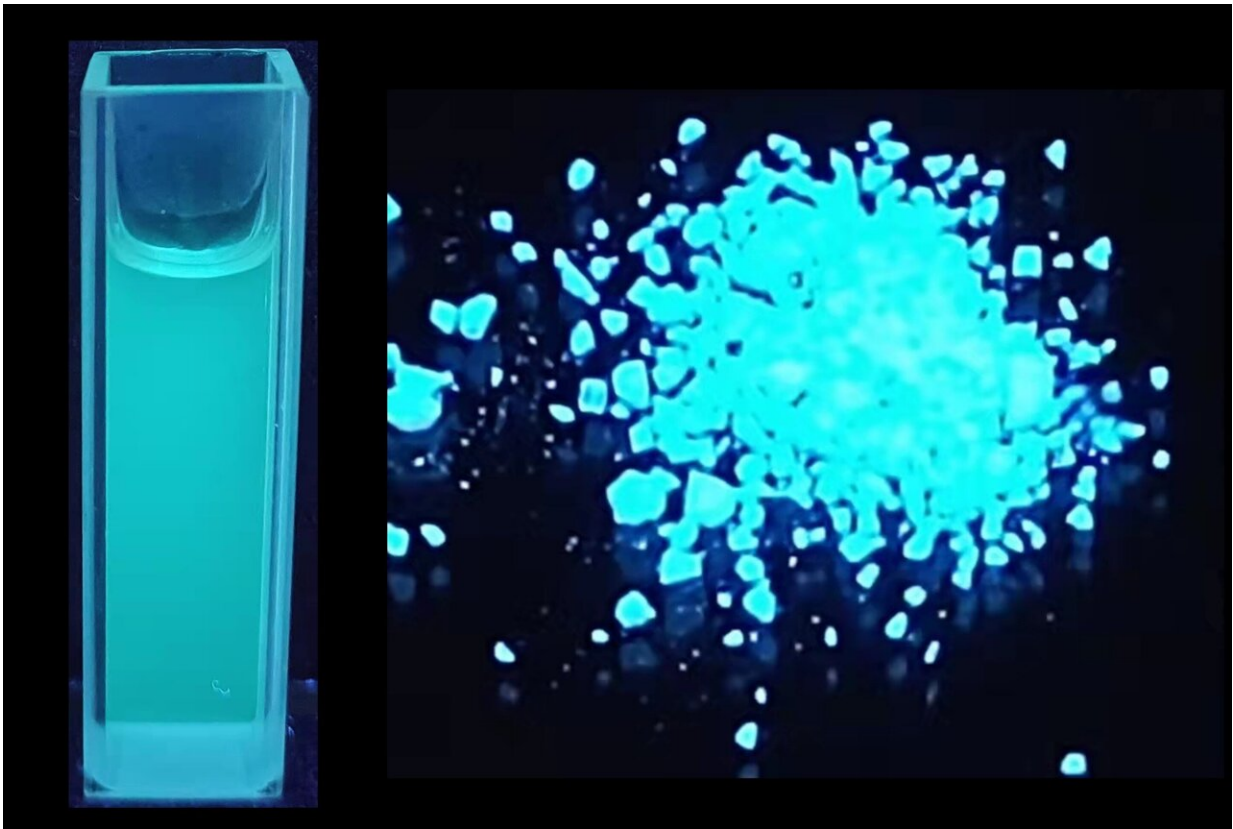


# Fluorescent blue coumarins in a folk-medicine plant could help us see inside cells

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A fluorescent compound from a plant root could help image cells quickly.  
Credit: Adapted from *ACS Central Science* 2023, DOI:  
[10.1021/acscentsci.3c00012](https://doi.org/10.1021/acscentsci.3c00012)

Plants that glow under ultraviolet (UV) light aren't just inventions of

science fiction TV and movies. Roots of a traditional medicine plant called the orange climber, or *Toddalia asiatica*, can fluoresce an ethereal blue hue. And now, researchers have identified two coumarin molecules that could be responsible. These natural coumarins have unique fluorescent properties, and one of the compounds could someday be used for medical imaging. Their study is published in *ACS Central Science*.

Fluorescent substances take in UV light that is directed on them and release vibrantly colored visible light. And some glow even more brightly when they are close together, a phenomenon seen in compounds called aggregation-induced emission luminogens (AIEgens). They are key components in some optical devices, cellular imaging techniques and environmental sensors. However, these molecules are usually made in a lab, and many are toxic. Some plants already have this ability, so, Ben Zhong Tang, Zheng Zhao, Xiao-Dong Luo and colleagues turned to nature to find naturally occurring and safer AIEgens.

The researchers dried orange climber roots, crushed them into a powder, and then isolated and identified coumarin compounds with aggregation-induced emission properties: 5-methoxyseselin (5-MOS) and 6-methoxyseselin (6-MOS). When dissolved in an [organic solvent](#), 5-MOS exhibited a blue-green glow and 6-MOS had a slightly dimmer blue glow. In addition, both AIEgens had low cytotoxicity and good biocompatibility.

Then in a final series of experiments, the team found that mitochondria could be clearly identified in [live cells](#) stained with 5-MOS without any additional processing, making cell imaging easier and faster than with most current methods. The newly reported compound is a natural, plant-derived option that could advance bioimaging, the researchers say.

**More information:** Natural Coumarin Isomers with Dramatically

Different AIE Properties: Mechanism and Application, *ACS Central Science* (2023). [DOI: 10.1021/acscentsci.3c00012](https://doi.org/10.1021/acscentsci.3c00012)

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