

Cell Analytics

Brochure with interactive links



nan]i[on

] **Accelerate** **[**
your research

Next level live-cell kinetic and phenotypic assays

AtlaZ

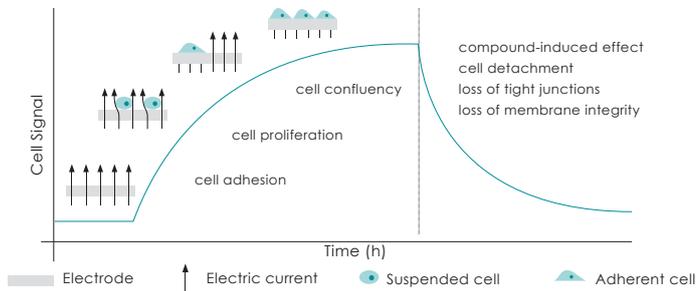
AtlaZ accelerates cellular research by enabling the investigation of a large variety of effects in cells over time. It offers label-free and real-time monitoring capabilities. It can simultaneously or independently record data from up to six 96-well plates.

To obtain a comprehensive understanding of your cells, it is essential to employ continuous and real-time monitoring, which provides access to kinetic and phenotypic information. The system's methodology relies on electrical impedance spectroscopy, which coupled with its impressive throughput, delivers an unprecedented quantity

and quality of information from your cellular experiments.

When the cells adhere, proliferate or die, they gradually prevent or enable the flow of electric current through the electrodes integrated in the culture plate, leading to a change in impedance.

It has been proven to be an excellent method for monitoring cell adhesion, cell specific structural changes, GPCR research, cancer research (e.g. breast cancer, immuno-oncology), proliferation and cytotoxicity (e.g. cardiotoxicity or hepatotoxicity).



Choose your quantitative cell analytics solution:

- Record from 6 x 96 well plates simultaneously or independently in real-time and label-free
- Select various recording modes for each plate.
- Cytolysis Mode allows for investigations into cell-killing kinetics.
- Cell Monitoring Mode facilitates the assessment of GPCR distal effects.
- TEER signal Mode enables the examination of barrier integrity.
- Unique Cell Signal at all available frequencies (full spectrum from 0.1 kHz - 100 kHz) allows the detection of a multitude of physiological effects in cells.



**AtlaZ offers simplicity
you will love**

 **Play video**

Sophisticated solutions for cardiac research

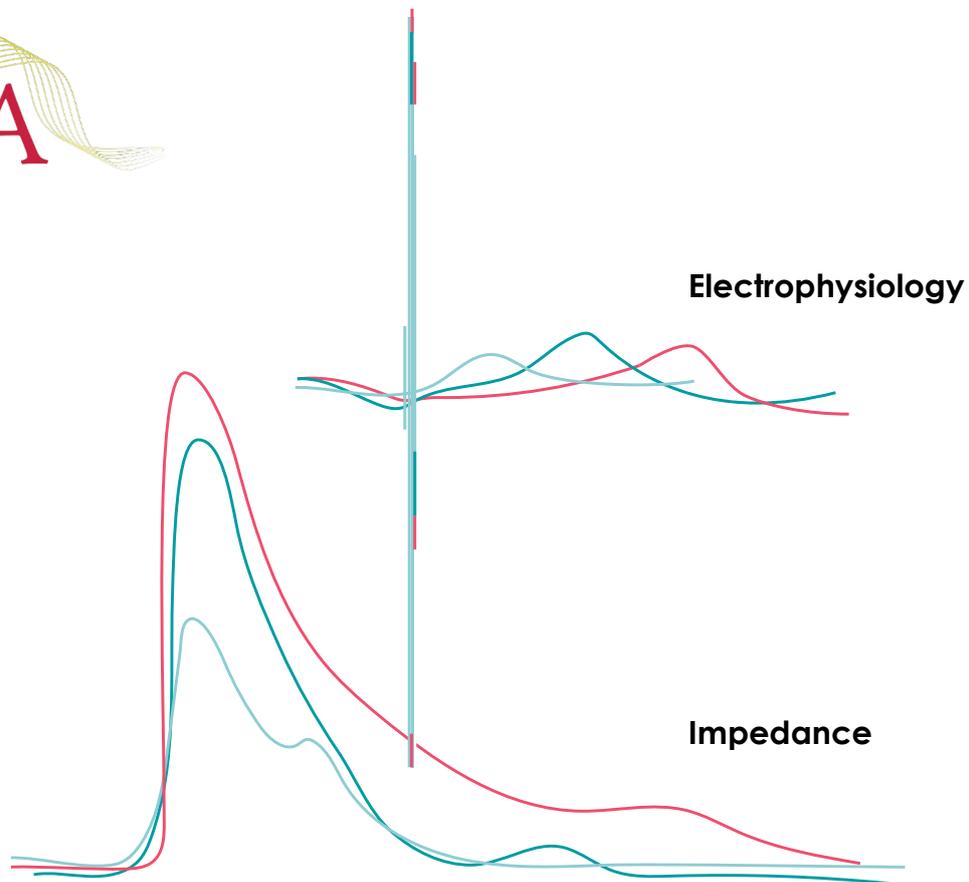
CardioExcyte 96

Fundamental insights on the electrical and mechanical dynamics of the human heart can uncover the complexity of cardiac disease.

CardioExcyte 96 offers a unique experimental constellation, uniting electrical and impedance readouts from the same cells, such as human iPSC derived cardiomyocytes. As a hybrid system it gives valuable insights into both electrophysiological and mechanical cellular phenotypes. In addition, the base impedance readout is continuously and automatically monitored as a measure of acute and chronic cell activity.

No subtleties of cytotoxic responses are missed, this includes non-contractile cell types such as hepatocyte-like cells or cancer cells as well as contractile cardiac cells. Impedance and extracellular field potential measurements are performed at high resolution, are non-invasive, and label-free. The CardioExcyte 96 is an automated device, recording from 96 wells at a time.

Standardized recording and analysis protocols for CardioExcyte 96 recordings are derived from the efforts of the **Comprehensive In vitro Proarrhythmia Assay (CiPA)** myocyte working group.



Combine contractility,
electrophysiology,
and cell viability in
one instrument.



Contractility and maturation under physiological conditions

FLEXcyte 96

The **FLEXcyte 96** provides a unique and advantageous physiological environment for studying cardiac cells, free from labeling or artificial interventions. This innovative technology greatly enhances the evaluation of drug candidates in cardiac safety, tox, and efficacy studies or basic research.

The system transforms traditionally limited cardiac contractility approaches of the Langendorff Heart into a cutting-edge modern high-throughput technique operating on a unique flexible substrate, mimicking an *in vivo*-like environment. It enables

real-time measurements of cardiac contractility, allowing researchers to observe and analyze the dynamic changes in cell behavior.

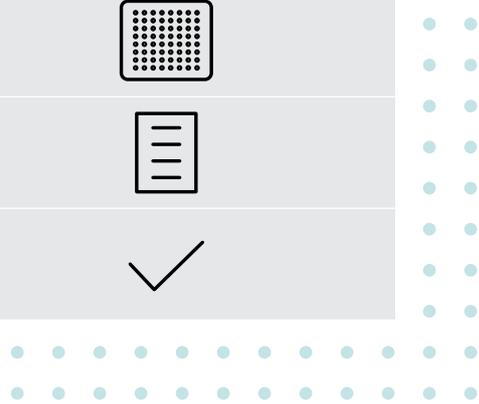
Additionally, the system accurately quantifies the force-frequency relation, providing valuable insights into the relationship between contractile force and heart rate. Furthermore, it is capable of detecting inotropic (changes in contractile strength) and chronotropic (changes in heart rate) effects, facilitating comprehensive investigations into the effects of various compounds or interventions on cardiac function.



Langendorff Heart

FLEXcyte 96

Adult cardiac phenotype	✓	✓
Target species		
Throughput		
Measured parameters		
Genetic disease model	✗	✓



FLEXcyte 96 uses a flexible, pro-maturation substrate for recording cardiac cells. This unique technology allows for recordings in a native-like environment close to mechanical conditions of the heart.

[▶ Play video](#)

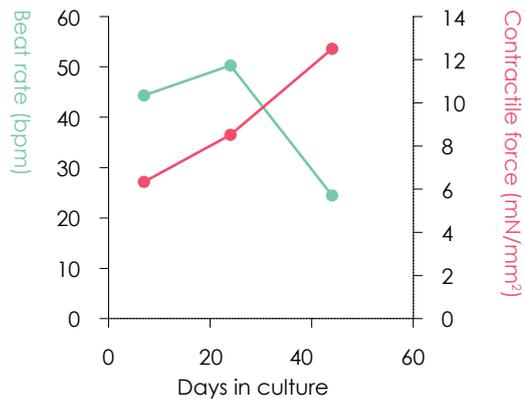
Long-term recordings can be performed on a lab benchtop, as the **incubation system** takes care of the optimal temperature, CO₂ gas mix, and humidity. The system's optional hypoxia variation, enables additional regulation of N₂ levels.



Mature cardiac phenotype

Flexibility is key for a pro-maturation effect on cultured human iPSC-derived cardiomyocytes. The FLEXcyte 96 system provides both basic prerequisites needed to record mature cardiac force (mN/mm²).

[▶ Play video](#)



Throughput, flexibility, pro-maturation

Throughput is essential when working with precious materials, such as patient cells or when running multiple drug assays. The CardioExcyte 96 and FLEXcyte 96 use standard format 96-well plates in various configurations to ensure optimal experimental flexibility, data reliability and speed.

In addition, AtlaZ offers an option to record from 6 x 96 well plates, thereby significantly increasing data output.

Flexibility is key for a pro-maturation effect on cultured human iPSC-derived cardiomyocytes. The flexible, native like environment mimics the mechanical conditions of real biological tissue thereby inducing pro-maturation effects. Additionally, electrical, optical and pressure stimulation options for the CardioExcyte 96 or the FLEXcyte 96 offer the perfect tool for contractility research in the pre-clinical field.



A photograph of two scientists in a laboratory. On the left, a man with a beard and glasses, wearing a white lab coat, is looking towards the right. On the right, a woman with long dark hair, also in a white lab coat and wearing blue gloves, is looking down at a piece of laboratory equipment. The background is a bright, slightly blurred laboratory setting with various pieces of equipment and shelves.

How well do
you know
your cells?

“We recently purchased the CardioExcyte 96 / FLEXcyte 96 system through the NIH shared instrument grant (S10) program to be used by a diverse group of researchers who use cultured heart cells to study genetic and other cardiac disorders or who need to test lead compounds for cardiac toxicity. We have been thoroughly satisfied by the performance of the instrument and have been pleased with the great support from Nanion. The 96-well format enables critically important replication and the ability to conduct multiple simultaneous experiments. We are now exploring use of the instrument to interrogate other types of contractile cells. Given the enthusiasm from multiple investigators, we are going to purchase a second instrument.

Prof. Al George, Northwestern University, Chicago, IL, USA

“Electrical Impedance Spectroscopy will become just as relevant for adherent cells as flow cytometry is relevant for cells in suspension. The methodology promises a huge potential for future scientific discoveries.”

Prof. Dr. Joachim Wegener, University of Regensburg

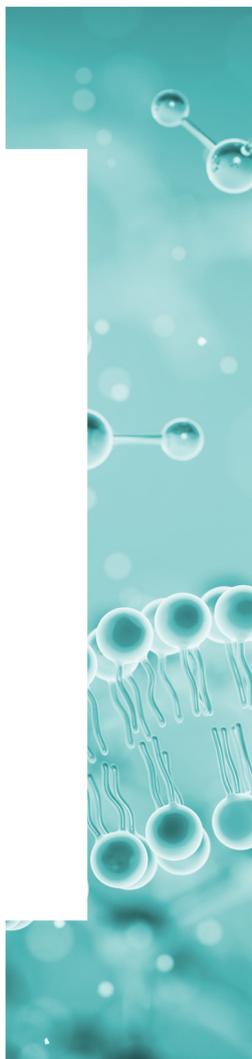
“My experience with Nanion’s technology was great, achieving highly reproducible data with the AtlaZ platform from day 1 was convincing for me.”

Prof. Dr. Percy Knolle, Technical University of Munich (TUM)

“Human iPSC-derived cardiomyocytes are the future of safe and efficient drug development. The FLEXcyte technology provides a tool for functional cardiac toxicology and efficacy screening on these cells. Force-frequency relation are the subject of current scientific discussions and require an assay technology that can accurately quantify them and we meet this need with the FLEXcyte 96.”

Peter Linder, CTO, Innovitro (CRO, FLEXcyte service provider)

accelerate your research



nanion Europe

info@nanion.de

phone: +49 89 219 095 0

nanion USA

info@naniontech.com

phone: 1-888-9-NANION

nanion China

andy.di@nanion.cn

phone: +86 10 82 17 6388

nanion Japan

info@nanion.jp

phone: +81 3 6457 8773

www.nanion.de



To find your nearest Nanion
representative, visit our website:
www.nanion.de

nan]i[on