Use of CXCR3 Inhibitors for Protecting Against Fetal Wastage

Brief Description of Technology
This technology utilizes methods and compositions related to reducing the risk of or preventing fetal wastage by administering CXCR3 inhibitors.

Technology ID
2014-1005

Technology Overview
With an estimated 2.6M cases occurring annually, stillbirth remains a pressing global health problem and it is suggested that maternal infection is an important causative factor. Dr. Way has discovered that neutralizing the CXCR3 receptor successfully inhibited fetal-specific T cells in a pregnant subject and prevented fetal wastage under both infection and non-infection contexts.

He has shown, in a Listeria monocytogenes (Lm) model, that fetal wastage requires recruitment of inflammatory cells that promote fetal-specific T cells to infiltrate the maternal-fetal interface. Essential to this process is the T-cell chemokine receptor CXCR3, which when inhibited or removed genetically, prevented fetal wastage. This protection against fetal wastage and in utero Lm invasion is maintained even after initiating CXCR3 neutralization after infection. These results suggest blocking CXCR3 may represent a more universal approach for mitigating immune-mediated pregnancy complications.

Applications
• Therapeutic treatment to prevent infection induced fetal wastage
• Implications for non-infectious pregnancy complications (preeclampsia)

Advantages
• Addresses underlying immunological factors driving maternal fetal tolerance, which appear to play a significant role in pregnancy complications.

Market Overview
Potential markets that this technology may impact include stillbirths, pre-term births, and preeclampsia: (1) ~24K babies are stillborn each year in the US, which is more than 10 times as many deaths as the number that occur from SIDS. (2) WHO estimates that 15M babies are born preterm each year, and associated complications are the leading cause of death of children under 5 years of age. (3) ~10M women develop preeclampsia each year worldwide, and 76K die from preeclampsia and related hypertensive disorders.

Investigator Overview
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