

## Einladung zum 79. ZEBET-Seminar

### Multicolor reporter gene assay for toxicity testing

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In the post genome era, reporter assay systems are widely used to study promoters, interactions between promoters and transcription factors, signal transduction and other cellular activities. Reporter assays are also applied to drug and toxicity screenings *in vitro*, *in cellulo* and *in vivo*. Of the reporter genes known to date, luciferases, enzymes that catalyze bioluminescence reactions, are used most frequently because their sensitivity and linear response range are superior to those of typical reporters including  $\beta$ -galactosidase, chloramphenicol, acetyltransferase,  $\beta$ -glucuronidase and fluorescent proteins. Bioluminescence is a simple reaction that is triggered by the addition of luciferin solution, and the equipment for measuring light intensity is simple because it uses only a photomultiplier or a charge-coupled device (CCD) camera; thus, reporter gene assays can be applied to high-throughput screening (HTS). For these reasons, luciferases are suitable reporter enzymes for the quantitative measurement of gene expression.

We have developed a novel tricolor *in vitro* reporter assay system to predict the toxicity of harmful chemicals. In this assay three luciferases that emit green, orange, and red light with a single substrate are used as reporter genes. The activities of the luciferases can be measured simultaneously and quantitatively with optical filters. This system enables us to simply and rapidly monitor multiple gene expressions in a one-step reaction.

**TERMIN: Mittwoch, 19. Januar 2011, 10:30 Uhr**

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