

HelixScreen

Creating a new era of breast cancer care: offering hope and health through personalized treatment.

In a nutshell

Every year, over 2.3m people are diagnosed with breast cancer. In Switzerland, one in eight women develop breast cancer over the course of their lifetime. Breast cancer is not a single disease – it has large variations between patients dependent on genetics, type of tumor, and lifestyle. Despite this complexity, much cancer care is standardized. Currently, it's estimated only 41% of patients respond positively to approved cancer treatments. We hope to improve these statistics by offering drug screening options to doctors and hospitals – allowing them to select the most effective drugs for individual patients and tumors.

Why is our technology important?

Current treatments for breast cancer are based on a series of approved drug treatments for endocrine therapy, taken in tandem with radio or chemotherapy. Oncologists currently make an estimation on which treatment combination will work best based on their own experience and the patient's type and stage of cancer. While there has been some movement towards personalized care in this area, there isn't currently a reliable way to study and test cells and tissues *ex vivo* (outside the body). Our technology uses Next Generation Sequencing (NGS) to understand how the active genes (mRNA) in a patient's cell changes. This will help us predict how these cells will respond to different drug regimes.

The benefits of our solution

1. **Quick and reliable:** we have developed a 3D model to grow patient samples *ex vivo*. This not only accurately reflects the genetic and molecular characteristics of the original samples but maintains the expression and function of hormone receptors – something not done before.
2. **High throughput:** even with a small number of patient samples, our technology can test a large number of drug combinations quickly and simultaneously. We use DNA barcoding technology which allows us to process multiple samples at the same time.
3. **Precision:** by using Next Generation Sequencing (NGS) and DNA barcoding, we can accurately compare gene expression before and after the drug treatment – allowing in-depth information on how the patient might respond to the drugs.

We believe that by getting rid of a “one size fits all” approach to breast cancer care, we can improve health outcomes – giving each patient the exact treatment they need, when they need it.

Keywords

Breast cancer, personalized medicine, functional drug screening, NGS, 3D ex vivo model, animal-free experiments

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