

## In This Issue

This issue of the *Journal of Developmental Origins of Health and Disease* contains a series of excellent Original Articles. Two articles focus on aspects of maternal stress during pregnancy, addressing both psychosocial stress as well as the nutritional stress associated with hyperemesis gravidarum. Two articles examine human cohorts assessing the potential utilization of cord blood immune biomarkers for small for gestational age (SGA) status as well as examining the prenatal and postnatal determinants of childhood body size. Among the animal studies, the articles assess immune responses in mice, dependent upon the maternal fatty acid diet, as well as the effect of maternal malnutrition on renal gene expression and histone modifications.

### Original Articles

**Maternal distress in early life predicts the waist-to-hip ratio in schoolchildren.** Kozyrskyj *et al.* utilize data from a case control study in Canada to examine the association of maternal stress factors and offspring waist-to-hip ratio. The authors demonstrate a relation of maternal postpartum distress with increased waist-to-hip ratio, though with gender-specific associations.

**Pregnancy and neonatal outcomes following hyperemesis gravidarum.** Coetzee *et al.* assess the effects of hyperemesis gravidarum on infant phenotype. The authors demonstrate that women with hyperemesis had infants with smaller head circumference, suggesting an important impact of severe nutrition limitations early in pregnancy.

**Cord blood immune biomarkers in small for gestational age births.** Matoba *et al.* examined umbilical blood immune biomarkers in a cohort of SGA and appropriate for gestational age births. SGA births had lower levels of log IL-1 $\beta$ , log BDNF and log NT-3. The reduction in IL-1 $\beta$  in SGA infants may indicate a diminished immune response similar

to that observed in preterm infants, whereas the reductions in BDNF and NT-3 may be indicative of altered neurogenesis.

**Pre- and postnatal determinants of childhood body size: cohort and sibling analyses.** Terry *et al.* utilize prospective data on over 20,000 participants from the Collaborative Perinatal Project to investigate the association of pre- and postnatal factors with child body size. The authors examine postnatal weight change during three time periods (birth to 4 months, 4–12 months, 1–4 years) demonstrating that there are multiple critical periods of influence shaping childhood body size.

**Perinatal programming of murine immune responses by polyunsaturated fatty acids.** van Vlies *et al.* examine a pregnant mouse model of diets varying in the composition of essential fatty acids. Offspring were maintained on a Western-style diet. Offspring of dams with a high  $\alpha$ -linolenic acid diet during lactation demonstrate an enhanced vaccination response, indicating a programming effect of maternal diet on offspring immune responses.

**Maternal malnutrition and placental insufficiency induce global downregulation of gene expression in fetal kidneys.** Denisenko *et al.* utilized a microswine model of maternal protein restriction during late gestation and early lactation, as well as an ovine model of placental insufficiency. In kidneys from near-term fetal and neonatal microswine, maternal protein restriction was associated with reduced levels of total RNA and transcripts of select housekeeping genes. The authors demonstrate that histone modifications (active/silenced) are reduced at promoters of downregulated genes indicating that transcriptional suppression may be a consequence of gestational undernutrition.

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