Separation of two-cell type from a heterogeneous cell population

Overview

Primary cell culture is an important tool for **drug development and testing** thanks to the ability to mimic the in vivo state and generate more physiologically relevant data. Most of the tissues have a **mesenchymal and epithelial component**. Isolation of one of the two populations of interest is one of the main issues. **Celector® technology** allows the separation of mesenchymal cells from epithelial cells without requiring enzymatic digestion or use of antibodies.

Details

- **High number of cells processed.** 500.000 to 1 million cells processed at once. Possibility to perform multiple injection to increase the final number of cells for further experiments;
- **High efficiency** of separation and reproducibility;
- **Maintained viability and sterility** ;
- Separated profile of mesenchymal and epithelial cells starting from a mixed population

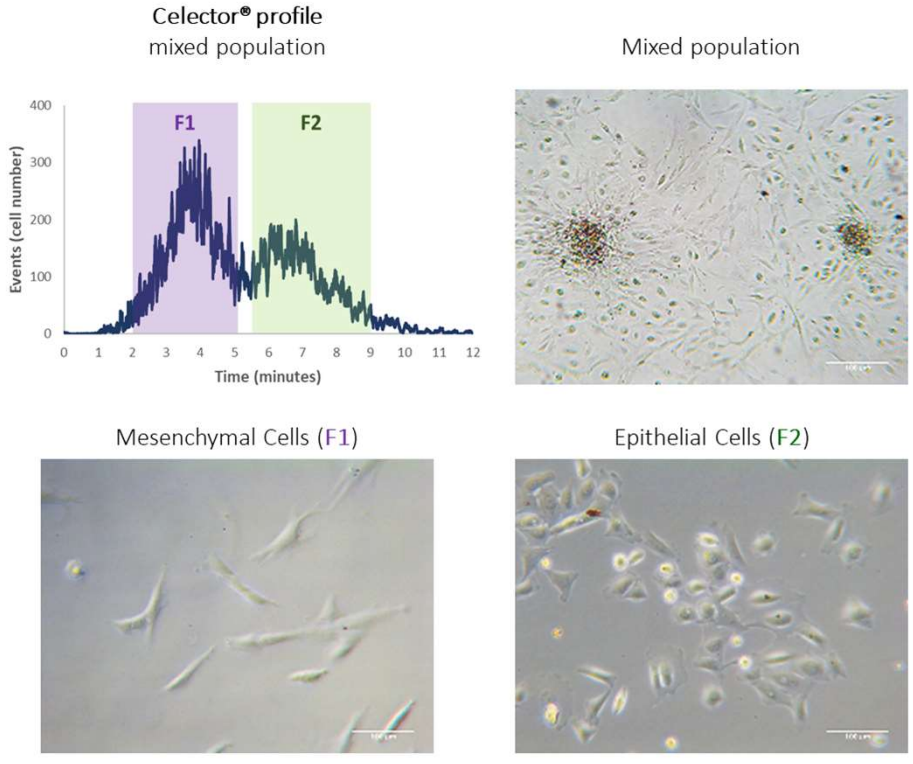

Figure 1. Separation of a mixed cell population using Celector® technology.

Separation profile of the mixed population with mesenchymal cells eluting in the first peak (F1, purple) and the epithelial cells in the second peak (F2, green). In the figure below, mesenchymal cells collected from F1 after plating show the typical mesenchymal morphology (left). Cells collected form F2 show epithelial morphology (right).

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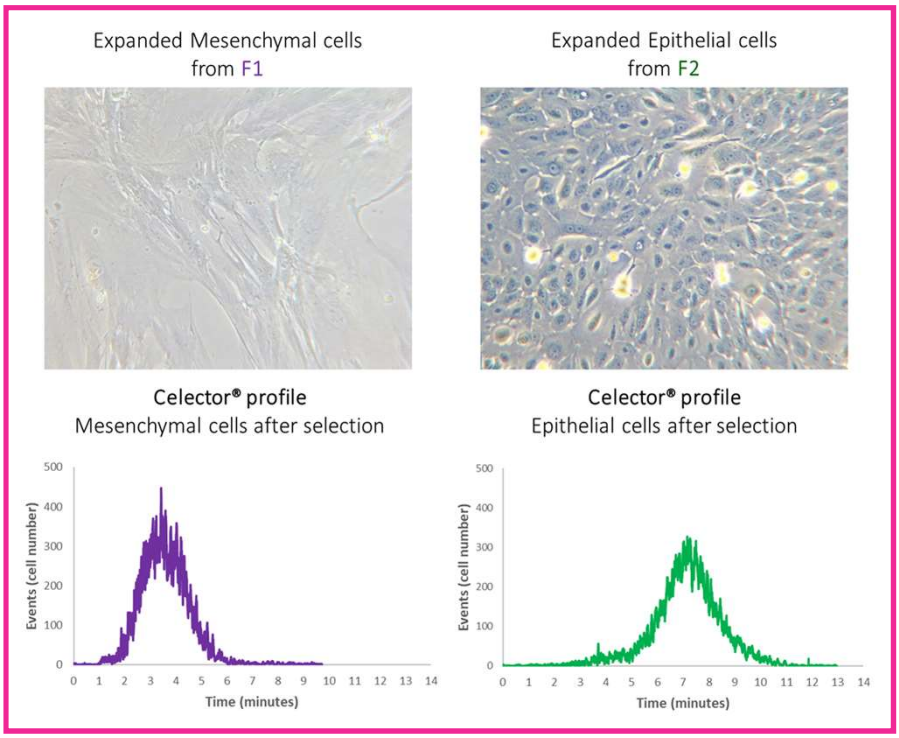

Figure2. Profiling of separated and expanded cells using Celector® technology.

Images of epithelial and mesenchymal cells after Celector® selection. The typical round and elongated cell morphology proved the efficient separation technique.
As confirmation, cells were analysed by Celector® and expanded cells show different retention time (Mesenchymal cells elute between 2 and 5 minutes, while epithelial cells between 5 and 9 minutes).

Comparison with Standard technique

Using the standard Flow Cytometry technique, mixed populations of mesenchymal and epithelial components cannot be distinguished using the physical parameters, with an evident overlap of the cell cloud.

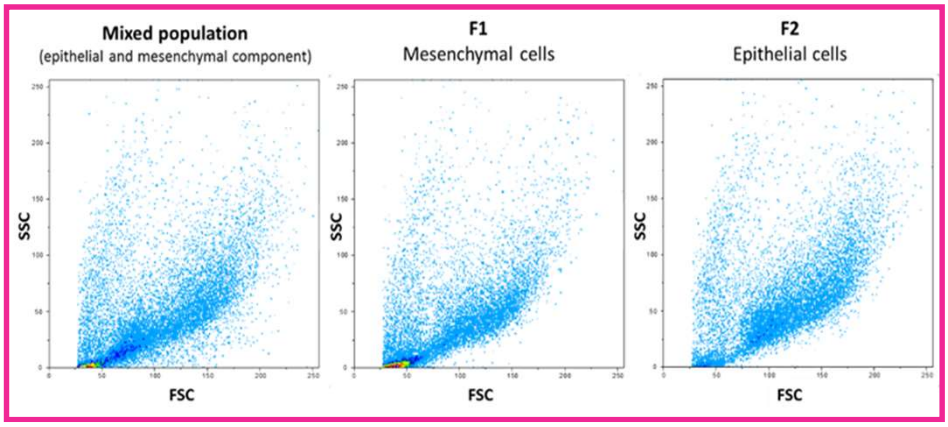

Figure 3. Flow cytometry analysis of a mixed population showing no difference between samples by physical parameters. Cells collected and expanded from F1 and F2 fractions share the same physical properties when analysed by flow cytometry.

Applications

- Positive selection or depletion of epithelial cells or mesenchymal cells from **single-cell preparations** of tissues;
- **Enrichment** of epithelial cells or mesenchymal cells from mixed culture;
- Positive selection of epithelial cells or mesenchymal cells from **direct co-culture experiments**

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