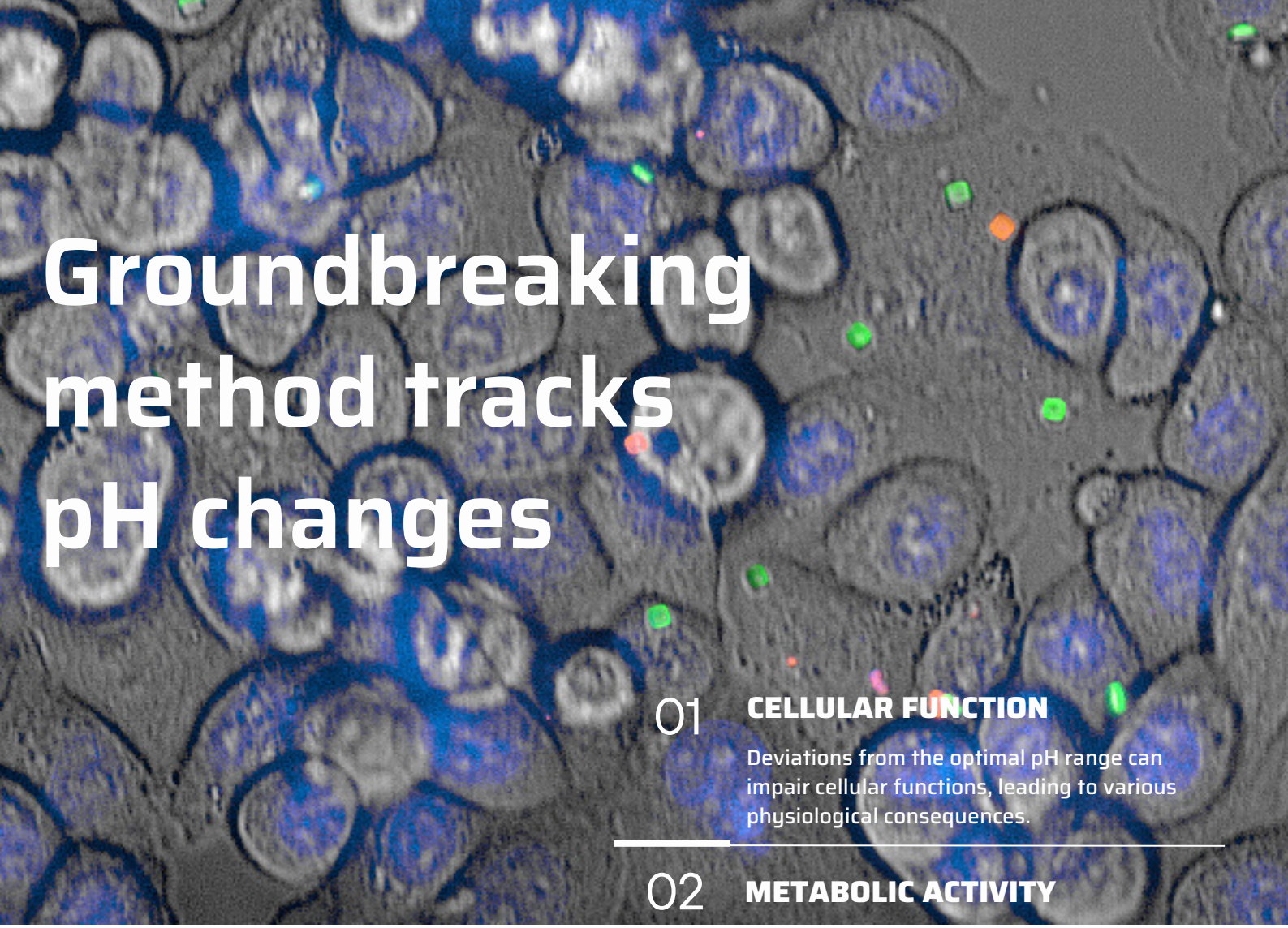

# Groundbreaking method tracks pH changes

Detecting pH changes during cell tracking studies offers invaluable insights into various aspects of cellular function, including metabolism, viability, and response to environmental factors or treatments.

This information not only aids researchers in comprehending fundamental biological processes but also facilitates the study of disease mechanisms and the optimization of drug delivery strategies.

As a result, they are better able to understand cellular behavior and develop improved therapeutic approaches.

## 01 CELLULAR FUNCTION

Deviations from the optimal pH range can impair cellular functions, leading to various physiological consequences.

## 02 METABOLIC ACTIVITY

Monitoring pH changes during cell tracking studies can provide insights into cellular metabolism and its dynamics.

## 03 CELLULAR VIABILITY & HEALTH

Monitoring pH changes during cell tracking allows researchers to assess the impact of experimental conditions, treatments, or environmental factors on cellular viability.

## 04 TUMOR MICROENVIRONMENT

Due to increased glycolysis and lactic acid production, the Warburg effect lowers pH values.Measurement of tumor pH provides insight into tumor progression, invasion, and treatment response.

## 05 DRUG DELIVERY AND EFFICACY

By tracking pH variations during cell studies, researchers can assess the efficiency and specificity of such drug delivery systems.

## 06 DISEASE PATHOLOGY

pH changes can be associated with various pathological conditions, such as acidosis in ischemic tissues, inflammation, or certain metabolic disorders.

a4cell® nanodevices

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# CytoTRACK SPAchip® pH Dual Detection Kit

## Discover the ultimate tool for advanced cell tracking analysis.

CytoTRACK SPAchip® pH Dual Detection Kit is the combination of the two technologies addressed to measure intracellular pH: CytoCHECK SPAchip® pH red single-detection andCytoCHECK SPAchip® pH green single-detection.

The product combines these two pH detection technologies so that each of them is internalized in one cell line for co-culturing applications. While tracking the two different cell subtypes and their interaction, measurements of intracellular pH levels by changes in fluorescence intensity are feasible at real time.

The advantages of this product are the combination of our two CytoCHECK pH detection kits, where the selection of the SPAchip® to the corresponding cell line will depend on the features of each. Red emission SPAchip® is recommended for applications which need to overcome high green autofluorescence signals and increase SNR. Green emission SPAchip® advantages are its easiness due to the possibility of using common GFP fluorescence filters and its easy linear response.

## Highlights

- Non-toxic for living single cells.
- Measures intracellular pH levels by changes in fluorescence intensity.
- Allows long-term monitoring of intracellular pH changes
- Composed of fluorescently labeled silicon microparticles that can be internalized in the cytosol of cultured cells.
- Provides a more comprehensive study of single-cell physiology and metabolism.
- Maximizes the performance of most imaging analyzers.
- Cell type flexibility, no lower limits.
- Ready-to-use, robust workflow

| Technical Specifications | **CytoTRACK SPAchip® dual pH detection kit** | |
|---|---|---|
| Product code | **D-001-PHGR** | |
| Amount | 2x 2.5 millions of SPAchips | |
| Applications | **Cell viability, proliferation, cell image acquisition** | |
| Assay time | 30 minutes | |
| Solubility | Soluble in assay buffer (aqueous) | |
| Fluorescence | λex: 546 nm; λem: 610 and 707 nm. | λex:488 nm; λem: 520 nm. |
| Detection method | Red fluorescence | Green fluorescence |
| Measuring range | pH 4.5 - 9.0 | pH 4.5 - 7.5 |
| Platform | Fluorescence microscopy, HCS/HCA platforms and flow cytometry | |
| Sample type | Adherent cells, suspension cells. | |

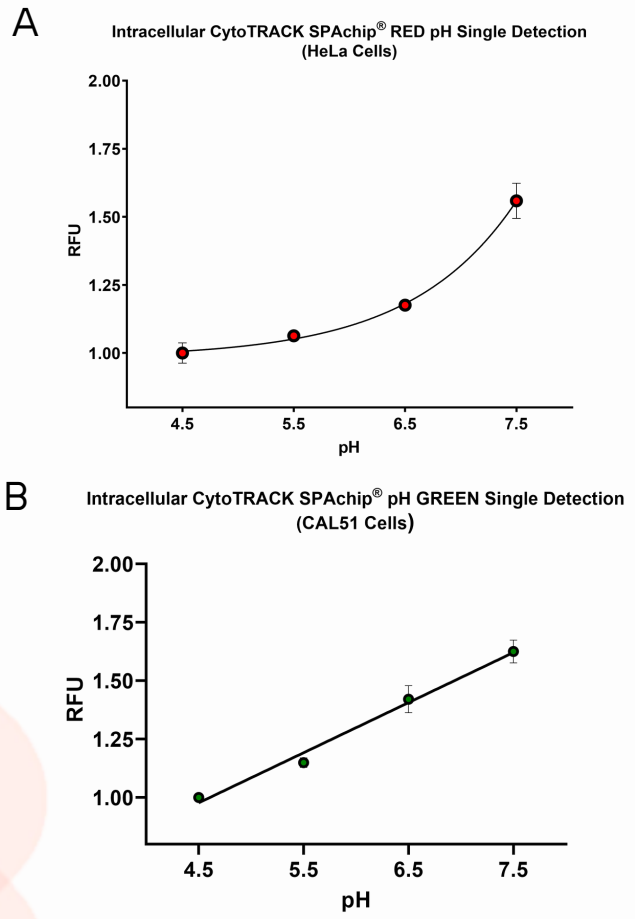


Figure 1: Red and green CytoTRACK® pH Detection at different pH conditions using commercial calibrators inside cells. A) Graph showing ratiometric normalized fluorescence intensity values of intracellular CytoTRACK SPAchip® pH RED Single Detection at different pH conditions using intracellular calibrators in HeLa cells. Ratiometric values were obtained by dividing λemi2=707/ λemi1=610emission signals in HCS-Operetta equipment with the excitation in the range λexc=546/15 nm. B) Graph showing normalized relative fluorescence intensity values of intracellular CytoTRACK SPAchip® pH GREEN Single Detection at different pH conditions using intracellular calibrators in CAL51 cells.

*Dynamic Film about cell sensing*


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