

# Two-chamber skin explant model for marine fish

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## SCOPE OF THE METHOD

<b>The Method relates to</b>	Animal health, Environment
<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>	Animal derived cells / tissues / organs
<b>Species from which cells/tissues/organs are derived</b>	Flatfish - common dab (Limanda limanda)
<b>Type of cells/tissues/organs</b>	Skin

## DESCRIPTION

### Method keywords

Tissue culture

Two-chamber skin explant method

Marine fish

saline environment

### **Scientific area keywords**

Fish disease

Ecotoxicology

infectious disease

host-pathogen interaction

### **Method description**

We have developed an innovative two-chamber skin explant model specifically for studies involving skin of marine fish. An apparatus was 3D-printed and consists of two plates, a lower and upper plate (with funnel). By mounting the explant between the plates, two chambers can be created with the possibility to use different media without exchange between the chambers.

### **Lab equipment**

Besides some pipets, no specific lab equipment is necessary. The explants are placed in a temperature-controlled room and all handlings with the explants are performed in a biosafety cabinet.

### **Method status**

Internally validated

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

#### **Advantages**

Two chambers are created allowing the use of saline and non-saline medium on the outside and inside of the tissue, respectively. A localized treatment spot is created where various processes on the skin can be studied. Reliable and useful for a broad range of skin studies. The pinpointed protocol has been proven to closely approximate the *in vivo* skin structure and cellular composition. Many future applications are possible including study on infectious diseases and effects of toxic compounds.

## **Challenges**

Only small sample sizes possible due to the intensive protocol. Using the pinpointed protocol it is, for now, only possible to keep the explants for 24 hours.

## **Modifications**

With possible modifications in the 3D printed apparatus, the used media or the use of continuous changes of the medium, it might be possible to keep the explants for a longer time period.

## **Future & Other applications**

We believe that the model had a broad application potential with various studies regarding skin health and integrity. It could be used to study the effect of toxic compounds on the total skin structure and integrity as well as disease-related aspects such as host-pathogen interactions or the uptake of contaminants.

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

### **References**

In preparation, will be added soon.

## Associated documents

### PARTNERS AND COLLABORATIONS

#### Organisation

**Name of the organisation** Ghent University (UGent)

**Department** Department of Pathology, Bacteriology and Avian Diseases

**Country** Belgium

**Geographical Area** Flemish Region

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