

Three types of fetal cells can migrate into maternal organs during pregnancy

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A pregnant woman's blood stream contains not only her own cells, but a small number of her child's, as well, and some of them remain in her internal organs long after the baby is born. Understanding the origin and identity of these cells is vital to understanding their potential effects on a mother's long-term health. For example, fetal cells have been found at tumor sites in mothers, but it is unknown whether the cells are helping to destroy the tumor or to speed its growth.

Three types of [fetal cells](#) have now been identified in the lungs of late-term pregnant mice by a team led by Dr. Diana Bianchi of Tufts Medical Center. The research, published 6 June 2012 in [Biology of Reproduction's Papers-in-Press](#), used publicly available databases to extract important genetic information from as few as 80 fetal cells. A combination of two different analytical techniques to characterize the rare fetal cells revealed a mixed population of trophoblasts (placental cells that provide nutrients to the fetus), mesenchymal stem cells (cells that later develop into fat, cartilage, or bone cells), and [immune system cells](#).

Researchers suspect that fetal cells in a mother's blood stream help her immune system tolerate and not attack the fetus. The detection of trophoblasts and immune cells in the maternal lung should aid future studies on this subject, as well as research into pregnancy-related complications like preeclampsia. The presence of fetal [mesenchymal stem cells](#) corresponds with previous studies that reported fetal and placental cells differentiating to repair injured maternal organs in both mice and humans.

Using this team's techniques of [gene expression analysis](#), researchers should now be better able to identify the types of cells present in maternal organs and in doing so determine their potential short- and long-term effects on a mother's internal systems.

More information: Pritchard S, Wick HC, Slonim DK, Johnson KL, Bianchi DW. Comprehensive analysis of genes expressed by rare microchimeric fetal cells in maternal lung. *Biol Reprod* 2012; (in press). Published online ahead of print 6 June 2012; [DOI 10.1095/biolreprod.112.101147](#)

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