## Cancer stemness inhibition-enhanced phototherapy achieved by light-controlled drug delivery system

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Cancer stem-like cells (CSCs) are a subset of cancer cells with extensive cell proliferation capability and show drug resistance towards conventional therapy.<sup>1</sup> After the treatment, survived CSCs can develop into recurrent tumors, leading to the poor prognosis of cancer patients.<sup>2</sup> Light-controlled drug delivery has attracted great attention recently with its unparalleled advantages, such as high precision and minimal invasiveness.<sup>3,4</sup> In the project, a near-infrared (NIR) light-responsive drug delivery system was developed to co-deliver cancer stemness inhibitors and photosensitizers. Light irradiation at the lesion can not only trigger the dissociation of nanoparticles and cargo release but also activate the photosensitizers to kill cancer cells. Moreover, efficient cancer stemness inhibition can reverse the sensitivity of CSCs towards phototherapy, resulting in whole tumor elimination with less recurrence potential. Cancer stemness inhibition can curb tumor cell metastasis and invasion as well. The designed system heralds a promising tactic to eliminate solid tumors precisely with synergistic efficacy and less side effects to normal organs.



*Figure 1:* (A) Schematic illustration of nanomedicine for combination therapy to target both differentiated cancer cells and CSCs. (B) Light-responsive nanomedicine can achieve controlled drug release and sensitized phototherapy.

## References

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