

# Isolation and cultivation of bone marrow-derived mesenchymal stromal cells

**Commonly used acronym:** BM-MSC

Created on: 20-03-2019 - Last modified on: 28-02-2022

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## Organisation

**Name of the organisation** Vrije Universiteit Brussel (VUB)

**Department** Pharmaceutical and Pharmacological Sciences

**Specific Research Group or Service** In Vitro Toxicology and Dermato-Cosmetology

**Country** Belgium

**Geographical Area** Brussels 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>Specify the type of cells/tissues/organs</b>	bone marrow-derived mesenchymal stromal cells

## DESCRIPTION

### Method keywords

Stem cells

stem cell culture

bone marrow

stem cell isolation  
mesenchymal stromal cells

### **Scientific area keywords**

mesenchymal stromal cells  
stem cell culture  
stem cell isolation

### **Method description**

Mononuclear cells (MNC) are isolated from bone marrow aspirates by density gradient centrifugation and washed in Hank's buffered salt solution. MNC are seeded at a cell density of  $2 \times 10^4$  cells/cm<sup>2</sup> in low glucose DMEM supplemented with 15% (v/v) heat-inactivated FBS, 2 mM L-glutamine and 0.5% (v/v) antibiotic/antimycotic solution. Cells are incubated at 37°C in a 5% (v/v) CO<sub>2</sub>-enriched humidified atmosphere, cultured up to 90% confluency, trypsinized, centrifuged, and subcultured at a lower density ( $5 \times 10^3$  cells/cm<sup>2</sup>) for all subsequent passages for 2 weeks.

### **Lab equipment**

Biosafety cabinet level 2;  
Cell incubator;  
Centrifuge.

### **Method status**

History of use  
Internally validated  
Published in peer reviewed journal

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

### **Advantages**

Robust protocol for isolation of bone marrow-derived mesenchymal stromal cells.

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

## References

De Kock J, Najar M, Bolleyn J, Al Battah F, Rodrigues RM, Buyl K, Raicevic G, Govaere O, Branson S, Meganathan K, Gaspar JA, Roskams T, Sachinidis A, Lagneaux L, Vanhaecke T, Rogiers V. (2012) Mesoderm-derived stem cells: the link between the transcriptome and their differentiation potential. Stem Cells Dev. 21(18):3309-23

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