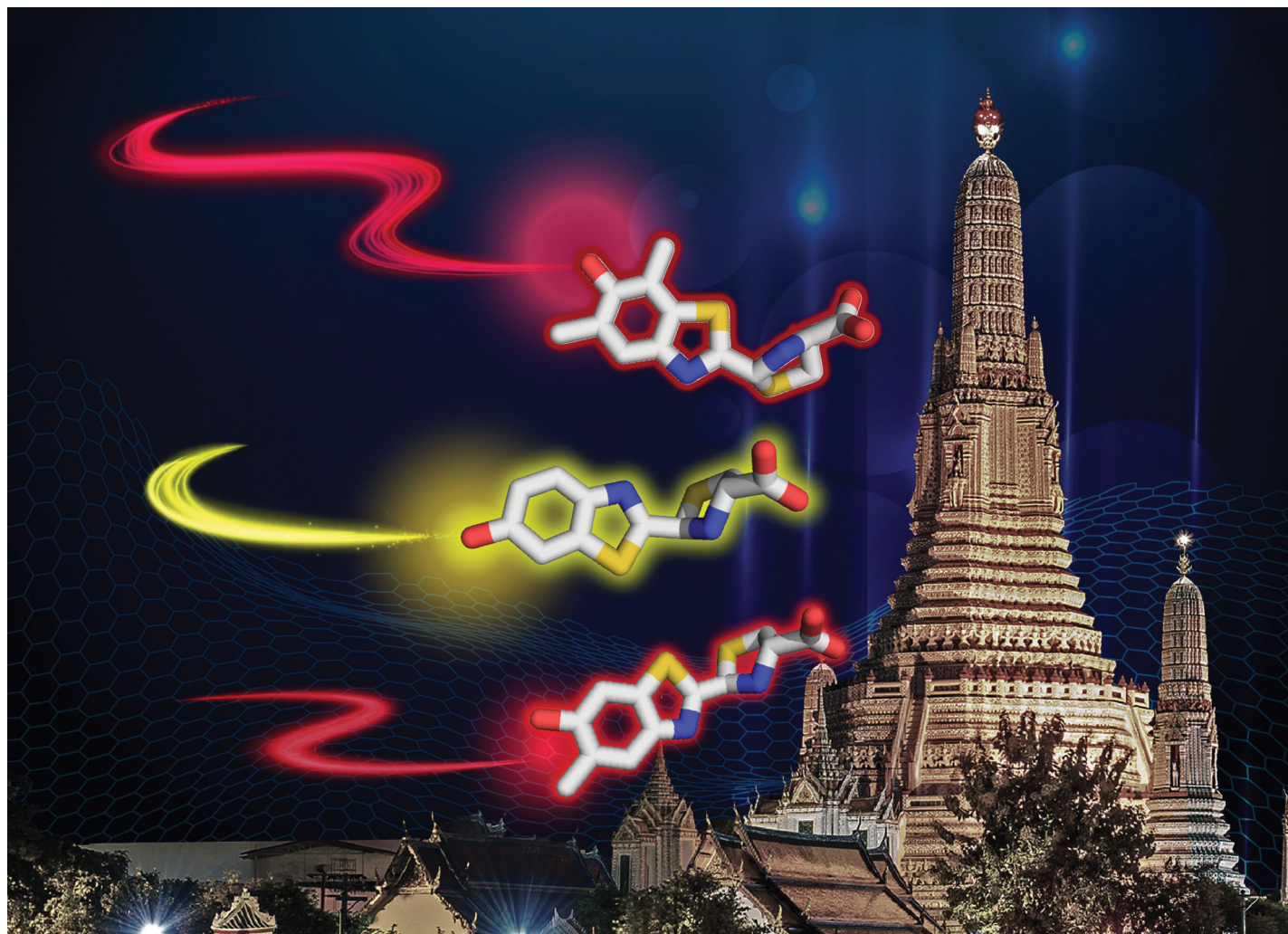




Showcasing research from Professor Pimchai Chaiyen's laboratory, School of Biomolecular Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Rayong, Thailand.

Red-shifted D-luciferin analogues and their bioluminescence characteristics

Reactions of luciferases and luciferins found in various organisms can generate bioluminescence or cold light emission useful as analytical and visualization tools. Here, six new D-luciferin analogues were synthesized. All analogues produce light with longer wavelengths compared to native D-luciferin. Notably, 5'-methyl- and 5',7'-dimethyl-D-luciferin generate brighter, red-shifted, and longer-lasting signals across multiple luciferases. Both analogues showed high sensitivity in mammalian cell assays. These red-shifted D-luciferin analogues are valuable for improving luciferase applications in biomedical research because they would allow better light penetration through cells, blood and tissue of animal models.

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See Pimchai Chaiyen *et al.*,
RSC Chem. Biol., 2026, **7**, 67.