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# Advantage of NIR bioluminescence for *in vivo* imaging

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## Abstract

Firefly bioluminescent system is attracting widespread attention as an *in vivo* imaging tool. Recently, near-infrared (NIR) light (650~1000 nm) is a hot topic due to high living body permeability. Although many NIR fluorescence imaging tools are commercialy available, these are not self-luminescent. We study the relationship between structure modification and the firefly luminescence wavelength, that the luciferase of *Photinus pyralis* (*Ppy*) was used. And we have succeeded in development of AkaLumine® which is a world's first near-infrared light *in vivo* imaging tool of bioluminescence. AkaLumine® is employed in *in vivo* imaging for mice. However, we wish AkaLumine® is used in larger animals such as marmoset and miniature pigs for *in vivo* imaging. We have subsequently developed a high solubility salt of AkaLumine®, TokeOni. The high solubility of TokeOni enables *in vivo* imaging in the previously mentioned larger animals. We have conducted imaging studies in miniature pig and we report its usability for *in vivo* imaging and the benefit it would provide to the greater scientific field.

**Keywords:** Firefly, bioluminescence, *in vivo* imaging

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