

Variations in placental microbiota appear related to premature birth

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A team of researchers from the United Kingdom has found a surplus of pathogenic bacteria in placentas from premature births, supporting the hypothesis that maternal infection may cause preterm birth. The research is published in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

The study was an investigation of [bacteria](#) in both healthy and preterm placental samples. The researchers also found evidence of placental bacteria in healthy pregnancies, which is contrary to the conventional wisdom.

The samples came from the Baby Bio Bank in London, UK, which is available for use by researchers worldwide. The samples, from more than 250 women, included some preterm deliveries (less than 37 weeks gestation). The investigators also took control samples from the environment, in order to distinguish potential contamination from bacteria that had been present during pregnancy.

"There was a clear difference in the types of bacteria observed in a placenta, dependent on whether [the baby] was delivered by caesarean section or vaginally," said corresponding author Lydia J. Leon, Ph.D., University College, London, London, UK. However, much of those differences may reflect contamination picked up during delivery rather than bacteria present in the placenta prior to delivery, according to the report.

"We did observe a higher number of known [pathogenic bacteria](#), such as Mycoplasma and Ureaplasma in the placenta of women who had a preterm spontaneous birth, which supports the long-observed association between maternal infection and preterm birth," said Dr. Leon. These have previously been reported as opportunistic intra-uterine pathogens, highly correlated with incidence of premature birth and miscarriage. But she cautioned that "much of the signal observed, as in many microbiome studies, may be

contamination picked up during [sample](#) collection and experimental procedures." Such potential contaminations had been identified and removed from the analysis, according to the report.

Preterm birth is associated with both psychological and physical disabilities and is the leading cause of infant morbidity and mortality worldwide. Infection is known to be an important cause of spontaneous preterm birth and recent research has implicated variation in the placental microbiome with preterm birth risk. "Our understanding of spontaneous preterm [birth](#) is relatively limited. That was the motivation for the research," said Dr. Leon.

"Recent advances in genetic techniques have made an exploration of all the bacterial species in a single tissue much easier, without the need to culture individual bacteria one by one," said Dr. Leon. If we better understand the involvement of bacteria during pregnancy, we can develop more targeted treatment to hopefully prevent [preterm birth](#) and save lives, she said.

Provided by American Society for Microbiology

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