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Microbiomes may hold key to better understanding of preterm birth

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A team of scientists from Mayo Clinic, the University of Illinois at Urbana-Champaign, and the J. Craig Venter Institute are leveraging a long-standing research relationship to apply results from the Human Microbiome Project to help identify microbial risk predictors for preterm birth.

"This is a collaborative effort to apply cutting-edge technology to one of the fundamental problems in maternal-fetal health," says Douglas Creedon, M.D., Ph.D., Mayo Clinic obstetrician and gynecologist. The project also represents the first major initiative of the newly formed Mayo-Illinois Strategic Alliance for Technology-Based Health Care.

"Bacterial vaginosis affects between 10 and 15 percent of women of reproductive age and is associated with a host of genital tract infections and pregnancy complications," says lead researcher Bryan White, Ph.D., a professor of animal science at Illinois. "Our ultimate goal is to use the wealth of genomic information from the Human Microbiome Project to improve women's health." The Human Microbiome Project is an NIH program to identify and catalog the microbes within the human body and determine their impact on health.

Drs. White and Creedon, along with co-leader Brenda Wilson, Ph.D., an associate professor of microbiology at Illinois, and Karen Nelson, Ph.D., and Derrick Fouts, Ph.D., at the J. Craig Venter Institute, will use the emerging microbiome, metagenome, and reference genome datasets to characterize the microbiomes associated with urogenital infections.

These include bacterial vaginosis, urinary tract infection and yeast vaginitis, which afflict over 1 billion women each year.

The project, entitled "The human vaginal microbiome and bacterial vaginosis," will explore the complex relationship between vaginal microbiota and humans. Scientists are particularly interested in the link between the vaginal infection and preterm birth, as microbiologic evidence suggests that infection may contribute to approximately 25 percent of preterm births.

"In most cases of preterm labor and delivery, intrauterine infection is not clinically apparent," Dr. White says. "But there seems to be a strong correlation between infection and premature birth. We see colonization rates as high as 79 percent for birth at 23 weeks of gestation, yet they decline to 11 percent at 31 to 34 weeks."

Provided by Mayo Clinic

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