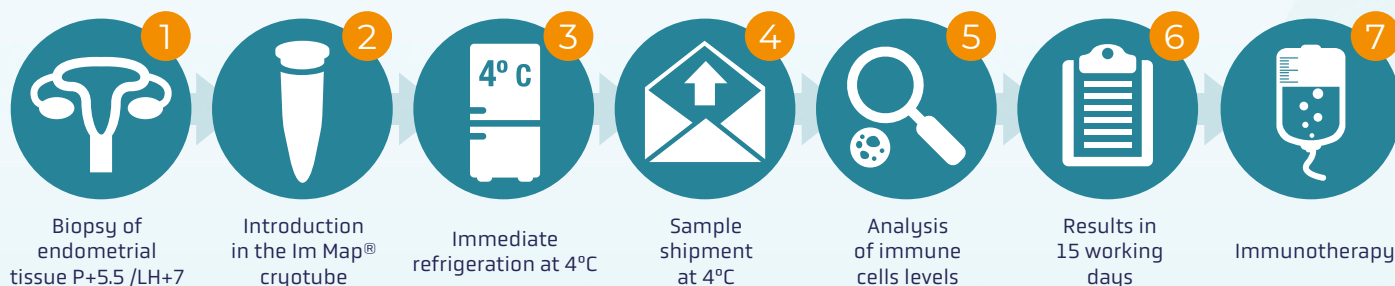


Im Map[®] is a cellular test that determines immune populations in the endometrium.



Im Map[®] can identify the different immune subpopulations present in the endometrium, so that alterations in their levels can be identified and patients can be offered specific immunotherapy to restore the immune balance in the endometrium and increase foetal tolerance, implantation and the probability of a successful pregnancy.

The process





Tissue and vascular remodelling

Immune cells present in the endometrium are essential for the proper regulation of trophoblast invasion, tissue remodelling, angiogenesis and embryo growth. These processes are carried out through the specific secretion of fetal growth stimulating factors and tissue and vascular remodelling.

Altered levels and activation of immune subpopulations have been shown to be associated with impaired vascular and tissue remodelling causing implantation failure, miscarriages, as well as pre-eclampsia, preterm delivery and fetal growth restriction ^{1,2}.

Pro-inflammatory/anti-inflammatory balance

Immune cells secrete small proteins called cytokines that regulate the inflammatory state of the endometrium. These can be classified into pro-inflammatory cytokines, which act as active agents in the induction of the immune response, and anti-inflammatory cytokines, which regulate this response. The synthesis of both cytokines will allow the establishment of the pro-inflammatory/anti-inflammatory balance present in the endometrium during the implantation window.

The study of the pro-inflammatory/anti-inflammatory balance is essential, as, for successful implantation, the maternal endometrium must present a specific inflammatory state that promotes this process. Indeed, dysregulation of the pro-inflammatory/anti-inflammatory balance has been associated with pregnancy loss, preterm birth, or preeclampsia ³. Additionally, other studies have shown that women with recurrent miscarriages have increased levels of pro-inflammatory cytokine-producing cells compared to women with successful pregnancies ^{4,5,6}.

Fetal tolerance

The embryo expresses paternal components that can be recognized by the maternal immune system and may cause embryo rejection during pregnancy. To ensure reproductive success, the endometrial maternal-fetal area presents a characteristic immune profile that promotes immunosuppression and ensures fetal tolerance and survival ⁷.

Various studies have demonstrated how an alteration in the immune subpopulations involved in regulating the immune response, and consequently, a change in tolerance, occurs in patients who have suffered spontaneous miscarriages during the first trimester ⁸.

How do we test Im Map®?

This is carried out through an endometrial biopsy in the luteal phase for diagnosis.

The endometrial biopsy sample can be obtained in parallel with the biopsy for our endometrial receptivity analysis test, ER Map®, on LH+7 in a natural cycle, on P+5.5 in a substituted cycle, and hCG+7 in a modified natural cycle.

The samples are analyzed using multiparametric flow cytometry. Flow cytometry is a biophysical technology used to detect immunological markers and carry out the counting of cellular populations.

This technique allows for the simultaneous multiparametric analysis of the physical and chemical characteristics of millions of cells in just a few minutes. In cases where abnormal levels of immune cells are detected, various appropriate immunotherapy options can be offered for each patient.

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