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New Studies Suggest Microorganisms in the Womb Set Stage For Childhood and Adulthood Diseases

Journal Dedicates Special Issue to the Emerging Importance of the Microbiota

RESTON, VIRGINIA—"Gut instinct" may take on new meaning as researchers unveil further importance of microorganisms that exist in the gut. Perturbation of this environment during pregnancy, delivery, and early infancy, could impact the developing baby's early microbiome and set the stage for health problems later in life.

"The Microbiome and Childhood Diseases," a special issue of the [Birth Defects Research Part C: Embryo Today](#) scientific journal released today (see the [Overview](#), doi: 10.1002/bdrc.21119), is a collection of ground breaking microbiota reviews. "The microbiome has become such a hot topic because it represents a crucial population of microorganisms in and on our bodies that is critical to our health. If disrupted, they could cause a wide range of diseases," said Michiko Watanabe, PhD, deputy editor of *Birth Defects Research Part C*.

According to Dr. Watanabe, the microbiome was previously thought to be either benign or a source of harmful infection. However, the reviews presented in the publication suggest otherwise. "They suggest the microbiome is not only crucial for adult health, but also for children. What happens during birth and our early childhood could have a big impact on health outcomes through our entire lifespan."

One particularly ground breaking finding pertains to the womb environment in which the baby develops. "One of the reviews, by Koleva et al., discusses the studies that reveal that the womb is not sterile and that the microbiota of the child are already developing *in utero*," explained Sharon Meropol, MD, PhD, Associate Director for Research and Evaluation at Rainbow Babies and Children's Hospital's Center for Child Health and Policy. "This means that not only do we have to worry about the microbiome of the child but also that of the mother and the irony is that some of our modern medical practices, through their effect on these early microbiota, could interfere with healthy child development."

The special issue is particularly timely as Birth Defects Prevention Month prepares to kick off in January. Both doctors agree that increasing evidence, reviewed here, supports the notion that protecting key steps in the transfer and maintenance of the normal microbiota in pregnant mothers and fetuses may prevent immunological, metabolic, and neurological birth defects.

"Disturbed microbiota could lead to a wide range of childhood diseases including allergies, asthma, obesity, and autism-like neurodevelopmental conditions," said Dr. Meropol. "But what

we're learning is that traditional practices like vaginal births, skin-to-skin contact immediately after birth and breastfeeding promote the development of the microbiome in the infant and help set the trajectory towards a healthy life."

[The Teratology Society](#), an international professional group of scientists hailed as the premier source for cutting-edge research and authoritative information related to birth defects and developmentally-mediated disorders, publishes *Birth Defects Research* with John Wiley & Sons.

The Teratology Society is made up of nearly 700 members worldwide specializing in a variety of disciplines, including developmental biology and toxicology, reproduction and endocrinology, epidemiology, cell and molecular biology, nutritional biochemistry, and genetics as well as the clinical disciplines of prenatal medicine, pediatrics, obstetrics, neonatology, medical genetics, and teratogen risk counseling. Scientists interested in becoming a Teratology Society member are encouraged to visit www.Teratology.org. For more information on the Teratology Society's upcoming Annual Meeting program where emerging scientific topics, such as [Genomics/Epigenomics and the Microbiome](#), will be discussed, please visit: <http://www.teratology.org/meetings/2016/>

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