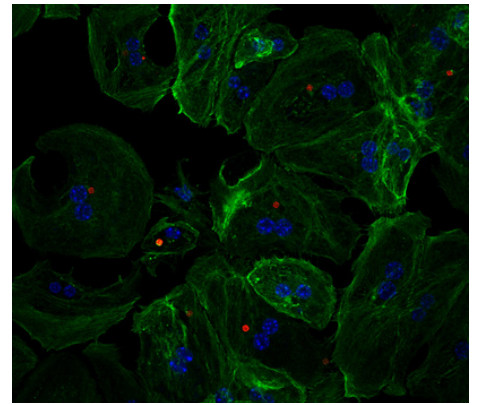


DECIPHERING THE INSIDE CELL'S STORY BY CYTOCHECK SPACHIP®!



Setting pH as key QC indicator of your cell studies.

CytoCHECK SPAchip® pH detection kits enable continuous, simultaneous and accurate monitoring of cytosolic and extracellular pH in living single cells.

It is essential to measure pH before performing metabolic assays on living single cells to maintain cellular health, optimize enzyme activity, ensure proper functioning of the metabolic pathway, and obtain reliable and reproducible results.

The accurate and rigorous measurement of pH stands as a fundamental prerequisite before embarking on any metabolic assay in living single cells. This critical step is imperative for a multitude of reasons that collectively underscore the precision and reliability of subsequent experimental endeavors. From safeguarding cell viability to fine-tuning enzymatic activities, the assessment of pH levels serves as the cornerstone for creating an optimal cellular environment. In this exploration, we delve into the manifold reasons why meticulous pH measurement emerges as a pivotal prelude to unravelling the intricacies of metabolic processes within living single cells.



Now, you are not limited to only monitoring extracellular pH: SPAchip® pH Detection Kits allow you to easily measure the pH inside individual living cells without any perturbation of their physiological state over long periods of time.

FUTURE-READY WITH CYTOCHECK SPACHIP®!

Why is pH a key indicator for effective quality control of living cells to warrant the standardisation and reproducibility of your cell experimental methodologies?

- Viability of cells: For metabolic processes, cells have an optimal pH range, and deviations from this range can damage, stress, or even kill them. Maintaining cell viability requires an acceptable pH range before starting an assay.
- A large number of metabolic processes are catalyzed by enzymes, and enzyme activity is highly pH-dependent.
- pH regulates metabolic pathways. By measuring pH, we ensure that the cellular environment is suitable for the specific metabolic pathways under investigation.
- pH affects ion transport across cell membranes. Cellular functions and metabolic processes can be affected by this. In order to maintain ion gradient integrity, pH must be maintained.
- Researchers can assess the buffering capacity of cell culture medium by measuring pH.
- For reliable scientific results, consistent and reproducible experimental conditions are crucial. pH measurement and control ensure standard conditions for experiments, reducing variability and improving reproducibility.
- Optimal Assay Performance: Some assays, especially those involving fluorescent probes or enzymatic reactions, are pH-sensitive. To ensure accurate measurements and optimal assay performance, pH must be within the specified range.

Bibliography:

Antosiewicz, J.M. and Kane, P.M. Editorial: Intracellular Molecular Processes Affected by pH. *Front. Mol. Biosci.* 9:891533 (2022). <https://doi.org/10.3389/fmolb.2022.891533>

Putnam, R.W. Chapter 17 - Intracellular pH Regulation, Editor(s): Nicholas Sperelakis, *Cell Physiology Source Book (Fourth Edition)*, Academic Press, Pages 303-321, ISBN 9780123877383 (2012) <https://doi.org/10.1016/B978-0-12-387738-3.00017-2>.

Swietach, P. What is pH regulation, and why do cancer cells need it? *Cancer Metastasis Rev.* 2019 Jun;38(1-2):5-15. <https://doi.org/10.1007%2Fs10555-018-09778-x>

Michl, J., Park, K.C. & Swietach, P. Evidence-based guidelines for controlling pH in mammalian live-cell culture systems. *Commun Biol* 2, 144 (2019). <https://doi.org/10.1038/s42003-019-0393-7>