

IVTech: The next generation of *in vitro* models

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In vitro cell cultures are often proposed as “Alternatives” to animal models, but they are still inadequate to reproduce the human pathophysiology. This is mainly due to the technological limitations of the standard equipment used in cell culture laboratories, such as the lack of a 3D micro-architecture, the static environment and the absence of cross talk between different tissues. These limitations cause the poor predictivity of a standard *in-vitro* model, if compared with the human reality.

IVTech offers know-how and technology to increase the predictivity of an *in vitro* model, overcoming the standard limitations of the standard (*i.e.* 3D static *in vitro* model).

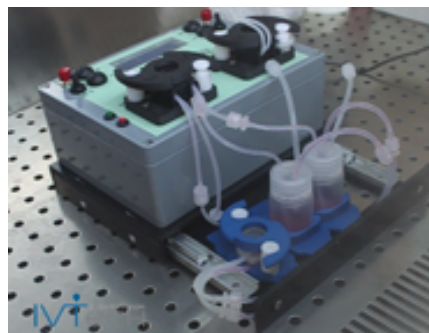


Figure 1. The peristaltic pump, called LiveFlow.

IVTech chambers, called LiveBoxes (LBs), are modular bioreactors standardized in dimension on the cell seeding area the commercial standard devices used in a biological lab. Therefore, the LBs unify of the advantages to work with a fluidic device, in terms of capability to reproduce the native environmental stimuli, with the know-how and protocols developed for standard devices. The chambers can be equipped with a peristaltic pump, called LiveFlow, compatible with an incubator environment.

The transparency of IVTech products permits the real-time monitoring of the tissues and the modularity allows to join different modules, each one focused on the simulation of a different tissue. This is the so-called multi-organ approach: the possibility to have a pathophysiological pathway in dynamic conditions and evaluate the tissues response, as a result of a cross modulation between organs, which interact by the

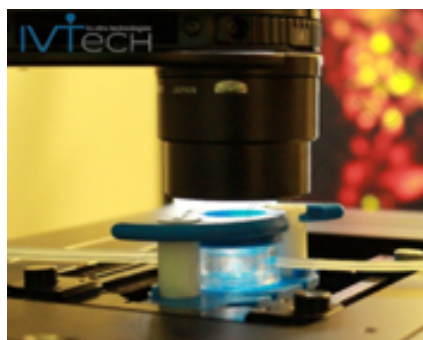


Figure 2. An IVTech chamber, called LiveBox2, suitable for the simulation of pathophysiological barriers. An IVTech chamber, called LiveBox2, suitable for the simulation of pathophysiological barriers.

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exchange of liquids. During the presentation, Tommaso Sbrana will introduce the IVT technology, describing some applications where the use of IVT chambers have demonstrated their advantages. Moreover, he will discuss about the last technological releases: LiveFlow PRO an automated peristaltic pump to vary the *in-vitro* experiment flow conditions and LivePa a pressure modulator useful to introduce pathological conditions, thus being one step closer to the human reality.