



## HIGH-RESOLUTION CELL IMAGING PLATFORM TO ACCELERATE DRUG DISCOVERY

There is an increasing demand to develop therapeutics targeting the brain, with the global neuroscience market valued at \$24bn in 2013 and estimated to reach over \$31bn by 2020. This demand means that the technologies used by researchers must continuously advance to obtain more elaborate test results ever faster and more efficiently. One of the key challenges is to screen the function of individual neurons and their capability to form networks. A technique called extracellular recording is often used in research laboratories to record the electrical activity of neurons and other electrogenic cells. By recording this data as new drugs are applied, researchers can understand the efficacy of their treatments.

The ETH Zurich spin-off founded in September 2016, MaxWell Biosystems AG, takes the concept of extracellular recording and pushes it a step further. Usually microelectrode arrays with only tens of electrodes measure the average activity across groups of cells. MaxWell Biosystems have developed a high-density microelectrode array featuring 26,400 electrodes, which enables electrical imaging – recording the activity of individual cells at sub-cellular resolution, such that the response of every cell to a given therapy can be assessed.

## ASSESSING THE CLINICAL POTENTIAL OF DRUGS TO FIGHT BRAIN DISEASES MORE EFFICIENTLY

The MaxOne system, MaxWell Biosystems' first commercial product, provides unprecedented live-cell electrical imaging, enabling users to analyze the function of every cell in the network. MaxOne drastically shortens the phenotype characterization of identified cells (e.g. genetically-modified cells that model a disease) from

several months to a few weeks. Through MaxOne and the multi-well platform, MaxTwo, MaxWell Biosystems aims to advance neuroscience research and to accelerate drug discovery. Only one year after founding, both MaxOne and MaxTwo are available to order internationally, and the startup is already working towards their next generation of products.

Combining MaxWell Biosystems' electrophysiology platform with human induced pluripotent stem cell (h-iPSC) technology enables accurate and fast analysis of human neurons, including cells from patients, and their responses to drugs in vitro. New assays based on the combination of MaxWell Biosystems' platform and h-iPSCs also contribute to a significant reduction of animal use during testing.

“The Venture Kick team efficiently helped us to focus on developing our business and get things moving fast.”

Urs Frey, co-founder and CEO of MaxWell Biosystems

## TAKING CELL-IMAGERY WORLDWIDE

In 2017, during the Venture Kick program, MaxWell Biosystems launched MaxOne and made its first sales in several European countries and Japan, to customers such as the Max Planck Institute for Brain Research in Germany, Aarhus University in Denmark, and the Kyoto University-based institute of the Nobel Laureate for iPSCs, Dr. Shinya Yamanaka, in Japan. As winners of the venture leaders Life Science prize, they were part of the Swiss National Startup team who flew to Boston to meet investors and business experts to further advance their expansion into the US and other international markets. On top of all of these achievements, MaxWell Biosystems was recognized as one of the TOP 100 Swiss startups of 2017.

With the help of Venture Kick, 2017 has been a big year for MaxWell Biosystems: “Thanks to the extensive experience of the Venture Kick team, the program significantly helped us to focus on developing our business, gaining visibility and getting things moving fast. And the kickers camps turned out to not only be intense work, but a lot of fun, too,” says Urs Frey, co-founder and CEO of MaxWell Biosystems.