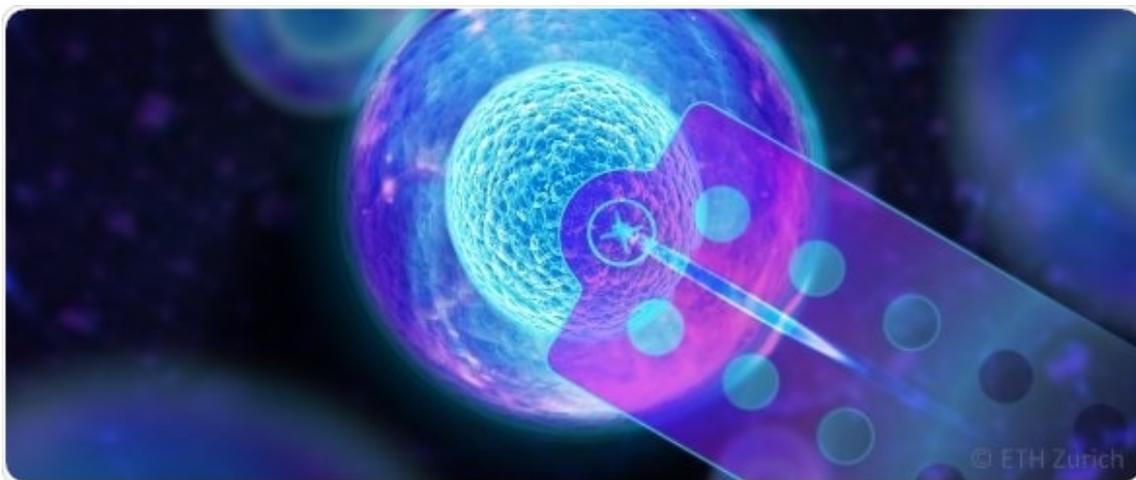


# Innovative method based on FluidFM technology could revolutionize biological research

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A groundbreaking new method for single cell analysis based on FluidFM<sup>®</sup> technology allows scientist to investigate the behavior of individual cells within their natural environment. The new method has been developed at ETH Zurich and could revolutionize biological research as it opens up a completely new dimension for the study of individual cells. The new technique makes it possible to sample the content of individual cells for molecular analyses directly in their native environment while preserving the entire cellular context. The method can thereby be applied repeatedly to the same cell without destroying it in the process.



*Image courtesy ETH Zurich*

Biologists are more and more interested to study the behavior of individual cells within a population. Studying the properties and behavior of individual cell rather than the conduct of an entire cell population can thereby reveal a much deeper understanding of the underlying biological processes. The newly developed technique is based on the usage of a FluidFM nanosyringe in order to penetrate single living cells and extract their content for further analysis. The subsequent downstream analysis of the collected samples can thereby be carried out using well established analysis methods. This way scientist can discover subtle but potentially important differences between individual cells within a population at a molecular level. The method can therefore also be applied to discover and investigate very rare cell types. "Our method opens up new frontiers in biological research. It is the start of a whole new chapter, so to speak", says Professor Julia Vorholt from the Department of Biology at ETH Zurich who is leading the research group that developed the new method.

Compared to existing methods, the newly developed technique has numerous advantages: Thanks to the unique properties of the underlying FluidFM technology, researchers can sample individual cells within a tissue culture directly within their native environment. The method can thereby be repeatedly applied to the same cell. In contrast to established methods for molecular analysis, FluidFM based single cell extraction does not require the cells under investigation to be separated and physically removed from their native environment. Furthermore, the cells are not destroyed in the process and can thereby be repeatedly sampled in order to study them over longer time periods. "This means we can study how a cell affects its neighboring cells" explains Dr. Orane Guillaume-Gentil who is a postdoc in Professor Vorholt's research group. Thanks to the new FluidFM based extraction of single cells it is now possible to conduct single cell analysis studies while preserving the entire cellular context with respect to space and time.

## FluidFM® as a platform technology

The newly developed method is based entirely on FluidFM technology. This technique has initially been developed at ETH Zurich and has since seen further expansion in its application portfolio over the years. The technique is being commercialized by the ETH Zurich spin-off company Cytosurge. While it was already possible to inject and isolate individual cells using FluidFM technology, this newly developed method adds another chapter in the application scope of FluidFM technology.

“Professor Vorholt and her research group really made a phenomenal effort by developing this new method for the extraction of individual cells” says Dr. Pascal Behr, CEO of Cytosurge. “This really brings an entirely new chapter to FluidFM and allows us to further strengthen our value proposition to our customers” Pascal Behr continues. “With the addition of this new single cell extraction method, FluidFM technology is really transforming into a true platform technology. We can now offer solutions ranging from biophysical investigations to micro 3D printing of metals and comprehensive single cell analysis.”

Source:

<https://www.cytosurge.com/>