

Smarter Workflow, Trustworthy Results

iFLUOR shortens the path from acquisition to decision. By combining gentle imaging, controlled microenvironments, and real-time analytics, it saves time, preserves cells, and enhances reproducibility. So, your datasets are easier to compare across days, assays, and labs.

Inside the platform

- **Optics & Imaging:** large-area capture engineered for dynamic samples.
- **Microfluidics:** programmable, leak-tight flow control for stable conditions and precise dosing.
- **Incubator compatibility:** Okolab incubator H301 mini allows precise control of temperature, CO2 and humidity.
- **Analytics:** computation of beat rate, amplitude, synchronization, with exportable reports.

A simple workflow

1. Load & stabilize the sample with temperature-controlled microfluidics.
2. Acquire with pulsed illumination over the full 10×10 mm FOV.
3. Analyze in real time to obtain maps and metrics.
4. Iterate protocols (dose, wash-out, repeat) and compare runs.

See iFLUOR live

Request a DEMO or data pack: info@d-tails.com

Scan our QR code:



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DT-FLUOR

Imaging Beating Heart Cells: Fast, Gentle, and Quantitative with iFLUOR

SEE MORE,
STRESS LESS.

D-TAILS
Disruptive Technological Advances In Life Science

iFLUOR is the imaging platform designed to capture the fast, fragile dynamics of cardiomyocytes and translate them into clear, quantitative results without compromising cell health. Whether you are screening compounds or following long-term maturation, **iFLUOR** streamlines the journey from experiment to insight.

Key benefits of iFLUOR:

iFLUOR couples a large field of view with integrated microfluidics to stabilize conditions and minimize stress. On top, real-time analytics continuously extract functional metrics. So you see what's happening, as it happens.

What you get in practice:

- **Wide-area coverage:**
Large field of view (10×10 mm) to image hundreds of cardiomyocytes or entire spheroids at once, capturing coordination, heterogeneity, and rare events.
- **Low-stress illumination:**
Pulsed light minimizes phototoxicity/photobleaching and preserves native physiology over long recordings and repeated sessions.
- **Chip-based parallel tracking:**
Monitor multiple populations side-by-side on the same platform for direct, controlled comparisons.
- **Precise microfluidics:**
Programmable, leak-tight flow with spatial and temporal control (up to 4 syringe pumps) for reproducible dosing, wash-in/wash-out, gradients, and complex protocols.
- **Integrated analysis tools:**
Transform raw imaging into quantitative data on beat frequency and regularity.
- **Environmental control:**
Okolab H30I Mini compatibility provides temperature stability, CO₂/humidity control, and support for long-term recordings with gentle perfusion.

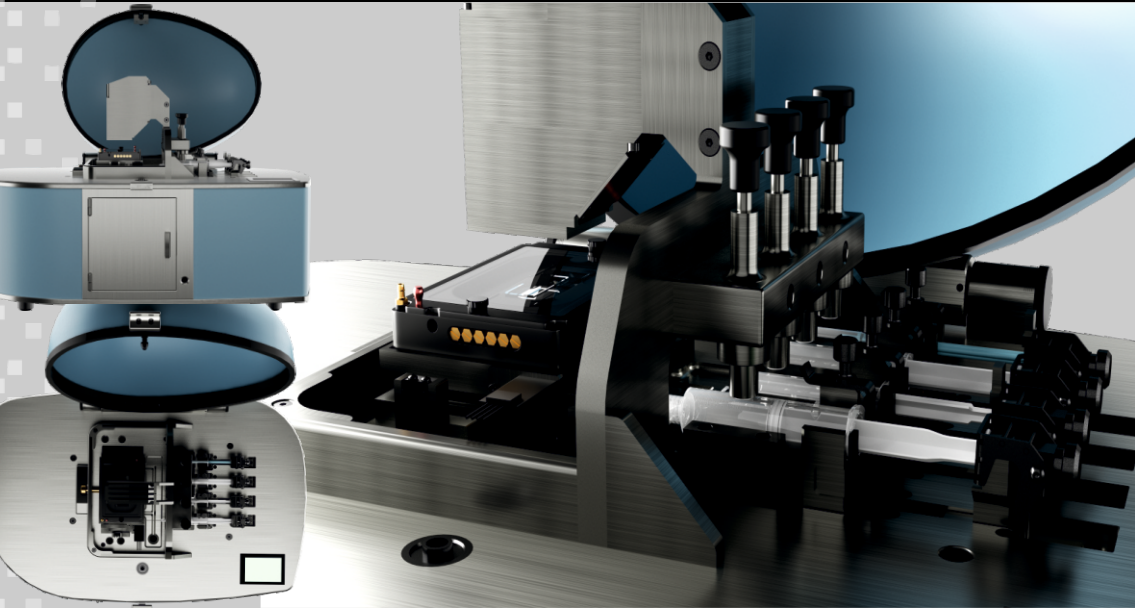


Figure 1. Three perspectives of iFLUOR: front view, top view, and a close-up of the microfluidic module providing fine spatial/temporal control of experimental conditions.

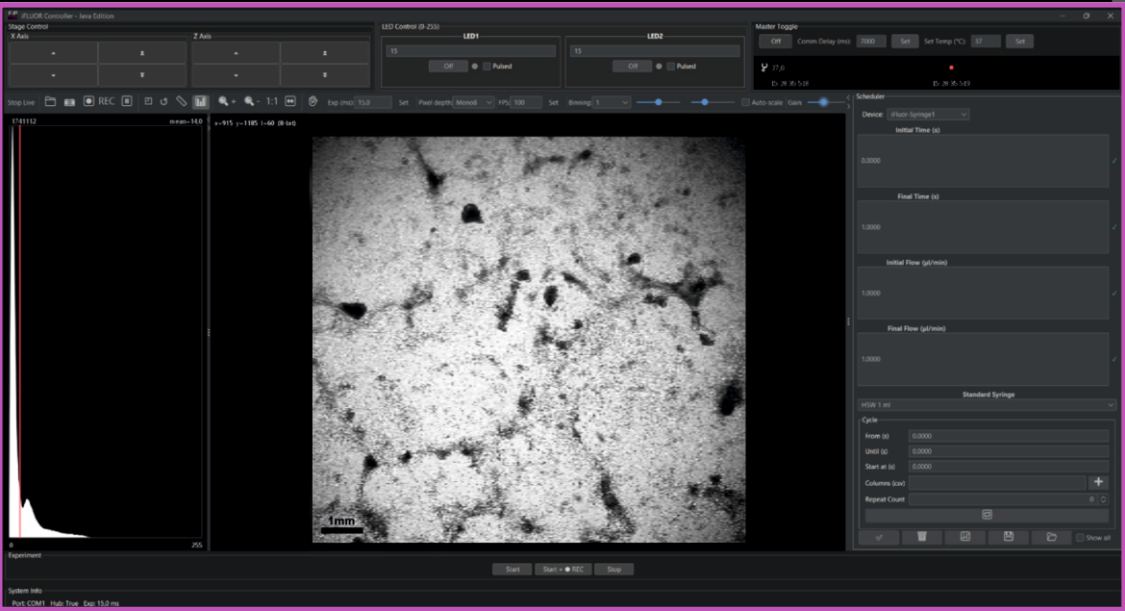
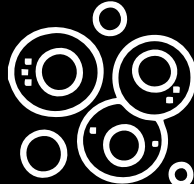
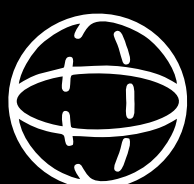


Figure 2. The intuitive iFLUOR interface in action: real-time visualization of cardiomyocytes with accessible functional parameters. Cardiomyocytes courtesy of Prof. Monica Ballarino and Giulia Buonaiuto (Department of Biology and Biotechnology "Charles Darwin" Sapienza University of Rome).

Applications:

Drug testing	iPSC-derived cardiomyocytes	3D cardiac spheroids	Long-term functional assays
			
dose-response curves with controlled perfusion and standardized functional endpoints.	follow maturation and variability across wells, batches, or time points.	capture coordination and spatial heterogeneity across the entire construct.	repeated, non-disruptive imaging to track trends without exhausting the sample.

Example results :

iFLUOR enables rapid detection of synchronized beating clusters and provides statistical summaries. Its color-coded maps surface leading and lagging regions for an intuitive readout of coordination and uncover small desynchronized pockets invisible to the naked eye.

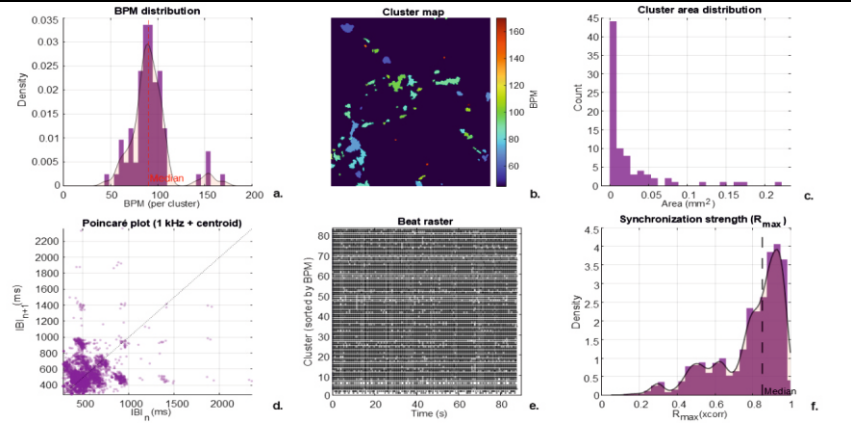


Figure 3. Multi-panel analysis of cardiomyocyte beating dynamics. (a) BPM distribution: Histogram of per-cluster beating rate; red dashed line marks the median. (b) Cluster map colored by BPM: Spatial map of all detected clusters; each is colored by its median BPM derived from the pixel periods within that cluster, highlighting spatial heterogeneity across the field of view. (c) Cluster area distribution: Histogram of cluster areas (mm²) for clusters, summarizing the size spectrum of contractile regions. (d) Poincaré plot of IBI: Scatter of successive inter-beat intervals (IBI_n vs. IBI_{n+1}) from all clusters; IBIs refined by 1 kHz upsampling and centroid timing. The diagonal indicates perfect regularity; spread reflects beat-to-beat variability. (e) Beat raster (clusters sorted by BPM): Event raster of detected beat times for each cluster (rows), BPM highlighting temporal coordination and rhythm stability. (f) Synchronization strength (R_{max}): Histogram of the maximum normalized cross-correlation across cluster pairs; red dashed line marks the median.