

# 3D organoid culture of MMTV-PyMT mammary gland tumors

**Commonly used acronym:** PyMT organoids

Created on: 09-09-2022 - Last modified on: 07-11-2022

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## SCOPE OF THE METHOD

<b>The Method relates to</b>	Animal health
<b>The Method is situated in</b>	Basic Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Species from which cells/tissues/organs are derived</b>	mouse
<b>Type of cells/tissues/organs</b>	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**

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