

# In vitro human experimental model for pancreatic acinar dedifferentiation

*Commonly used acronym: In vitro human ADM culture model*

*Created on: 12-08-2019 - Last modified on: 21-08-2019*

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Animal health, Human health
<b>The Method is situated in</b>	Basic Research
<b>Type of method</b>	In vitro - Ex vivo
<b>This method makes use of</b>	Human derived cells / tissues / organs
<b>Species from which cells/tissues/organs are derived</b>	Human
<b>Specify the type of cells/tissues/organs</b>	Pancreatic exocrine cells

## DESCRIPTION

### Method keywords

acinar dedifferentiation

acinar-to-ductal metaplasia

### Scientific area keywords

pancreatic cancer

### Method description

Loss of acinar differentiation drives pancreatic cancer. An established human in vitro

experimental model is used in our lab to study this process. Pancreatic exocrine cells from human donors are placed in suspension culture in Advanced RPMI medium supplemented with 5% heat-inactivated fetal bovine serum, and undergo stress due to isolation, which causes the acinar cells to lose their typical characteristics and eventually transdifferentiate into ductal-like cells. This enables us to study the process of acinar dedifferentiation without the use of any in vivo model. If exocrine cells are placed in monolayer culture, they acquire a ductal-like phenotype, while in suspension culture they acquire a more progenitor-like phenotype with an activation of a senescence program.

### **Lab equipment**

No special lab equipment is needed except for suspension culture plates.

### **Method status**

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

The experimental model provides excellent foundation to study the first step in pancreatic cancer formation.

### **Challenges**

Primary pancreatic exocrine cells grow in spheroid-like structures, which makes it hard to dissociate and manipulate. They are very sensitive to stress and a high rate of cell death can be observed the first days after seeding. Daily culture medium refreshments are needed to have a healthy culture.

## **REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION**

### **References**

Baldan et al., 2019 (Sci Rep) Mfopou JK et al., 2016 (Biosci Rep) Houbracken et al., 2012 (BMC Biotechnol.) Houbracken et al., 2011 (Gastroenterology)

### **Associated documents**

## PARTNERS AND COLLABORATIONS

### Organisation

**Name of the organisation** Vrije Universiteit Brussel

**Department** LMMO

**Country** Belgium

*Coordinated by*



*Financed by*

