

# Firefly protein lights pathway to improved detection of blood clots

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The enzyme that makes fireflies glow is lighting up the scientific path toward a long-sought new medical imaging agent to better monitor treatment with heparin, the blood thinner that millions of people take to prevent or treat blood clots, scientists are reporting. Their study appears in the ACS' monthly journal *Bioconjugate Chemistry*.

Bruce Branchini and colleagues describe a need for new medical imaging agents that emit near-infrared light — the light rays that "night vision" technology detects, enabling soldiers to see in the dark. Those rays penetrate deeper into the body and could give doctors a better way of detecting the proteins involved in blood clotting. Scientists already use luciferase, the enzyme that makes lightning bugs glow, in laboratory research.

The new study describes an advance toward using luciferase in medical imaging. The scientists combined a protein obtained from firefly luciferase with a special dye that allows the protein to emit near-infrared light. In laboratory experiments, the new material successfully detected minute amounts of a specific blood protein, called factor Xa, which is used to monitor the effectiveness of [heparin](#) treatment. It offers promise for improved monitoring of heparin therapy, the article suggests.

**More information:** "Chemically Modified Firefly Luciferase Is an Efficient Source of Near-Infrared Light", *Bioconjugate Chemistry*.

Provided by American Chemical Society

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