

Study finds common cold virus can infect the placenta

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Researchers have shown that a common cold virus can infect cells derived from human placentas, suggesting that it may be possible for the infection to pass from expectant mothers to their unborn children.

The study, published in the journal *PLOS ONE*, was led by Dr. Giovanni Piedimonte, professor of pediatrics and vice president of research at Tulane University.

"This is the first evidence that a [common cold virus](#) can infect the human placenta," Piedimonte said. "It supports our theory that when a woman develops a cold during pregnancy, the virus causing the maternal infection can spread to the fetus and cause a pulmonary infection even before birth."

During pregnancy, the placenta acts as a gatekeeper to provide essential nourishment from a mother to a [developing fetus](#) while filtering out potential pathogens. Scientists are discovering that the barrier isn't as impenetrable as once believed with recent studies showing how viruses such as Zika can slip through its defenses.

Using donated placentas, researchers isolated the three major [cells](#) types found in placentas—cytotrophoblast, stroma fibroblasts and Hofbauer cells—and exposed them in vitro to the [respiratory syncytial virus](#) (RSV), which causes the common cold. While the cytotrophoblast cells supported limited viral replication, the other two types were significantly more susceptible to infection.

For example, the Hofbauer cells survived and allowed the virus to replicate inside the cell walls. As Hofbauer cells travel within the placenta, researchers suspect they could act as a Trojan horse and transmit the virus into the fetus.

"These cells don't die when they're infected by the virus, which is the problem," Piedimonte said. "When they move into the fetus, they are like bombs packed with virus. They don't disseminate the virus around by exploding, which is the typical way, but rather transfer the virus through intercellular channels."

Researchers suspect RSV could attack lung tissue within the fetus, causing an infection that may predispose offspring to developing asthma in childhood. Piedimonte plans to launch a [clinical study](#) at Tulane to further test the theory.

More information: Vladimir Bokun et al, Respiratory syncytial virus exhibits differential tropism for distinct human placental cell types with Hofbauer cells acting as a permissive reservoir for infection, *PLOS ONE* (2019). [DOI: 10.1371/journal.pone.0225767](https://doi.org/10.1371/journal.pone.0225767)

Provided by Tulane University

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