

# A model of inflamed primary human synoviocytes for the evaluation of compounds in the physiopathology of joint diseases

*Commonly used acronym: Model of inflamed synoviocytes*

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## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Translational - Applied Research
<b>Type of method</b>	In vitro - Ex vivo
<b>This method makes use of</b>	Human derived cells / tissues / organs
<b>Used species</b>	Human
<b>Targeted organ system or type of research</b>	Joint health

## DESCRIPTION

### Method keywords

inflammation  
cartilage catabolism  
short-term  
mode of action  
screening

### **Scientific area keywords**

joint health  
anti-inflammatory properties  
medical devices  
visco-supplements  
anti-catabolic properties  
osteoarthritis  
drugs  
food supplements

### **Method description**

The culture of primary human synoviocytes provides an excellent cellular model for studying the normal and pathological physiology of synoviocytes and the development of joint diseases. Human primary synoviocytes can either be provided by commercial suppliers or isolated from fresh biological material (synovial membrane tissue sampled during total knee replacement surgeries). Primary synoviocytes are cultured in monolayer, for short-term periods (usually from 24h to 72h), in presence of IL-1b which is efficient to induce a pro-inflammatory environment and pro-catabolic conditions. This short-term model is used to assess the mode of action of several novel therapeutic solutions intended for joint diseases such as osteoarthritis (drugs, food supplements, medical devices, ATMP). It can also be used as a rapid screening model before moving on to *in vivo* experiments (in view of the 3Rs). Dexamethasone is used as positive control to counter the pro-

inflammatory and pro-catabolic status of the inflamed synoviocytes.

### **Lab equipment**

- Laminar flow hood and CO2 incubator (for cell culture),
- qPCR machine (for molecular biology analyses),
- Spectrophotometer and fluorometer (for NO and DNA measurements, respectively).

### **Method status**

History of use

Internally validated

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

#### **Advantages**

- Short-term, cheap and efficient screening model,
- Easy access to the HFLS (commercial supplier).

#### **Challenges**

Inter-variability between donors (primary cultures).

#### **Modifications**

This model could be adapted into a co-culture model with chondrocytes to better mimic the joint articulation.

#### **Future & Other applications**

This model is currently adapted to other species in our facilities (dog, horse, ...) for

the testing of veterinary products.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### Associated documents

[In vitro culture of primary human synoviocytes.pdf](#)

## PARTNERS AND COLLABORATIONS

### Organisation

**Name of the organisation** ARTIALIS

**Department** Preclinical Department

**Country** Belgium

**Geographical Area** Walloon

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