

# Real-time cell monitoring in bioreactors



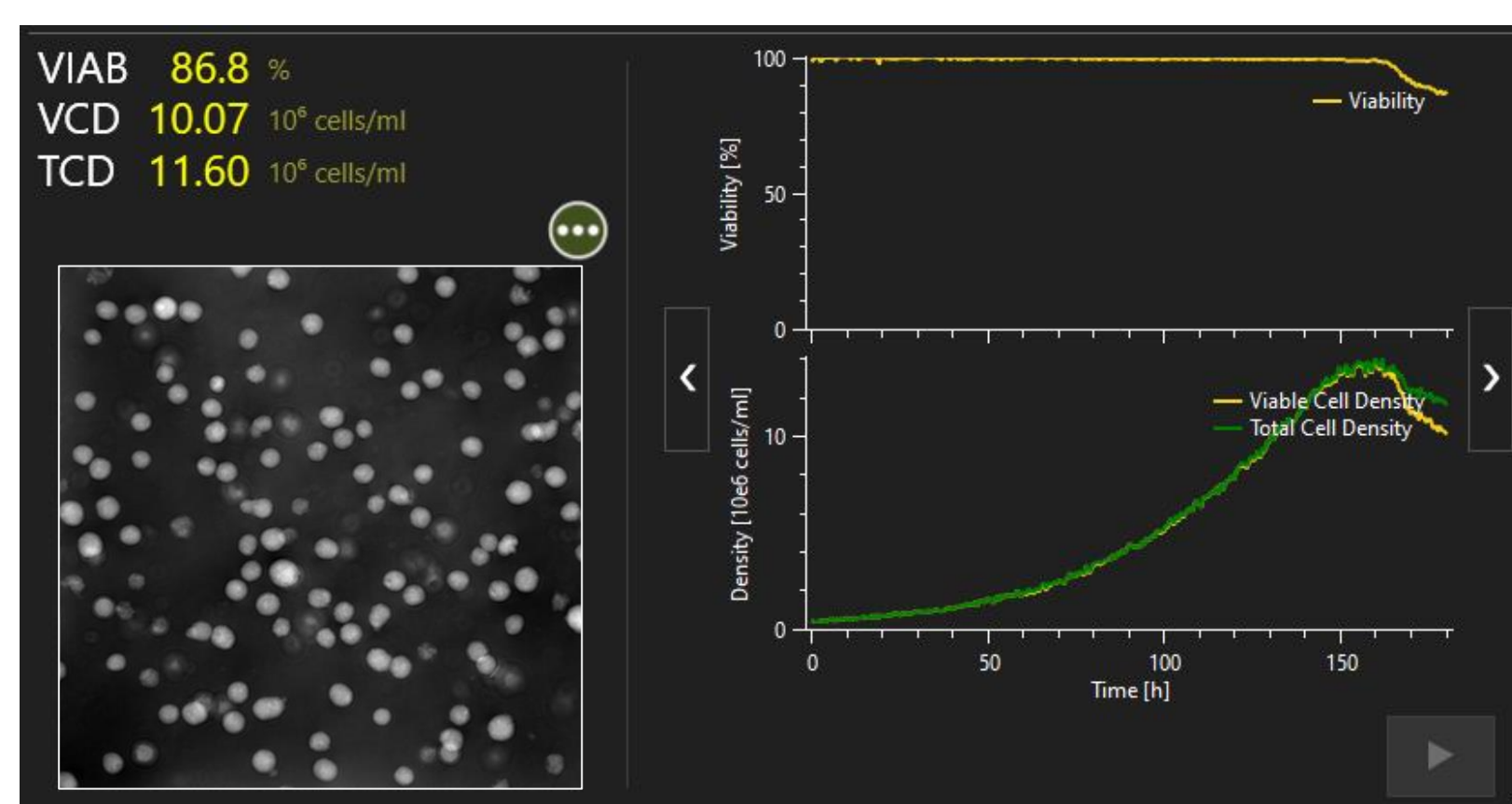
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## Abstract

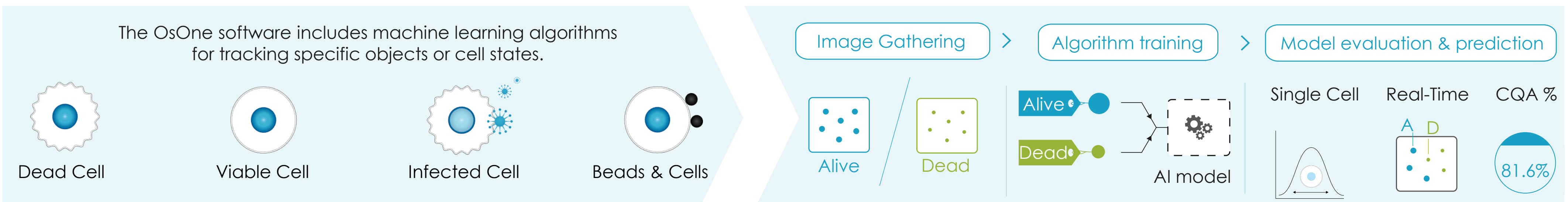
Cell monitoring in bioreactor is often done in an offline manner with manual sampling, staining and measurement on a dedicated device. Analysis is often limited to cell count and cell viability, which are traditionally performed once a day. This process has many issues : manual sampling is labor intensive; cell sampling involves loss of cells and bioreactor opening increases risk of contamination... These elements prevent offline monitoring from providing real-time information.

The Ovizio iLine F brings real-time cell-monitoring to bioreactors by combining label-free imaging and closed-loop bioreactor connection cartridges. Captured images are analyzed by machine-learning algorithms to enable monitoring of multiple parameters : cell viability, cell count, detection and counting of objects and beads and morphological changes (activation, infection...)

## Ovizio iLine F Setup

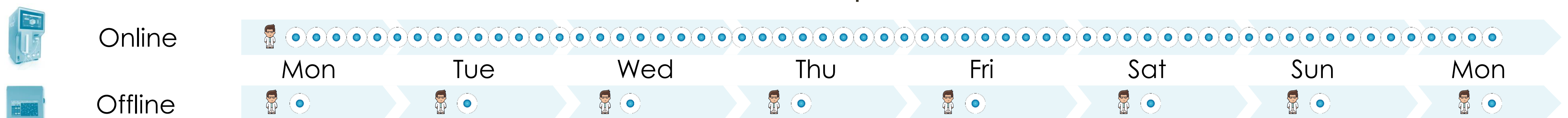


Our OsOne software showing real-time measurement of cell quality attributes (CQA's) : viability, total cell density and viable cell density. CHO cells grown for 7 days in bioreactor.

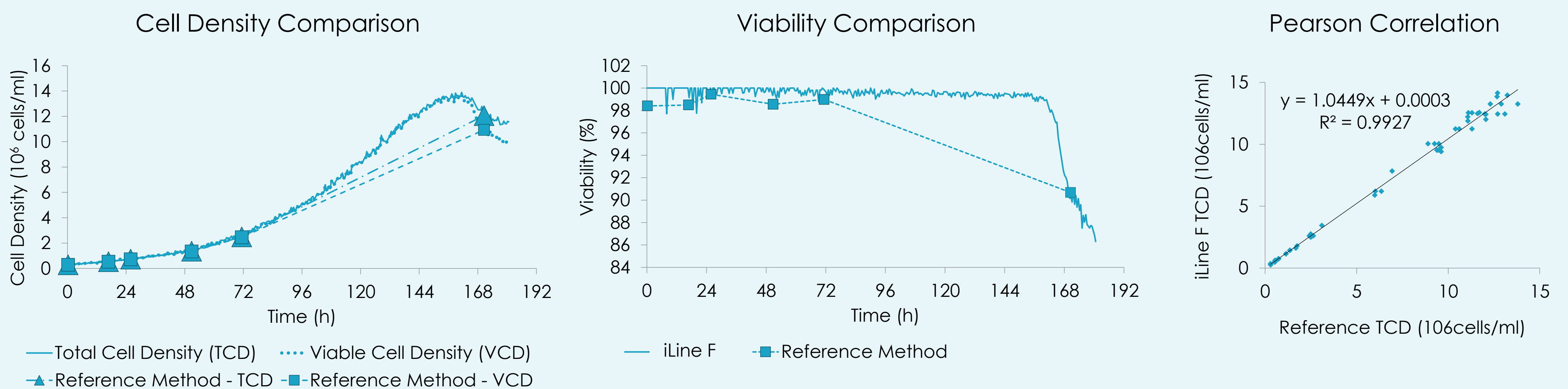


## Online vs Offline measurement : workflow comparison

● : Cell Measurement    👤 : Manual operation



## Online vs Offline measurement : CQAs (Viability, Cell Counting & Morphological changes)



CHO cells inoculated at  $0.3 \times 10^6$  viable cells/ml in CD-OptiCHO™ medium (Life Technologies) and batch cultured for 7 days. Total cell density, viable cell density and viability were measured either every 30 min with our iLine F Pro or once a day with a ViCell (Beckman Coulter®).

The Ovizio iLine F enables real-time monitoring of cells in a bioreactor. Our machine-learning algorithms provide reliable cell-monitoring with robust results on cell viability, viable cell density (VCD) and total cell density (TCD).

