

| ReproFLOW: Detecting immune cells

ReproFLOW is a specialised test designed to assess the immune composition of the endometrium, the inner lining of the uterus. This test plays a crucial role in evaluating how the immune system influences fertility, particularly in cases where implantation failure or recurrent miscarriage occurs.

Understanding the Reproductive Uterine Immunophenotype Test

ReproFLOW analyses an endometrial biopsy, a small tissue sample taken from the uterus, to examine immune cells that impact implantation. The test focuses on immune cell diversity, known as immune cell heterogeneity, and determines whether the immune environment is supportive or "hostile" to pregnancy. Although this is a test that help us to understand better the immune profile inside the uterus, there is a lot of controversy regarding its benefits to improve success rates. This is mainly due the lack of consistency in tests and definitions of normality so does for the therapeutic options.

How the Test Works

ReproFLOW utilises a technique called flow cytometry to identify and measure specific immune cells present in the endometrial lining. These include:

- ➔ Natural Killer (NK) Cells: uNK (uterine NK cells) and pNK (peripheral NK cells) with subsets like CD56 bright, CD56 dim, and CD57+
- ➔ T-Cells: CD3, CD5, CD8, and CD4 (including Th1, Th2, Th17, and Treg3, which are involved in immune balance)
- ➔ B-Cells: CD19, which plays a role in immune regulation

Additional Markers and Insights

While its primary focus is on lymphocytes, the test can also detect other immune markers:

- ➔ **CD14:** Helps differentiate between monocytes and lymphocytes
- ➔ **CD138:** Identifies plasma cells, which could indicate the presence of chronic endometritis, a condition linked to implantation failure

By assessing both the type and activation status of immune cells, ReproFLOW can distinguish between patients with high or low immune activation, allowing for tailored fertility treatments. This information helps doctors determine if immune imbalances are affecting implantation and whether interventions—such as immune-modulating therapies—may improve pregnancy outcomes.

How it's performed?

- A sample of endometrial tissue is collected.
- The test is performed at a specific phase of the menstrual cycle, the mid-secretory phase (cycle days 18-24), since the immune environment of the uterus changes throughout the cycle. In some cases, we use hormonal treatment to prepare the lining.
- The procedure is quick and minimally invasive, often done in a doctor's office without anaesthesia.
- The risks are very little. Mild pelvic pain and bleeding are the most common. Uterine infection is a very rare complication.

Who's it for?

- Women with recurrent implantation failures.
- Patients with a history of recurrent miscarriage.

Currently, there is no single "perfect" diagnostic test. In fact, the medical literature reveals ongoing controversy and a lack of consensus regarding when to use one test over another. In many cases, it may be appropriate to perform multiple tests, as their interpretation greatly depends on the individual clinical context. These tests can provide complementary insights, and the decision to use them should be tailored to each patient's unique history, presentation, and fertility journey.

Costs

ReproFlow Endometrial Biopsy

€650
