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# New luminescent compounds enhance the speed and sensitivity of bio tests

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## Abstract

At Biosynth we have been producing luminescent molecules and substrates for over 20 years. We are constantly improving the synthetic access to luminogenic compounds and optimizing their properties. Our final products are used in numerous commercial tests, kits and media. This presentation introduces our latest developments.

A. Pro-luciferins. Luciferin derivatives were coupled to enzyme-labile groups to form bioluminescent substrates for specific bacteria detections of different strains such as coliforms, *E. coli*, *Enterococcus ssp.* or *S. aureus*. These products improved the detection limits significantly, for example the sensitivity for coliforms detection is increased 30-fold as compared to conventional fluorescence methods.

B. Biosynth produces and markets CybLuc (N-cyclobutylaminoluciferin). The group of Minyong Li from Shandong University, Jinan recently developed the novel red-emitter Luciferin derivative CybLuc, which is characterized by maximum wavelength of about 600 nm, higher lipohylicity and extended signal duration in vivo. These characteristics make CybLuc the ideal substrate for deep BLI.

C. Luciferase is a crucial component of ATP-based hygiene monitoring. To overcome frequent problems with conventional luciferase enzyme, such as low thermal and storage stability or unwanted background enzyme activities, Biosynth develops a new luciferase isoform by genetic approach and using a new, highly stable enzyme preparation method.

D. Dioxetane-based probes for life science applications. In close cooperation with Doron Shabat, Tel Aviv Univ. who developed a series of novel Dioxetane based chemiluminescence probes Biosynth produces AquaSpark<sup>TM</sup> probes for research and diagnostic applications. These probes offer unique advantages as they can work as single agents (without the need for enhancers), they have a higher efficiency and sensitivity over currently existing probes, they are especially designed to work under physiological conditions and can be used ex-vivo and in-vivo.

**Keywords:** Luciferin, Pro, luciferin, luciferase, CybLuc, diagnostic, AquaSpark, dioxetane

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