

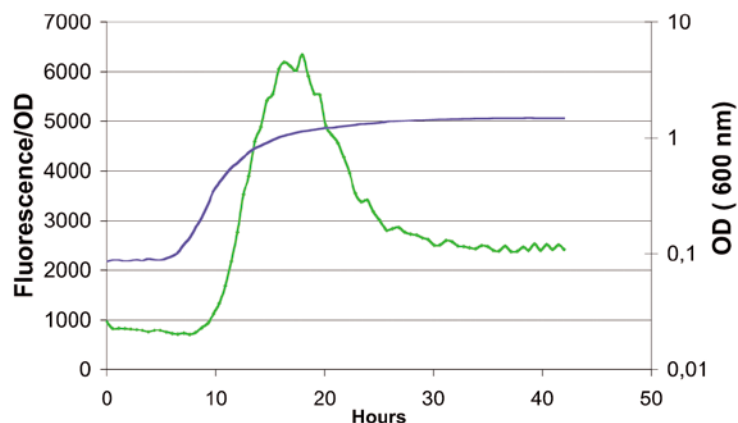
# Infinite™ 200

## in search of biological insecticides

The Microbial Ecology and Host-Pathogen Interaction Laboratory (EMIP), of the INRA Institute in Montpellier, France, has already made great progress in research on virulence factors of insect pathogens, using Tecan's monochromator-based Infinite™ M200 microplate reader. The researchers, led by Dr Alain Givaudan, are studying the biochemistry, physiology and genetics of the bacterial virulence factors, with a view to developing a new means of biological control for the integrated pest management of crops.

Dr Givaudan, head of the Virulence Factors and Bacterial Genomics group, explained: "We are studying insect-pathogenic bacteria, *Xenorhabdus* and *Photorhabdus*, which are symbionts of entomopathogenic nematodes. When the nematodes attack an insect, the bacteria are able to invade the insect and release virulence factors which lead to the death of the host insect. But, before we can monitor bacterial gene expression *in vivo*, we are first studying the virulence factor expression during

the course of bacterial growth *in vitro*. We have chosen the Infinite M200 for our work because it is able to maintain shaking cultures over long periods and because various parameters, such as the temperature, agitation and the frequency of measurements, can all be programmed very easily using Tecan's Magellan™ software. The instrument is very easy to use, and really allows us to obtain plenty of results in a short space of time."



Bacterial cells containing a transcriptional fusion with the destabilized GFP(AAV) were cultured in LB broth. Bacterial growth (in blue) and fluorescence (green line) were monitored using the Infinite M200. As shown on the figure, the burst of expression of this specific gene occurred at the end of the exponential growth phase. The instability of dGFP revealed that the gene expression is transient during the stationary phase



"To study real-time gene expression we are using novel green fluorescent protein (GFP) variants, with half-lives as short as 40 minutes, as reporter molecules. The optical density (bacterial growth) and fluorescence (gene expression) of shaking bacterial cultures, in black 96-well microplates, are simultaneously monitored every 30 minutes over 48 hours. Our studies have so far revealed that the expression of virulence factor is transient during bacterial growth."

The laboratory already has plans to use the very flexible Infinite M200 in other related projects. For example, another group in EMIP is studying the taxonomy of bacterial entomopathogens and determining the genetic relatedness among the bacteria by performing fluorometric hybridizations in microplates, and measuring the fluorescence using the Infinite M200.