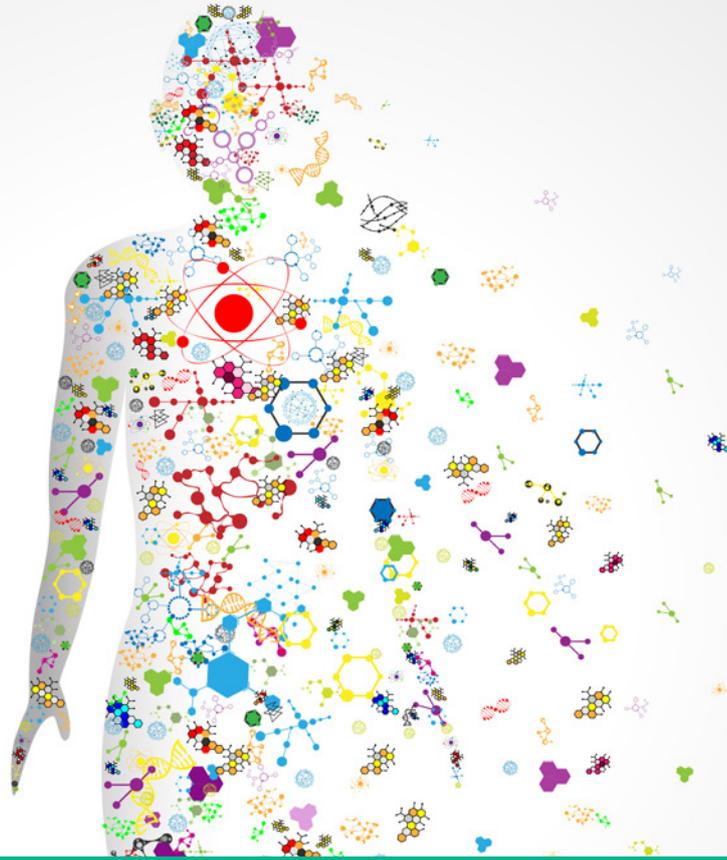


Immunologic factors such as an abnormal response to the developing embryo by a woman's immune system may be the cause in many infertility cases



Repeated implantation failure and recurrent miscarriage are two of the most challenging conditions in reproductive medicine. Repeated implantation failure is determined when embryos of good quality fail to implant following several IVF treatment cycles. Recurrent miscarriage is defined as three or more consecutive pregnancy losses. Genetic, hormonal, metabolic, uterine anatomical, infectious or immune disorders have been reported as possible aetiologies, however, in many women, no discernible cause is established. Recent investigations point out that immunologic factors, such as an abnormal response to the developing embryo by a woman's immune system, may be the cause in many of such cases.

iGLS offers Immunology Map, a comprehensive immunological test to help identify the cause of recurrent miscarriage or implantation failure in challenging cases, where embryonic causes and/or endometrial factors have been ruled out.

METHODOLOGY



1
Biopsy of
endometrial tissue
P+5.5 /LH+7



2
Introduction in the
Immunology Map
cryotube



3
Sample shipment
at room
temperature



4
Analysis of immune
cells levels



5
Results in 15
working days



6
Immune
Therapy

NK Activity Assay

Natural killer (NK) cells are a type of lymphocytes with an important task in the immunological system. They are able to differentiate between self and non-self cells and eliminate non-self exogenous cells. NK cells are the most prevalent immune cell population in the secretory endometrium and decidua of early pregnancy. These uterine NK cells participate in the recognition of the embryo and the initiation of the mechanism of maternofoetal immunotolerance in the first stages of implantation. Several studies have reported that high levels of NK cells in the endometrium are related to failed embryo implantation and miscarriage¹⁻². iGLS NK Activity Assay identifies the NK cells population present in both, the endometrium and the maternal blood so that specific immune treatment to reduce NK activity and to improve implantation and pregnancy success can be offered to patients.

TH1/TH2 Cytokines Assay

TH1 and TH2 are a type of lymphocytes responsible for coordinating the cellular immune response. TH cells secrete small proteins called cytokines, which are active agents in the induction of the immune response. There is a close interaction between TH1 and TH2 cytokines production. During pregnancy there is shift from TH1 to TH2 response that functionally induces maternal tolerance to the developing embryo. Increased levels of TH1 cytokines are associated with pregnancy loss, preterm labour or pre-eclampsia³. Women with recurrent miscarriage have been shown to have increased TH1 levels compared with women that go on to have successful pregnancies⁴. Specific immune therapy is available for altered TH1/TH2 cytokines ratio cases.

T-Reg Activity Test

Regulatory T-cells (T-reg) are highly specialized immune lymphocytes that play an important role in preventing immune and autoimmune responses against self-antigens. T-reg cells are essential in promoting foetal survival by avoiding the recognition of paternal tissues by the maternal immune system and hence preventing the rejection of the embryo. Several studies have reported a relationship between a deficit in T-reg cells number and miscarriage within the first trimester⁵. Specific immune treatment can be offered to women with abnormal regulatory T-cell activity.

How do we perform the tests?

iGLS Immunology Map is performed in an endometrial biopsy sample on luteal phase for the diagnosis and, in a blood sample, for the therapy follow up. The endometrial biopsy sample can be obtained in parallel with the biopsy for our endometrial receptivity analysis, ER Map[®] test at LH+7 in a natural cycle or P+5.5 in a HRT cycle. Samples are analysed under a flow cytometer. This is a biophysical technology employed to detect immunological markers and cell counting. It allows simultaneous multiparametric analysis of the physical and chemical characteristics of several millions of cells in a few minutes. If abnormal levels of immune cells are detected, immune therapy suited for each patient can be offered. These immune treatments can improve the reproductive outcome of patients, increasing the chances of embryo implantation and reducing the probability of miscarriage.

Our specialised team can discuss with you the therapy options available for patients showing high levels of NK cells, shifted ratios of Th1/Th2 or low levels of activated regulatory T-cells.

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iGLS

Advanced Genetic Services
+34 965 118 029 • info@igls.net
www.igls.net