

# C-CHEM<sup>2</sup> AT A GLANCE

**PURPOSE:** The Center for Children's Health, the Environment, the Microbiome, and Metabolomics (C-CHEM<sup>2</sup>) examines how environmental exposures affect infants during pregnancy and after birth. Specifically, C-CHEM<sup>2</sup> researchers are studying the complex interactions of toxicant exposures, the microbiome, and the metabolome and their impact on birth outcomes and infant health and neurodevelopment among African American mothers and babies in Atlanta.



**FOUNDATION:** Two ongoing pillar studies form the bedrock of C-CHEM<sup>2</sup>.



**PILLAR 1:** Led by the School of Nursing, the maternal microbiome study looks at how biobehavioral risk factors disrupt the maternal microbiome and in turn increase the risk of preterm birth among African American women. A related study looks at how chronic maternal stress and disadvantage affect the microbiome-gut-brain axis of their infants. The studies involve pregnant women and their babies in metro Atlanta.



**PILLAR 2:** The HERCULES Center at Rollins School of Public Health provides the laboratory resources and expertise needed to analyze biological and environmental samples for C-CHEM<sup>2</sup> projects. HERCULES specializes in studying the exposome—the cumulative effects of lifelong environmental exposures on health.



**PROJECTS:** C-CHEM<sup>2</sup> researchers are undertaking three related projects that draw from both pillar studies.



## PROJECT 1:

**CHERUB** (Characterizing Exposures and Outcomes in an Urban Birth Cohort) will characterize the environmental exposures of mothers and infants using their microbiome samples and environmental samples collected in the home.



## Project 2: MEND

(Microbiome, Environment, and Neurodevelopment Delay) will determine how environmental exposures influence the infant gut microbiome and the neurodevelopment and behavior of infants during the first 18 months of life.



## Project 3: MATRIX

(Metabolic, Microbiome, and Toxicant-Associated Interactions) will identify the metabolic pathways related to environmental exposures before and after birth and how these pathways influence the maternal and infant microbiomes, birth outcomes, and infant neurodevelopmental and behavior.



**COMMUNITY PARTNERS:** The Community Outreach and Translation Core (COTC) partners with local groups to ensure that research is relevant, accessible, and culturally appropriate. COTC members include C-CHEM<sup>2</sup> researchers and representatives from Atlanta-area schools and organizations that serve African American women and families. C-CHEM<sup>2</sup> scientists look to the COTC to inform their research and determine the best ways to share study results with Atlanta's African American community.