAN, KARTHIK SAMBATH, New Jersey Inst of Tech — Light-responsive protecting groups enable scientists to regulate activities of bioactive molecules in living cells upon light irradiation. The basic idea behind this technique is that molecules of interest can be inactive with photo-responsive groups, after light-triggered photo-cleavage the molecules of interest can be freed and act in an intact form. This approach has been used for drug delivery and exhibited pinpoint accuracy with light guidance as well as low off-target toxicity. However, most of the light-responsive groups show absorbability in the UV-to-blue region (300 – 450 nm), in which the high energy radiant leads to unwanted photo-toxicity. Thus, there is a strong need to develop photo-responsive groups that can absorb light in longer wavelengths. Boron-dipyrrromethene (BODIPY) derivatives were identified as one of the potential chromophores to sense light, they absorb at the visible region with high molar extinction coefficients. A new class of BODIPY-based oxime ester light-responsive compound was designed to sense green light and photo-uncage carboxylic acids. The mechanism and kinetics of the light-responsive procedure were studied. Further, we constructed a photo-uncaging drug delivery system to release valproic acid, which can inhibit the histone deacetylases and induce apoptosis in tumor cells.

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