ARACHNID - Automated canceR-on-A-CHip orgaN-specific metastatIc spreaD

Despite the improvements in cancer treatments, diagnostic tools and early detection strategies, cancer is still a major public health burden as one of the 6 leading causes of death worldwide. In 2020, 90% of the 10 million deaths registered out of 19.3 million new cancer diagnoses were associated not with primary tumors but with the secondary metastases.

The complex time-dependent chain of events and cascades of biophysical and biochemical factors regulating tumor metastasis cannot be replicated using conventional in vitro cell models (such as transwell invasion and scratch/wound healing assays) nor in vivo animal models. The scientific and medical communities are striving to better understand the steps of metastatic spreading to devise strategies to stop its occurrence, especially in pediatric oncology, as in the case of Neuroblastoma, the most common and difficult to treat among tumors of preschool age (15% of pediatric oncology deaths).

To solve these limitations we propose ARACHNID, a unique, multiplexed, automated, and increased-throughput multi-organ on a- chip platform conceived around the complex process of cancer metastatic spread. The project's potential for breakthrough innovation resides in its unique capabilities, promising to accelerate research, reduce costs, and contribute to the development of more effective cancer treatments.

The ARACHNID project aims to explore and prove the technical-commercial potential of our proprietary tumor-metastasis-on-a-chip (TMOC) platform, starting from pediatric tumors and extending the application to adult cancers, involving Biogenera, biotechnological SME operating the pharma NB domain, as a testbed and early adopter.

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