Multiorgan-on-chip systems to study the complexity of the cell microenvironments

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The human cancer disease modeling is currently carried out through 2D cell culture in static conditions, and in vivo xenografts or genetically engineered animal models, but predictability, reliability, and complete immune compatibility remain important challenges. For this aim, novel 3D, fully humanized in vitro cancer tissue models have been recently optimized by adopting emerging technologies such as microphysiological systems (MPS) and 3D tumor models. A survey of the most promising MPS platforms adopted for both translational medical research and new drug development will be shown, by deepen the possible scientific outcomes, benefits of these challenging approaches and also the current limitations.