Why didn’t your mother reject you?

Professor Guillermina Girardi
Chair in Women’s Health
Division of Women’s Health
King’s College London

Abstract
For an immunologist, pregnancy remains an enigma. As half the genes are derived from the father, the fetus and the placenta must be considered a 'semi-allograft'. Although it ensures optimal nourishment and protection of the fetus throughout its early development, intimate contact with the mother's uterine tissue makes the fetus and placenta potential targets for her immune system. The mismatched 'organ transplant' would be quickly rejected without substantial immune suppression. Why are the placenta and fetus not rejected in a uterus infiltrated by maternal immune cells? In this lecture, I will discuss the most recent findings that could possibly answer this crucial question. Survival of the embryo in the uterus depends on the maintenance of immune tolerance at the maternal-fetal interface. I will describe the new molecular and cellular pathways that protect the placenta and thereof the fetus from the maternal immune system attack. Failure of the placenta to avoid maternal immune response can cause pregnancy complications such as miscarriages and preeclampsia.

Selected Publications for Reference
3- Trowsdale J et al. Mother’s little helpers: mechanisms of maternal-fetal tolerance. Nat immunol 2006 ;7(3) :241-6
7- Rouas-Freiss N et al. The alpha 1 domain of HLA-G1 and HLA-G2 inhibits cytotoxicity induced by natural killer cells: is HLA-G the public ligand for natural killer cell inhibitory receptors? PNAS 1997; 94(10):5249-5254.