

Human Normal and Cancer Organoid Culture with Defined Components for Six Different Tissue Types

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Technology description

Invention Summary:

An organoid is a small three-dimensional (3-D) cellular tissue structure that highly resembles the in-vivo organ from which it is originated. New technology developed at Rutgers Cancer Institute of New Jersey enables researchers to generate organoids from six different cancer types and normal tissues derived from patients suffering from glioblastoma, prostate, breast, kidney, lung, and bladder cancers. Using this new human organoid culture methodology, stem cell-derived organoids are generated from human primary tissues at 80-90% efficiency within 4 weeks. The resulting organoids are reproducibly maintained for at least 6 months. Cancer organoids comprises of epithelial cells and cells undergoing epithelial-mesenchymal transition (EMT) (cancer feature). They also express functional marker specific to the organ (e.g. PSA for prostate organoids, mammoglobin for breast organoids and surfactant for lung derived organoids). This technology provides defined cell processing methods, cell culture media and defined organoid media with supplements and step-by-step instructions to generate the organoids from the patient tissues.

The present technology is highly useful for better understanding of cancer development and for use in drug discovery.

Application area

Human organoid culture kit

High-throughput cancer drug screening

Testing drug sensitivity with biopsy samples from patients in precision medicine to enable personalized therapy

Advantages

Generation of human organoid with a high efficiency (80-90%)

Stable maintenance of cells with genetic and growth rate features resembling those of primary tissues

Production of different cell types in the organoids

Defined serum-free culture components

Suitable for many cancer and tissue types

Institution

[Rutgers University](#)

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