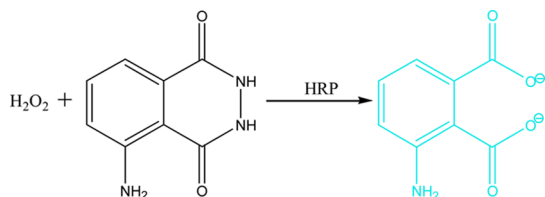


## Comment on “Gold-Nanocrystal-Enhanced Bioluminescent Nanocapsules”

In a recent paper, Lu *et al.*<sup>1</sup> reported metal-enhanced bioluminescence based on bioluminescent protein nanocapsules (BPN) conjugated with gold nanocrystals. They used horseradish peroxidase (HRP) nanocapsules to load the gold nanocrystal for preparing gold–BPN complexes. The as-prepared gold–BPN complexes exhibited approximately 10-fold enhancement in bioluminescent intensity and were effectively delivered into the cells with outstanding stability. However, some incorrect descriptions were found in Scheme 1, which may mislead the readers.

In Scheme 1A, authors describe the oxidation process of luminol to 3-aminophthalate catalyzed by HRP, producing a light emission at 425 nm. Luminol is a very popular and classic chemiluminescent reagent,<sup>2,3</sup> and it can also be a bioluminescent reagent.<sup>4</sup> It has been widely used to ultrasensitively determine various analytes (blood, proteins, DNA, and metallic ions) by inhibiting, enhancing, or catalyzing luminol luminescence.<sup>5–7</sup> However, the molecular structures of both luminol and 3-aminophthalate are incorrect as shown in Scheme 1A. Luminol is the common name for 5-amino-2,3-dihydro-1,4-phthalazinedione, which is often called 3-aminophthalhydrazide.<sup>8,9</sup> Therefore, both luminol and 3-aminophthalate contain amino groups (–NH<sub>2</sub>). However, amino groups are not observed from Scheme 1A. The right luminescence reaction of luminol to 3-aminophthalate catalyzed by HRP is shown in Figure 1.



**Figure 1.** Schematic illustration of the luminescence reaction for the oxidation of luminol to 3-aminophthalate catalyzed by HRP.

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