

## In vitro co-cultures of human immune cells and (lung) tumor cells

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### Organisation

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**Country** Belgium

**Geographical Area** Flemish Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human 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>	Human
<b>Type of cells/tissues/organs</b>	Human
<b>Specify the type of cells/tissues/organs</b>	lung cancer (A549, NCI-H1975), immune cells (subtypes of PBMCs and neutrophils)
<b>Used species</b>	Human
<b>Targeted organ system or type of research</b>	Lung

## DESCRIPTION

### Method keywords

A549

PBMC isolation

magnetic separation

treatment of cocultures

### Scientific area keywords

immunotherapy  
Lung cancer  
PBMC  
cancer treatment

### **Method description**

By using *in vitro* co-cultures of immune cells and lung tumor cells, we can study and evaluate the immune-activating and/or anti anti-tumor properties of certain treatments. Tumor cell proliferation can be studied with live-cell imaging instruments (IncuCyte, EVOS, ...) and the occurrence of immune activation can be evaluated by measuring immune mediators (IL-2, IFN $\gamma$ , TNF $\alpha$ , ...) in the supernatant of the co-cultures with ELISA, MSD or mass spectrometry.

On the first day, tumor cells can be seeded in well plates and can be grown for 24h. Just before addition of the different immune cell types, a cell image of the whole well can be generated. Different immune cell types can be added to the wells and selected wells can be stimulated with a treatment of choice. After 72h of culturing, cell images can be generated and compared to each other to evaluate tumor cell proliferation. Also, the supernatant of each condition can be used to measure immune mediators of interest to evaluate immune activation for each condition separately.

### **Lab equipment**

Incubator;  
Laminar flow;  
Well plates;  
Pipets;  
Live-cell imaging microscope;  
ELISA plates/MSD instrument/mass spectrometer.

### **Method status**

Published in peer reviewed journal

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

### **Advantages**

Easy-to-use;  
High-throughput;  
Rapid results;  
High reproducibility.

### **Challenges**

Heterogeneity of the tumor microenvironment is not taken into account.

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

### **References**

Eline Berghmans, Julie Jacobs, Christophe Deben, Christophe Hermans, Glenn Broeckx, Evelien Smits, Evelyne Maes, Jo Raskin, Patrick Pauwels and Geert Baggerman. Mass Spectrometry Imaging Reveals Neutrophil Defensins as Additional Biomarkers for Anti-PD-(L)1 Immunotherapy Response in NSCLC Patients (2020). Cancers (12; 863)  
doi: 10.3390/cancers12040863

### **Links**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7225984/>

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