

AUTOMATED MULTIMODE MICROSCOPY AND IMAGE ANALYSIS IN ULTRA-LOW-LIGHT AND IN VARIABLE BACKGROUND CONDITIONS

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The trend from simple, single endpoint to complex multi-endpoint reading to allow quantifying the *full complexity of biological phenomena* of a wide variety of features in cells or multi-cellular models leads to a need for microscopic readers with better integration of the dimensions space and time with a novel blend of precision, sensitivity, flexibility and speed.

Multimode reading allows following multiple events, like protein localisation or translocation in cells. We have built an analysis platform capable to quantify these events in variable background conditions within and across samples. Using novel shape detection principles, the analysis platform successfully identifies and quantifies objects in very faint, low signal to noise images.

Examples include: signal transduction induced low-light protein translocation or expression. Specific cell identification in brightfield images of unlabelled live cells that are distorted by variable air-liquid meniscus effects in a multiwell.

Combining these background and noise invariant capabilities with multimode analysis provides a powerful tool for high volume population analysis of cell culture assays.