Growth through innovation – bringing Fluicell into the future

Difference and repetition are useful concepts to help comprehend the world around us. They can be applied almost universally, down to the fundamental aspects of life itself, where the two concepts interlink. The genetic replication of living cells both constitutes a fundamentally repetitive process, creating consistency from generation to generation, and a force of change through the difference crated by genetic evolution. The principles of difference and repetition can also be applied to describe Fluicell and our ambition to grow through continuous innovation.

With the recent launch of Biozone 6, Fluicell's third independently developed product, we again demonstrate our ability to identify an unmet need within biological research and, in a swift and cost-effective way, develop a solution to address it. With Biozone 6, it is possible for researchers to obtain pharmacological data from single cells directly in their native environment.

The launch of Biozone 6 also illustrates how the concepts of difference and repetition are embodied in the work that we do and in the products we develop. At the core of everything that we do at Fluicell is our unique approach to microfluidics, based on controlling the flow of liquids in open volumes. This has been with us from the start and can be seen reiterated in almost all our products and applications.

Our microfluidic equipment has time and again enabled researchers to produce results and acquire knowledge that would not have been obtainable using any other means, whether it concerns elucidating the neurobiology of mosquitoes[1], exploring potential pathways for the emergence of the first living cells[2] or creating detailed high-resolution tissue models[3]. Our core technology provides a consistent framework that can be applied again and again to reliably generate unique and groundbreaking research breakthroughs.

The same basic design idea is repeated in Biozone 6. At the same time, retreading old footsteps and only doing things that has already been proven to work has never been a driving force for Fluicell. Rather, our primary motivation is, and has always been, to develop tools that change the way research can be done, while at the same time keeping our feet firmly rooted in our technological foundation. And Biozone 6 is precisely this blend of difference and repetition. The product is based on the same fundamental principles as our other single-cell products, but Biozone 6 involves a complete rethinking of the basic microfluidic design with the goal of translating the highly versatile single-cell targeting capabilities of BioPen into the demanding framework of pharmaceutical research.

Through the work together with Hoffmann-La Roche, we can safely conclude that this transition has been successful. We are very proud of just having launched a new product and we look forward to seeing how it will introduce change into new fields of research. Biozone 6 is designed to be attractive to researchers in the pharmaceutical industry and in academic settings, targeting a fast-growing market (20% CAGR) valued to approximately USD1.3 billion. For us, it is important to have this double usability since academic customers are coming more and more important withing the pharmaceutical research context as an increasing part of the early steps in the drug discovery process is being performed by actors closely related to academic research institutions. The various covid-19 vaccines being a recent clear example of this specific trend.

Biozone 6 might be our most recent example of what happens when we let difference and repetition meet, but the most striking example of this is without doubt Biopixlar. Like Biozone 6, Biopixlar was developed in close conversation with the research community, something that allowed us to clearly identify a need within the bioprinting and cell culture sector for high-resolution tissue models that was not yet addressed by any other technology on the market. When we took the step into the world of bioprinting, we did that as a force of change, bringing something new and different instead of copying what was already there.

Changing people's perception of what something is and how something is done can be challenging. One could imagine that repeating and refining an already established concept is a faster path towards growth and increased revenues. However, the benefits for bringing forth true innovation far surpasses this in the long run. The bioprinting sector is expected to grow on average by 16% each year and reach USD 4.4 billion by 2028. As the technology matures, we will start seeing an increase demand for bioprinted structures with actual biological relevance. This is where Biopixlar's ability to create tissues with detailed cellular architecture and a cellular microenvironment that closely mimics that in actual tissues and organs prevails.

We can already now see an increased awareness and demand for the benefits that high-resolution bioprinting can bring, not least exemplified by Biopixlar's inclusion in the EU-funded research

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project BIRDIE aimed at creating physiologically relevant renal in vitro models. The project coordinator, Dr. Carlos Mota states[4],

> "*Fluicell's unique technology, capable of dispensing single cells with an unprecedented accuracy, is essential to mimic spatial distribution of multiple cell populations as observed in tissues and organs. The level of accuracy over the cellular spatial distribution within a bioprinted constructs is not possible with other bioprinting techniques.*"

Based on this, and the constantly increasing interest for Biopixlar we observe from the research community, we are confidently expecting Biopixlar's importance on the bioprinting market to grow substantially.

Despite the great prospects for Biopixlar in tissue and disease model bioprinting for research purposes, the greatest future promise for bioprinting lies in using bioprinting for therapeutic purposes is an area that is yet to be fully explored with an enormous market potential. The reason why progress in this area has been limited so far is because it is a very challenging endeavor that requires much more than having a structure with a physical resemblance of a human organ. However, with Biopixlar's high resolution bioprinting capabilities, we are confident that Fluicell has the potential to become an important actor within this area going forward.

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1. Jové, Veronica et al., Sensory Discrimination of Blood and Floral Nectar by *Aedes aegypti* Mosquitoes. *Neuron*. **108**, 1163 - 1180 (2020). https://doi.org/10.1016/j.neuron.2020.09.019
2. Köksal, Elif S. et al., Nanotube-Mediated Path to Protocell Formation. *ACS Nano*. **13** 6867-6878 (2019). https://doi.org/10.1021/acsnano.9b01646
3. Jeffries, Gavin D. M. et al., 3D micro-organisation printing of mammalian cells to generate biological tissues. *Sci. Rep.* **10**, 19529 (2020). https://doi.org/10.1038/s41598-020-74191-w
4. Fluicell AB, FLUICELL LANSERAR BIOZONE 6 ™ – EN NY NIVÅ INOM ENCELLS-FARMAKOLOGI. (2021). https://mb.cision.com/Main/15966/3306031/1386519.pdf