Miltenyi Biotec

# MSC Phenotyping Kit, human

## Confirm compliance with ISCT criteria

This kit was developed for the fast and standardized characterization and quantification of cultured human mesenchymal stromal cells (MSCs) by flow cytometry based on the defined standards of the International Society for Cellular Therapy (ISCT)[1]. The MSC Phenotyping Kit applies recombinantly engineered REAfinity™ antibodies for fast, trouble-free, and reliable phenotyping.

- **5-color antibody cocktail detecting MSC-positive markers (CD73, CD90, and CD105) and -negative markers (CD34, CD45, CD14, CD19, and HLA-DR)**
- **5-color antibody cocktail for isotype control**
- **Individual single-color fluorochrome-conjugated antibodies for compensation control**

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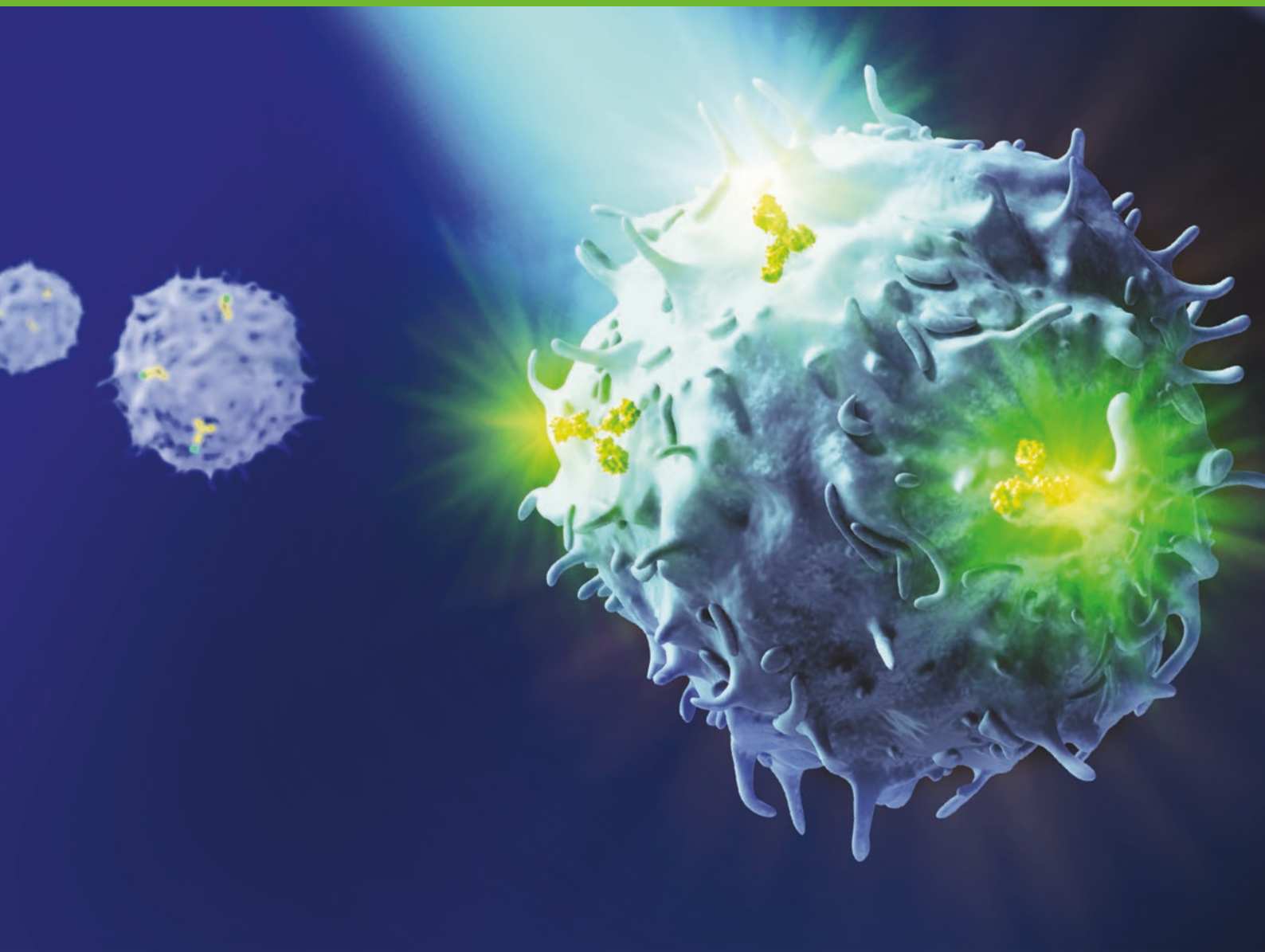

## Confirm compliance

The Mesenchymal and Tissue Stem Cell Committee of the ISCT has proposed a set of standards to define human MSCs for both laboratory-based scientific investigations and for pre-clinical studies[1].

These MSC-defining criteria are:

- plastic-adherence when maintained under standard culture conditions
- postivity (≥ 95% of the cell population, when measured by flow cytometry) for CD73, CD90, and CD105, while lacking expression of CD34, CD45, CD11b or CD14, CD19 or CD79α, and HLA-DR (≤ 2% positive cells, when measured by flow cytometry)
- ability to differentiate into adipocytes, chondrocytes, and osteoblasts under standard *in vitro* differentiation conditions

By defining these criteria, ISCT has provided guidelines to improve the reliability of inter-investigator comparison of results, which can accelerate scientific discovery and facilitate the development of novel cellular therapies.

## Comprehensive MSC reagent portfolio

Miltenyi Biotec has developed a comprehensive reagent portfolio to standardize cultivation and characterization of MSCs. Find all relevant products you need to ensure compliance with the MSC identification criteria in the table below:

| Product | Capacity | Order No. |
|---|---|---|
| MSC Phenotyping Kit, human | 50 tests | 130-125-285 |
| StemMACS™ MSC Expansion Media Kit XF, human | 500 mL | 130-104-182 |
| StemMACS MSC Expansion Media, human | 500 mL | 130-091-680 |
| MSC-Brew GMP Medium | 500 mL | 170-076-326 |
| MSC-Brew GMP Medium | 2000 mL | 170-076-325 |
| StemMACS AdipoDiff Media, human | 100 mL | 130-091-677 |
| StemMACS OsteoDiff Media, human | 100 mL | 130-091-678 |
| StemMACS ChondroDiff Media, human | 100 mL | 130-091-679 |
| MSC Suppression Inspector, human | 2.5 mL | 130-096-207 |

Information about the complete range of products for MSC research is just a click away on **www.miltenyibiotec.com/MSC**

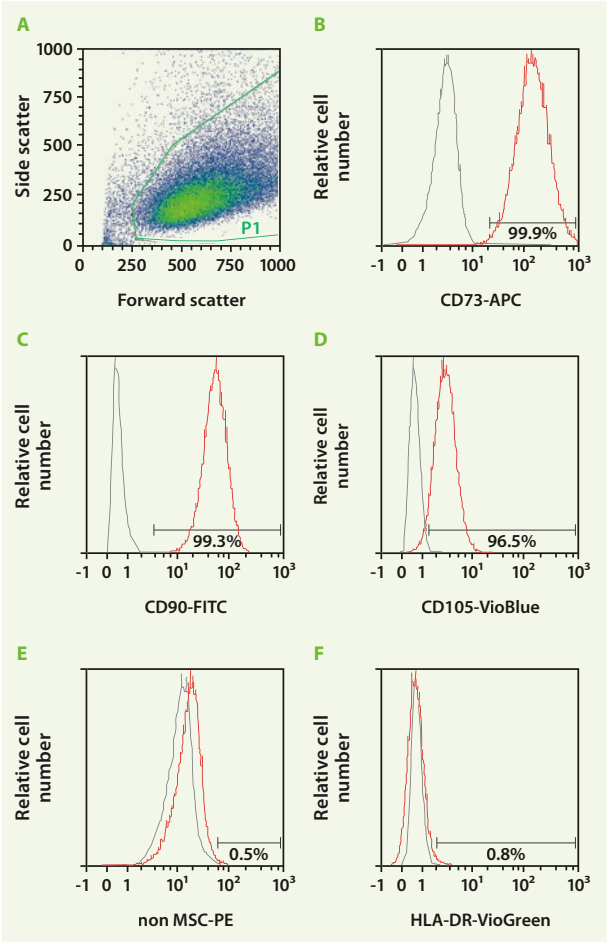


**Figure 1:** Human MSCs were cultured and expanded in StemMACS™ MSC Expansion Media Kit XF, human. Cultured cells were divided into two aliqouts, and stained with the MSC Phenotyping Cocktail and the Isotype Control Cocktail, respectively. Both fractions were analyzed by flow cytometry using a MACSQuant® Analyzer. Each histogram (red) was overlaid with the corresponding isotype control (grey) to identify positively stained cells (A–F).

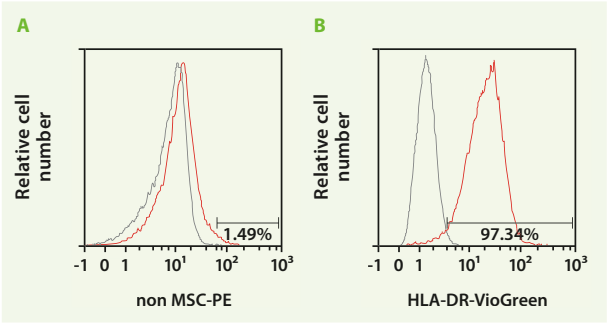


**Figure 2:** In order to distinguish stimulated MSCs from unstimulated MSCs, cells were cultured with IFN-γ and the expression of HLA-DR and other MSC-negative markers was investigated. Upon stimulation with IFN-γ, the HLA-DR expression was upregulated (B) compared to unstimulated cells (Figure 1F). Meanwhile, the expression of other MSC-negative markers was comparable between stimulated (A) and unstimulated MSCs (Figure 1E).


**Reference:**

1. Dominici, M. *et al.* (2006) Minimal criteria for defining multipotent mesenchymal stromal cells. The International Society for Cellular Therapy position statement. Cytotherapy 8: 315–317.


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