ONE-PAGER

# Beyond Dyes: Label-free phenotypic drug fingerprinting

## Direct from incubator to insights

Cell painting is a fluorescence imaging method which captures static phenotypic responses of cells and is limited by the complexity of using five or more dyes to visualize different organelle systems(1).

Nanolive's label-free live cell imaging method eliminates the need for costly dyes and complex protocols by leveraging the inherent properties of cell structures (including morphology and dry mass) to simplify phenotypic profiling in live cells, without phototoxicity or photobleaching.

Dynamic functional, morphological, and content metrics from living cells and organelles are delivered by Nanolive's AI-powered automated digital assays, providing richer insights with higher biological relevance.

## Nanolive's approach

Quantitative label-free imaging

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AI-powered analysis

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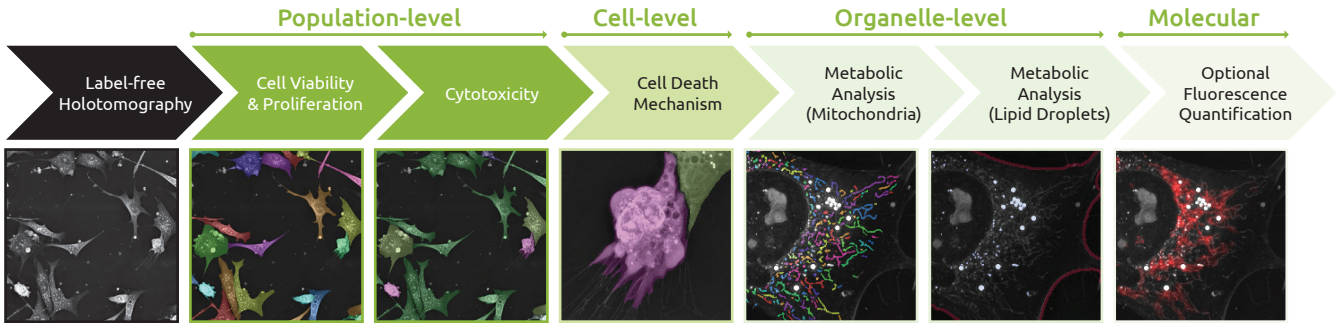
Morphological, content & functional insights into MoA

## Label-free imaging and automated analysis

Automated analysis transforms raw images into actionable biological insights at the push of a button.



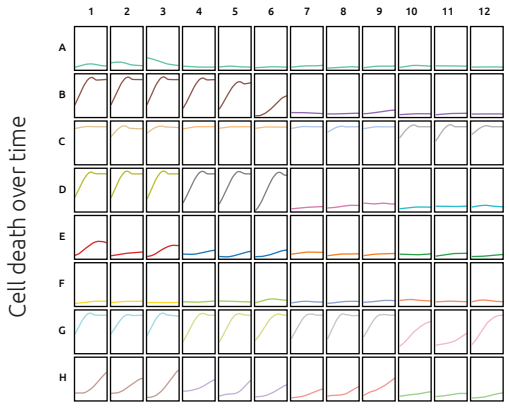

## Dynamic functional insights

Automatically quantify treatment effects over time at plate, single-cell, and organelle resolution, linking compound exposure to phenotypic changes across pathways and targets.

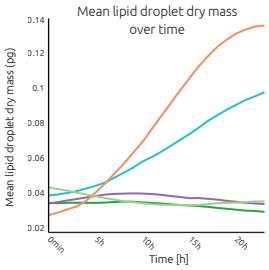
*All graphs were produced from the same 96-wp label-free drug screen in preadipocytes (control condition in purple).*

### Cell Viability, Proliferation and Cytotoxicity

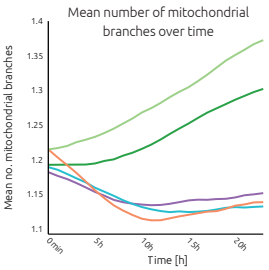
Monitor cell growth, health, and cytotoxicity dynamically, with automated classification of apoptosis vs. necrosis.




### Metabolism & Cell Health




Spot early metabolic modulation and off-target lipid stress to guide compound triage.

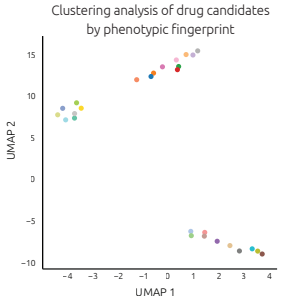



Measure mitochondrial stress, morphology, and fragmentation as early indicators of toxicity or MoA.

## High content screening

Hundreds of individual metrics can be combined to produce phenotypic fingerprints and cluster compounds by functional response. When benchmarked against reference drugs, phenotypic profiling can indicate likely mechanisms of action, flag off-target or toxic effects and accelerate hit-to-lead prioritization for uncharacterized drug candidates.

*This example UMAP clustering analysis was produced in EVE Explorer using data from the 96 well plate above, incorporating label-free metrics from Nanolive's digital assays.*




**CONTACT US TO DISCUSS HOW NANOLIVE CAN BE INTEGRATED INTO YOUR MOA AND TOXICOLOGY WORKFLOWS:**


*References:*
*(1) Cimini, B. et al., Nature Protocols (2023). https://doi.org/10.1038/s41596-023-00840-9*



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