

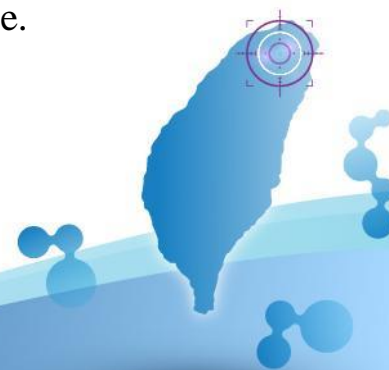
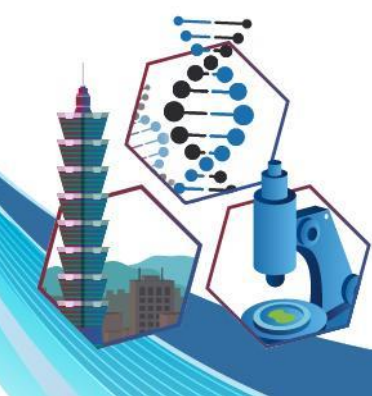
# From Blood to Breakthroughs: The Promise of 3D Cell Cultures in Precision Medicine

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A significant unmet need in current oncology practice is the lack of viable patient tumor cells, which limits the scope of pathological and clinical tests and makes functional analyses, such as cell viability assays, challenging. In this presentation, we introduce a novel 3D culture system, termed Rapid Reproducible Rare Cell 3D Expansion (R3CE®), which can quickly expand single tumor cells into spontaneously forming 3D spheroids. Unlike conventional 3D culture platforms that require a high quantity of cells and have slow growth rates, our system can rapidly expand minute number of cells, such as circulating tumor cells (CTCs) in blood and tumor cells from needle biopsies or surgical specimens, transforming single cells into hundreds of CTCs and tumoroids within a week.

We have developed the Onco-REAL™ assay, a liquid biopsy CTC cultivation for multiomic analysis, including sequencing, protein expression, and cell viability evaluation. Present studies with over 800 blood tests across more than 10 cancer types indicate that a two-week turnaround time and 1 mL of blood are sufficient to evaluate a patient's druggable protein targets, such as HER2 and PD-L1, or to assess the efficacy of chemotherapy drugs. Real-time disease monitoring with drug response and resistance assessment provides crucial scientific evidence and enables timely drug recommendations for cancer patient treatment. In conclusion, the R3CE® system and Onco-REAL™ assay offer promising advancements in the field of personalized medicine.



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Precision, Innovation, and Legacy in Laboratory Medicine



These innovations provide a rapid, efficient, and comprehensive approach to precision diagnosis and monitoring, addressing the critical need for viable cells in patient evaluation and ultimately improving patient outcomes.

