

Tulane awarded \$3.5 million to study how killer immune cells prevent birth defects

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Dr. Amitinder Kaur, professor of microbiology and immunology and chair of the division of immunology at the Tulane National Primate Research Center, will lead a team to examine natural killer cells of chronic and acute CMV infection throughout pregnancy in a nonhuman primate model. Photo by Sally Asher.

Over half the population carries a herpesvirus that doesn't cause any symptoms. It's so common that physicians don't routinely screen for it, not even during pregnancy. But of those individuals who contract the virus during pregnancy, nearly a third transmit it to their developing child where it can cause microcephaly, cerebral palsy,

and other developmental disabilities.

Though for most, cytomegalovirus, or CMV, doesn't pose an issue, Tulane University researchers will use a new \$3.5 million grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development to investigate how specialized immune cells may block CMV transmission during pregnancy.

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Natural killer cells modulate the maternal immune system by protecting the developing fetus from potential pathogens while also suppressing maternal immunity enough to maintain the pregnancy itself. But our understanding of these natural killer cells lags, particularly in the context of CMV infection.

In mothers with longstanding or chronic CMV, the virus rarely infects the fetus even though the mother is in an immunosuppressed state. The research team seeks to understand what natural killer cells need in order to block transmission of the virus during pregnancy, and how this knowledge could be applied toward future CMV vaccine development.

"Infection with CMV is widespread, and usually occurs without incident," said Kaur. "It is only when a mother becomes infected with CMV during pregnancy that it can pose a real danger to her fetus, and it is those outcomes that we seek to prevent by better understanding how CMV-infected mothers harness natural killer cells to avoid congenital transmission."

Co-investigators on this study include Dr. Sallie Permar, chair of the department of pediatrics and pediatrician-in-chief at Weill Cornell Medicine and Keith Reeves, Ph.D., professor of surgery at Duke University.

The Eunice Kennedy Shriver National Institute of Child Health and Human Development is an institute within the National Institutes of Health.