Unlocking Physiological Relevance: Advanced 3D Cell Culture, Organoid Models, and Translational Applications

This comprehensive session delves into the evolution and application of 3D cell culture, emphasizing advanced models such as cancer organoids. It begins by defining 3D models and detailing the essential components and protocols required for their successful implementation. Specific attention is given to the necessary elements for creating 3D models, including the selection of primary cells (e.g., hepatocytes for 3D models), various matrices and culture vessels (e.g., Geltrex Flex, scaffold-free spheroid generation, and specialized inserts for skin models), and the optimization of media and supplements using specialized formulations and PeproTech growth factors and cytokines.

The session applies these foundational techniques to cancer research, addressing the limitations of current models and showcasing the use of optimized media for both 2D and 3D systems. A strong emphasis is placed on translational utility through case studies using tumoroids (cancer organoids). These applications include high-fidelity killing assays for NK and CAR-T cells in cell and gene therapy, high-throughput tumoroid-based compound screens, advanced methods for engineering patient-derived tumoroids, and the creation of complex microenvironments via co-culture of tumoroids with fibroblasts and endothelial cells.

Additionally, the session highlights the critical role of advanced imaging techniques - enabling detailed visualization and analysis of cellular structures and interactions within 3D models, providing insights into cellular behavior, morphology, and the microenvironment. The use of high-resolution imaging facilitates the assessment of drug responses and the validation of experimental outcomes, thereby enhancing the overall understanding and application of 3D cell culture systems.

The session concludes with a summary and resources to facilitate the successful adoption of advanced 3D modeling techniques.

Wednesday, October 29, 2025 at 10:00 am–1:00 pm

Register now at **thermofisher.com/upcomingevents**

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