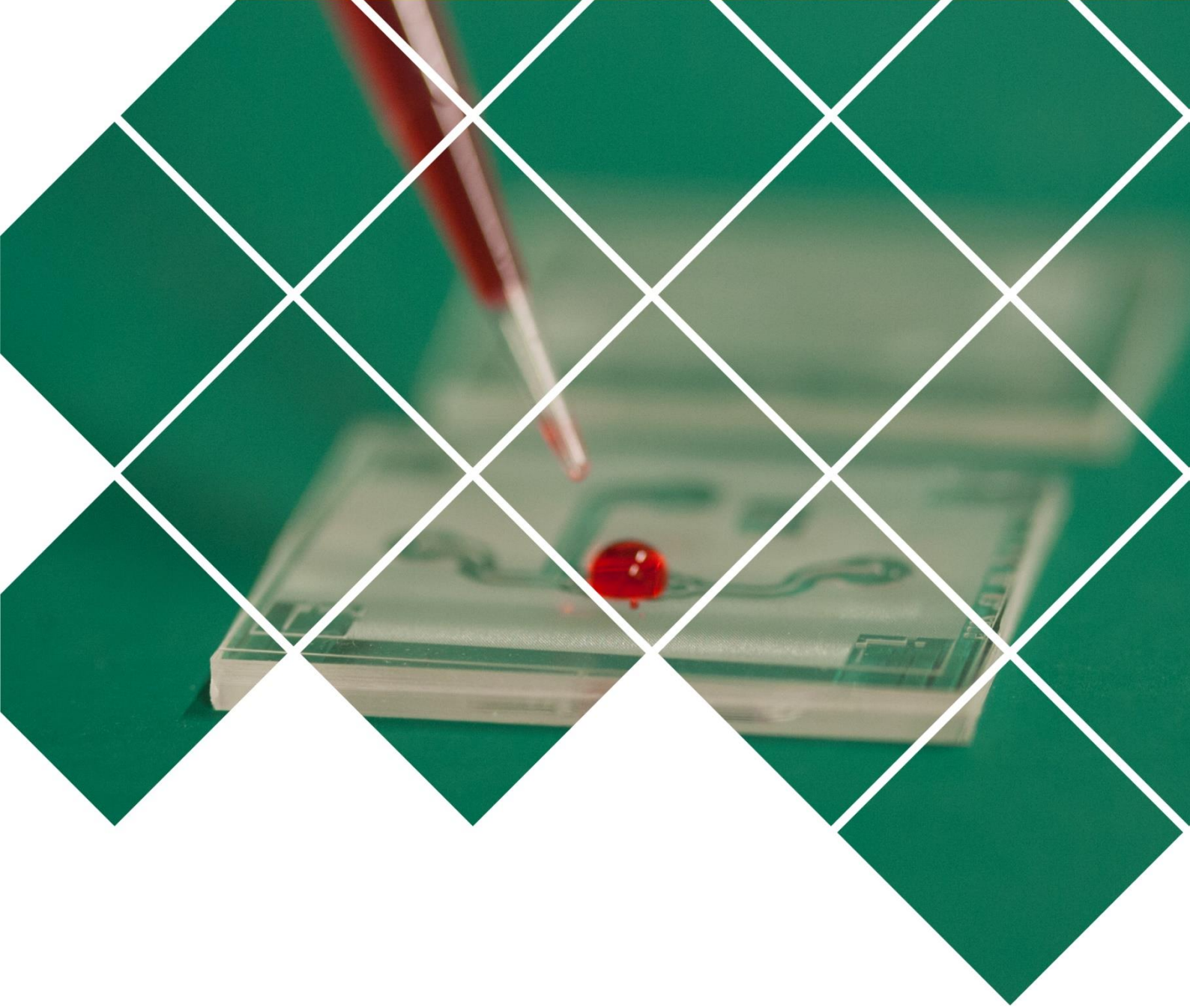


NeurZOne

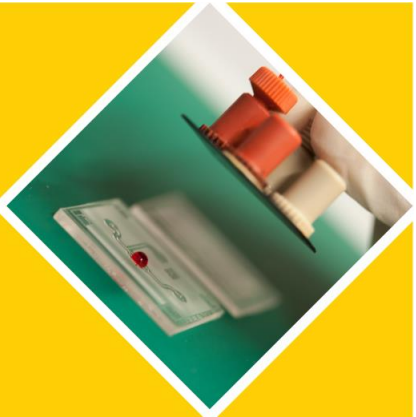
MicroTISSUE

multiparametric microfluidic platform

to study the microenvironment

Technology Platform

MicroTISSUE



Technology Description

MicroTISSUE is a microfluidic multiparametric platform which recreates in vitro the tissue complexity by dissecting cell-cell communication and cross-talk mechanisms in specific pathophysiological scenarios.

MicroTISSUE enables to culture together different cell types on separate controlled microchambers within the same chip, so that the role of each specific cell type is dissected.

A specific design of the microfluidic device allows to perform tests with cells isolated from tissue in order to reach a very significant response from a biological point of view. Cells are stimulated in a highly controlled in vitro setting; multiple morphological, molecular, biochemical and functional quantitative parameters are simultaneously obtained in a time-lapse mode.

By the use of physiologically relevant cell system, **MicroTISSUE** represents a much more detailed and physiologically relevant validation tool, which enables to better filter candidate molecules and enables early drop out of false candidates. **MicroTISSUE** represents an innovative platform for lead optimization services.

MicroTISSUE is also very effective in the development of compounds for Rare Diseases as it is able to work with a very limited number of cells thanks to the microscale approach.

The main benefit is the overall cost and time saving as well as the wealth and quality of data obtainable per experimental session, enabling drug developers and researchers to tailor much more efficiently the downstream phases of research.

MicroTISSUE Key Features

- ✓ MicroTISSUE is designed with several microfluidic connected microchambers, where different cell populations can be cultured at the same time recreating a tissue-like cell-cell cross-talk scenario;
- ✓ The tool is well validated for the use of Primary Human Cells, allowing the obtaining of a pretty unique set of relevant information;
- ✓ Cell-cell cross-talk mechanisms after specific single/multiple/parallel stimuli can be finely analyzed in real time by:
  - Co-culturing different cells in a single chamber to evaluate direct physical interactions;
  - Culturing different cells in different chambers microfluidically

MicroTISSUE

connected to evaluate soluble factor-mediated interactions;

- ✓ The great versatility of MicroTISSUE allows its application in several ambits
- ✓ Working in microscale, MicroTISSUE allows the use of samples in very low concentration, reducing experimental costs and extending its application also on conditions where samples are hard to obtain;

How do we meet your needs?

Main fields of application of **MicroTISSUE** are:

- ✓ **Research:**

In vitro investigation on specific cell population role and cell-cell cross-talk mechanisms in specific pathophysiological scenarios.

- ✓ **Drug Discovery & Development:**
  - **Discovery**: fine analysis of efficacy, toxicity, metabolism and compound-receptor binding effects and cells mechanisms after candidate drugs stimuli;
  - **Preclinical**: effective selection, optimization and ranking of interesting candidates per indication;
- ✓ **Compound Repositioning:**

A deep understanding of the microenvironment's complexity and a specific dissection of communication mechanisms among different cell populations within a tissue of interest enables to associate existing compounds/drugs to new disease indications in a very effective way.

MicroTISSUE allows an efficient and low cost repurposing of existing compounds or failed candidates, recreating in vitro the complexity mechanisms related to a physiopathologic scenario of interest and providing an informative profile of drugs/candidate activities in this context.

Technology Platform

MicroTISSUE

✓ **Personalized Medicine:**

MicroTISSUE recreates pathophysiological scenarios with a patient's cells in order to identify the most promising drugs, helping physicians to undertake a more effective patient-specific therapeutic strategy.

For any further information please contact us at info@neuro-zone.com