

# Generation of Organized Porcine Testicular Organoids in Solubilized Hydrogels from Decellularized Extracellular Matrix

*Commonly used acronym: Testicular organoids*

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## Contact person

Marc Kanbar

## Organisation

**Name of the organisation** Université Catholique de Louvain (UCL)

**Department** Institut de Recherche Expérimentale et Clinique (IREC), Andrology Lab

**Country** Belgium

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Basic Research, Translational - Applied Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Species from which cells/tissues/organs are derived</b>	Pig
<b>Type of cells/tissues/organs</b>	Testes

## DESCRIPTION

### Method keywords

artificial testis

decellularization  
extracellular matrix  
immature testicular tissue  
spermatogonial stem cells  
testis  
organoids  
3D Cell culture

### **Scientific area keywords**

fertility preservation  
cancer  
boys  
fertility restoration

### **Method description**

This method describes the generation of porcine testicular organoids using piglet testicular cells seeded in a testicular extracellular matrix (tECM) hydrogel. To generate the solubilized tECM hydrogel, porcine immature testicular tissues (ITTs) were dissected in small fragments and decellularized in a 0.01% sodium dodecyl sulfate solution followed by agitation in a 1% Triton X-100 solution before being lyophilized and digested in a solution of HCl/pepsin. To generate the organoids, testicular cell suspensions were isolated from the porcine ITT and seeded into the hydrogel to form each organoid (500 000 cells per hydrogel). The generated organoids were then cultured *in vitro* and showed both an architecture and endocrine function that are similar to that found in the native organ *in vivo*.

### **Lab equipment**

- Biosafety cabinet,
- Laminar flow hood,
- Culture incubator,
- Nanodrop,
- Rheometer,
- Mass spectrometer,
- Cryogenic freezer,

- Bain Marie.

## Method status

Published in peer reviewed journal

## PROS, CONS & FUTURE POTENTIAL

### Advantages

This an open access method that describes in detail how to create an artificial porcine testis using testicular cell suspensions seeded in an 'inhouse' produced hydrogel formed from decellularized extracellular matrix.

### Challenges

An optimal balance between cell removal and extracellular matrix preservation is the biggest challenge of the technique.

### Modifications

The impact of tECM of different stiffnesses on the outcome of testicular organoids culture still needs to be evaluated.

### Future & Other applications

This method can be potentially applied to testis tissue from other species to produce testis organoids.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### Associated documents

[ijms-20-05476.pdf](#)

[ijms-19-00227.pdf](#)

### Links

[Generation of Organized Porcine Testicular Organoids in Solubilized Hydrogels f...](#)  
[Development of a Cytocompatible Scaffold from Pig Immature Testicular Tissue Al...](#)

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