



Bruker Industry Educational Session

Monday 24 June 2024

12:35 – 13:15

Room – Lammermuir 2

Harnessing the Power of the Beacon® Platform to Advance Cell Therapies and Accelerate Cell Line Development Workflows

The revolution in life science research is focused on understanding the function of single cells, which is essential for developing new therapies. Traditional methods like FACS and scRNASeq provide only partial insights into cellular behavior. Bruker's Beacon® Optofluidic system offers a comprehensive approach, delivering a complete picture of single-cell function. The Beacon enables serial multi-modal analysis and real-time imaging of the same live cell and its progeny, allowing simultaneous measurement of thousands of single cells or colonies. This platform integrates two advanced technologies:

1. Light-driven Optoelectronic Positioning (OEP) gently controls single cells and beads, facilitating customized experiments without harming the cells.
2. A microfluidic chip with NanoPen® chambers ensures continuous media and assay reagent flow, enabling dynamic cellular biology studies over time with a high-resolution microscope.

This powerful technology has propelled advancements in cell line development (CLD) using Bruker's Opto CLD workflow on the Beacon platform. Typically, CLD campaigns demand extensive technical and resource investments, requiring repeated cell function assessments of candidate clones over several months using various methods to select lead clones for cell banking. The Beacon platform streamlines these measurements, enabling them to be conducted at the earliest stages of a CLD campaign, meaningfully accelerating clone selection. For instance, productivity and quality measurements can be performed within days of single cell cloning (SCC), and stability measurements within the first 4-6 weeks of SCC. Here, we present the principles underpinning these substantial advancements and discuss the outcomes they enable for CLD practitioners utilizing the Beacon platform.