Immunomonitoring of MSC-based trial: WHY?

- Anti-inflammatory & Immunosuppressive properties of MSCs
- Crucial for treatment of dysimmune diseases & Tissue repair

2 levels of monitoring

Level 1 included with cell production for all clinical assays
- Freezing of PBMC for further analyzes (function, genetic,...)
- Freezing of sera for further analyses of soluble factors (IDO, TSG-6)
- 3 time-points (M0, M1, M3) for phenotypic immunomonitoring on peripheral blood

- Level 2 Specific to each protocol depending on study design (Allo/Auto, repetitive versus single injection, local versus systemic infusion of MSC)

For example
- Monitoring of IL10-producing B reg
- Cytokines production by Th cells following stimulation
- Evaluation of allogeneic cell response after MSC infusion

Qualification of immunomodulatory properties of GMP-grade MSCs

MSC-related parameters

- Tissue origin
- Culture conditions
- Priming
- Culture expansion (PD, senescence)
- MSC to immune cell ratios
- MSC to immune cell ratios
- Mechanism?

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Immune cell-related parameters

- Viability
- Proliferative potential
- Stimulation cocktail
- Specific inhibitors
- MO
- DC
- CTL
- B
- NK
- PMN
- Th

ECELLFRANCE
immunomonitoring platforms for MSC-based clinical trials

Immunomonitoring on peripheral blood

Level 1

- Identification of target cells or immune pathways
- Identification of biomarkers associated with immune response

- Cell Polarity switch ?
  - Th1, Th2, Th17, Th9
  - Chemokine receptors

- Treg induction ?
  - Number
  - Activation markers

- Activation/inhibition of discrete T cells subsets ?
  - Memory markers
  - Activation markers
  - Thymic output
  - NKGD1, CD4

- Alteration of B cells ontogeny?
  - Maturation markers
  - Memory/innate markers
  - Surface Ig (classic switch)

- Alteration of monocyte compartment ?
  - Subsets
  - Number
  - Activation markers

- Activation/inhibition of NK cells ?
  - Number
  - Activation markers

- Alteration of dendritic cell compartment ?
  - Subsets
  - Number

8 panels with 10 fluorochromes to monitor immune status of the patients before and after treatment

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