3D organoid culture of MMTV-PyMT mammary gland tumors

Commonly used acronym: *PyMT organoids*
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SCOPE OF THE METHOD

The Method relates to	Animal health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
This method makes use of	Animal derived cells / tissues / organs
Species from which cells/tissues/organs are derived	mouse
Type of cells/tissues/organs	mammary gland tumor

DESCRIPTION

Method keywords

MMTV-PyMT

mammary gland tumors
carcinoma
mammary tumor organoids
Organoid model

Scientific area keywords

breast cancer
tumor-derived
3D culture

Method description

The mammary-specific polyomavirus middle T antigen overexpression mouse model (MMTV-PyMT) is one of the most commonly used models in the cancer research field for multiple reasons, among which the spontaneous development of multifocal luminal tumors, the early tumoral onset, and the primary tumors' morphology resembling those in clinical biopsies. Here we present a method for the derivation of MMTV-PyMT tumor organoids recapitulating the complex structural organization and heterogeneity observed *in vivo*. The generation of an organotypic culture from MMTV-PyMT primary tumors provides a valid research platform exploitable for a variety of experimental analyses concerning the study of breast cancer progression, the modulation of the tumor-microenvironment or metastases formation. These organoids can be derived from a limited amount of starting material and are easily maintained and expanded in basement membrane extract (BME).

Lab equipment

- Biosafety cabinet,
- Cell incubator,
- Phase-contrast microscope.

PROS, CONS & FUTURE POTENTIAL

Advantages

- Primary cells,
- 3D organoids mimic tumor heterogeneity,
- Organoids have strong expandability and ease of maintenance,
- Versatile applications.

Challenges

Recapitulation of the primary tumor but not of other cell types in the microenvironment that may play a role in the tumorigenic transformation and/progression.

Modifications

Co-culturing with other cell types.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

Associated documents

PARTNERS AND COLLABORATIONS

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