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# Data-analysis strategies for image-based cell profiling

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## Abstract

Image-based cell profiling is a high-throughput strategy for the quantification of phenotypic differences among a variety of cell populations. It paves the way to studying biological systems on a large scale by using chemical and genetic perturbations. The general workflow for this technology involves image acquisition with high-throughput microscopy systems and subsequent image processing and analysis. Here, we introduce the steps required to create high-quality image-based (i.e., morphological) profiles from a collection of microscopy images. We recommend techniques that have proven useful in each stage of the data analysis process, on the basis of the experience of 20 laboratories worldwide that are refining their image-based cell-profiling methodologies in pursuit of biological discovery. The recommended techniques cover alternatives that may suit various biological goals, experimental designs, and laboratories' preferences.

## Figures

**Figure 1. Representative workflow for image-based cell...**

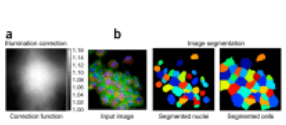

**Figure 2. Methods used for image analysis.**

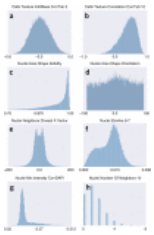

**Figure 3. Diversity of feature distributions in...**

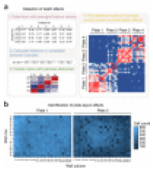

**Figure 4. Example diagnostic plots for detecting...**

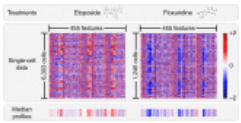

**Figure 5. Single-cell data aggregation.** The feature...

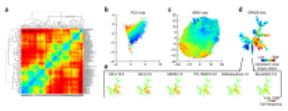

**Figure 6. Visualizations for downstream analysis.** The...

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