

## In This Issue

This issue of the *Journal of Developmental Origins of Health and Disease* (*J DOHaD*) contains two review articles, a brief report, and nine original articles. *J DOHaD* continues to publish a blend of themed and non-themed issues, encompassing both pertinent review articles and original research. We are looking forward to a themed issue on the programming effects of *in vitro* fertilization pregnancies as well as themed issues resulting from the International DOHaD Congress and regional societies. We encourage suggestions for additional future themed issues/topics which may be directed to our themed issue editor Professor Janna Morrison (Janna.morrison@UNISA.edu.au).

### Reviews

**Early-life programming and the risk of non-alcoholic fatty liver disease (NAFLD).** Lynch *et al.* discuss the increasing prevalence of NAFLD and sequelae of liver cirrhosis and hepatic carcinoma. The authors review studies suggesting that fetal and early-life exposure to maternal under- and over nutrition, excess glucocorticoids and select environmental pollutants may increase the susceptibility to NAFLD.

**DOHaD at the intersection of maternal immune activation and maternal metabolic stress: a scoping review.** Goldstein *et al.* discuss the impact of maternal morbidity during pregnancy and offspring disease in situations where several maternal morbidities co-exist (e.g., nutrient restriction, metabolic disorders, maternal infection). Studies in both humans and animals indicate correlation between maternal metabolic/nutritional/infectious exposures on outcomes of preterm birth and low birth weight. The authors suggest that future studies should examine maternal morbidity interactions, assessing whether effects are synergistic, inhibitory or independent.

**Retinal microvascular plasticity in a premature neonate.** Kandasamy *et al.* present a case report of a premature, low birth weight infant treated for retinopathy of prematurity. The authors propose an inherent retinal microvascular plasticity in premature neonates which may potentially extend to other vascular beds.

### Original Articles

**Restricted nutrition-induced low birth weight, low number of nephrons and glomerular mesangium injury in Japanese quail.** Nishimura *et al.* examined a model of perinatal undernutrition in Japanese quail, resulting from withdrawal of egg white from eggs before incubation. The authors demonstrated

that delayed nephrogenesis and increased apoptosis resulted in a lower mature nephrons. These results indicate that perinatal undernutrition may trigger structural changes in glomerular mesangium, possibly contributing to nephrosclerosis.

**Early-life risk exposure and stunting in urban South African 2-year-old children.** Slemming *et al.* examined 1098 mother infants pairs enrolled in the Birth to Twenty Plus cohort study. Nearly one quarter of children were stunted at 2 years of age, with socio-economic status, overcrowding, maternal education and birth weight serving as predictive variables. The authors discuss the need for preventive strategies to address the significant impact of early-life stunting.

**The effect of paternal methyl-group donor intake on offspring DNA methylation and birth weight.** Pauwels *et al.* assessed the effect of paternal dietary intake of methyl-group donors with paternal and cord blood methylation status. Paternal intake was positively associated with paternal global DNA methylation as well as cord blood methylation of *IGF2* DMR, an imprinted gene. These findings provide further evidence of the importance of preconceptual paternal exposures and epigenetic programming.

**Maternal low-protein diet in female rat heart: possible protective effect of estradiol.** Braz and *et al.* utilized a rat model of maternal low-protein diet during gestation and lactation to examine offspring heart ventricle. The authors demonstrate that maternal low-protein diet results in increased cardiac oxidative stress which was alleviated in part by a rise in estradiol levels. These findings suggested a positive mechanism of cardiac protection among females beginning at reproductive age.

**Feasibility of collecting tumor samples of breast cancer patients diagnosed up to 50 years ago in the Child Health and Development Studies.** Krigbaum *et al.* obtained consent from F0 and F1 breast cancer survivors to assess pathology reports of mothers who developed breast cancer. Tissue samples and pathology reports were obtained from a majority of patients, indicating that it is feasible to examine relationships between early-life exposures and molecular tumor markers. The authors suggest that future cohorts request consent for obtaining tumor tissues at study enrollment and implement real-time tissue collection for future analysis.

**Environmental enteropathy is associated with cardiometabolic risk factors in Peruvian children.** Lee *et al.* examined measures of intestinal permeability and bacterial translocation in 156 children participating in the Peruvian Cohort Study. Lower intestinal surface area was associated with greater blood

pressure and inflammation at seven months of age and higher blood pressure in later childhood. The authors discussed the relationship between environmental enteropathy and cardiometabolic risk.

**Umbilical artery histomorphometry: a link between the intrauterine environment and kidney development.**

DeFreitas *et al.* sought to examine the association of the umbilical artery histomorphometry with nephron mass. The authors demonstrated that an enhanced umbilical artery muscular area (and presumed vascular elasticity) was associated with increased renal mass, as measured by ultrasound. Measurements of umbilical artery may provide a noninvasive means of assessing neonatal renal and vascular development, and the risk of future cardiovascular and renal disease.

**Placental restriction in multi-fetal pregnancies and between-twin differences in size at birth alter neonatal feeding behavior in the sheep.**

Peter *et al.* utilized a model of *in utero* growth restriction in sheep to examine neonatal feeding behavior and infant growth. The data support the

hypothesizes that prenatal growth constraint increases lamb appetite, consistent with prior studies in rodents. These effects may contribute to the development of offspring obesity in undernourished newborns, a result of increased energy intake.

**Reduced fetal vitamin D status by maternal undernutrition during discrete gestational windows in sheep.**

Cleal *et al.* utilized a model of maternal undernutrition in pregnant sheep to examine the association and effects of vitamin D status. The authors demonstrated that higher fetal plasma 25OHD concentration was associated with higher skeletal muscle myofiber and capillary density. Reduced fetal plasma 25OHD concentration may be mediated by altered placental CYP27B1, suggesting that placental nutrient transport may alter fetal physiology in the presence of maternal nutrient alterations.

Michael G. Ross, M.D., M.P.H.

Editor-In-Chief

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