9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Key Lectures

K-45
Organoids: A paradigm-shifting stem cell-based technology for drug discovery and development, companion diagnostics, and preclinical patient stratification

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Hubrecht organoid technology (HUB) has developed the 3D culture system to establish and expand human and animal epithelial tissue from a variety of organs, both healthy and diseased, such as cancer. The organoid technology is based on the work of Hans Clevers that identified adult stem cells in many human tissues, including intestine, liver, pancreas, breast, and lung. Organoid cultures have the virtually unlimited expansion, genetically and phenotypically stable and retain biological and functional properties of the original tissue (Barker et al., Nature 2007; Sato et al., Nature 2009, 2011; Gastroenterology 2011; Huch et al., Nature 2013; Karthaus et al., Cell 2014; Cell 2015; Boj et al., Cell 2015).

Organoids recapitulate the original tissue response to external stimuli and provide a unique and robust in vitro model for drug development, diagnostics, and patient stratification. The HUB is collaborating with and licensing the technology to the Pharmaceutical and Biotech industry. In addition, HUB has built a comprehensive Living Biobank of well-characterized Organoids from different healthy, disease, and cancerous tissues of multiple organs. In combination with the Living Biobank and Organoid technology, HUB offers a unique platform to develop assays and provide preclinical drug discovery, toxicity, personalized medicine services.