

# In vitro megakaryocyte and platelet production

*Commonly used acronym: MK, PLT*

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## Contact person

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## Organisation

**Name of the organisation** Katholieke Universiteit Leuven (KUL)

**Department** Cardiovascular Sciences

**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, Translational - Applied Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Used species</b>	human
<b>Targeted organ system or type of research</b>	blood

## DESCRIPTION

### Method keywords

megakaryocyte

platelet

bone marrow

differentiation

### **Scientific area keywords**

thrombocytopenia

platelet production

megakaryopoiesis

### **Method description**

*In vitro* differentiation of hematopoietic stem cells (HSC) or inducible pluripotent stem cells (IPS) to megakaryocytes and platelets using specific differentiation conditions (liquid and 3D media). CRISPR/cas mutagenesis of HSC or IPS to study the effect of gene depletion or specific mutants on megakaryopoiesis and the production of platelets.

### **Lab equipment**

- Cell culture equipment;
- FACS;
- Amaxa nucleotransfector;
- Cell culture reagents and specific cytokines;
- Molecular reagents and technologies.

### **Method status**

Still in development

Internally validated

Published in peer reviewed journal

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

### **Advantages**

Reduces the need for producing KO mice or other functional mice studies.

### **Challenges**

Impossible to generate high numbers of platelets that have the same characteristics as blood platelets.

## Modifications

Other groups are working on improving the capacity of platelet generation (for transfusion purposes).

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

PMID: 30467204

PMID: 26936507

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