

H2020 project:

Tumor and Lymph Node on Chip for cancer studies

Tumor-LN-oC

About project

Tumor-LN-oC proposes the development and validation of a TRL 5 tumor-lymph node-on-chip (Tumor-LN-oC) platform composed of 3D tissue models and microfluidic chips which will connect surgically removed human primary tumors and LN tissue from the same lung cancer patient. This will serve as a "biological twin" of the patient and will allow us to study the interaction of primary tumors with LNs for individual patients.

Using sensitive proteomic and molecular approaches it will characterize the soluble signals that neutralize the immune response and allow tumor cells to metastasize to the LNs and to use them as spring boards for further dissemination. This will enable the use of existing drugs, or the development of new ones that could reverse this process and inhibit tumor growth and dissemination. It will also allow the identification of novel biomarkers characterizing metastatic cells which could also be exploited therapeutically. Moreover, by employing novel imaging approaches, Tumor-LN-oC will generate a spectral "fingerprint" of migrating/metastasizing cells which could be used for diagnostic purposes in tumor and lymph node biopsies.

The proposed technologies will provide added value to the EU cancer diagnostics and pharmaceutical industries and lower the barriers associated with the application of OoC technology in disease diagnosis and therapy.

Expected impact

- Verifiable progress in the application of Organ-on-Chip technologies for in-vitro research
- Reduction of the need for animal and clinical testing
- Lowering of barriers for application of Organ-on-Chip technology
- Improved competitiveness and attractiveness of the European biomedical and healthcare sector
- Increased awareness and knowledge about medical regulatory policies and requirements, especially by academics and SMEs



Project Facts:

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Research and Innovation action Lump Sum

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