

Breathing new life into cell-based studies

The recently launched Gas Control Module for the Infinite® 200 PRO is offering researchers at the University of Salzburg a new approach to the investigation of cellular processes, allowing incubation of cells within the reader for the first time.

Variations in environmental conditions can lead to inconsistent and unreliable data for cell-based optical studies, due to changes in the pH and color of the media during incubation. Tecan developed the Gas Control Module (GCM™) for the Infinite 200 PRO multimode microplate reader to allow precise regulation of oxygen or carbon dioxide levels within the reader chamber, providing a more stable culture environment over time and allowing the duration of cell-based experiments to be extended without adversely affecting results.

Thanks to the close relationship between Tecan Austria and the University of Salzburg, Priv-Doz Dr Kristjan Plaetzer from the Division of Physics and Biophysics has been assessing the advanced capabilities of the patent pending GCM for cell-based optical studies. Kristjan explained: "One of the major issues in cell biology has always been the relatively long time course of experiments, particularly for eukaryotic cells. Even rapidly dividing cells, such as cancer cells, still have a doubling time of 16 to 24 hours. For this reason, cell biology research over the last 30-40 years has mainly concentrated on cellular structures, using microscopes and colorimetric dyes to study phenotypic changes in these systems. However, structural biology is just one aspect of a living system, governed by a series of dynamic processes, and research has more recently turned towards investigation of cellular processes."

"Fluorescence- and luminescence-based techniques are widely used to follow the kinetics of cellular processes over time, but these investigations are generally limited by the stability of the culture environment. Cultures need to be transferred between a CO₂ incubator and the reader at regular intervals to produce quantitative kinetic data, however the time course of many biological processes is between 24 and 48 hours, leading to gaps in the data when researchers need to rest. The development of the GCM for the Infinite 200 PRO eliminates this obstacle to research, by allowing cultures to be incubated within the reader without affecting the resulting data."

"We first began working with Tecan many years ago, and have always been very impressed by its instruments and services," Kristjan added. "We even still have our original SPECTRAFluor™ reader, which works reliably, so we are certainly convinced of the quality of Tecan equipment. The flexibility of the Infinite M200 PRO is also a real advantage in a research environment, as the Quad4 Monochromators™ system allows us to run a wide spectrum of assays. If you want to perform a new assay, you simply scan for the most appropriate excitation wavelength and can start using it straight away, without the need to buy new filter sets. The dual injector module further increases the flexibility of the instrument, particularly for luminescence measurements, and the latest version of the

system's i-control™ software is well suited to cell-based studies. You can easily set the incubation temperature and define the plate type, and it offers a large number of pre-defined parameters for specific assay kits. Overall, this makes the Infinite 200 PRO

an ideal tool for process biology, in the same way the microscope is a tool for structural biology.”

To find out more on Tecan's Infinite 200 PRO multimode readers, visit www.tecan.com/infinite200

Kristjan Plaetzer (left) and Victoria Engelhardt
(Photo: Kolarik)

