

INSIGHT, INNOVATION, INTEGRATION

We present an innovative screening platform that integrates 3-dimensional cell culture techniques with an automated microfluidic platform to culture T47D breast carcinoma cells in more physiologically relevant 3D *in vitro* microenvironments that include different extracellular matrix (ECM) molecules and stromal fibroblasts. Traditional screening platforms are typically limited to 2-dimensional cultures, often exclude ECM molecules, stromal cells, and are less representative of the microenvironment found *in vivo*. This new microfluidic platform efficiently and effectively screens for ECM compositions within 3D microenvironments that modulate the morphology and growth of T47D cells in monocultures and co-cultures. Applying the concepts presented in this work to higher throughput screening platforms will be useful for identifying key ECM components and mechanisms involved in cancer biology.