

## In This Issue

This Issue of *Journal of Developmental Origins of Health and Disease* contains three Reviews and six Original Articles. The Original Articles focus on human studies with topics ranging from energy expenditure during pregnancy to DNA methylation to placental contribution to offspring programming, while the study of DuPriest et al examines adipocyte function in microswine offspring.

### Reviews

**Diverse ability of maternal immune stimulation to reduce birth defects in mice exposed to teratogens: a review:** Hrubec et al present a fascinating discussion as to how maternal immune stimulation prior to or during pregnancy reduces teratogen-induced offspring birth defects. The proposed hypothesis of a role of maternal cytokines in the prevention of teratogen-induced effects opens avenues of scientific studies and potential therapeutic interventions.

**Effects of *in utero* conditions on adult feeding preferences:** Portella and colleagues examine the clinical and animal evidence which demonstrate that the fetal environment can influence offspring food preference. The impact of food preference/taste/olfaction, acting through the reward/pleasure pathway, may contribute to manifestations of programmed appetite/satiety and hyperphagia.

**Programming of the lung by early-life infection:** Hansbro and co-authors review the impact of infections on the developmental origins of asthma. The authors demonstrate that respiratory viral and select bacterial infections in early life are associated with induction of asthma, whereas exposure to probiotics or alternative bacteria may be protective. In view of the high prevalence of childhood asthma, this review has great importance for therapeutic interventions.

### Original Articles

**The modified obstetric metabolic equivalent (MET): finding a MET that fits in pregnancy:** Campbell et al examined the energy expenditure for rest and activities of daily living and treadmill walking among pregnant patients, comparing their values with the compendium of physical activities (CPA). Their measurements confirm that the use of the MET<sub>cpa</sub> to estimate energy expenditure during pregnancy may result in significant over or under estimation. An established range of pregnancy specific MET values may be useful for both clinical studies and exercise intervention strategies.

**Is low birth weight associated with adiposity in contemporary U.S. youth? The Exploring Perinatal Outcomes Among Children (EPOCH) Study:** Jaiswal and colleagues examined the EPOCH study data base, comprised of 442 children from Colorado, United States. The authors demonstrated that birth weight was positively but weakly associated with BMI, and inversely associated with abdominal subcutaneous adipose tissue at ages 6–14. These findings provide some support for the hypothesis that

under nutrition *in utero* is associated with an increased propensity for abdominal adiposity.

**Associations of long interspersed nuclear element-1 DNA methylation with preterm birth in a prospective cohort study:** Burris and co-authors examined associations of maternal and umbilical cord blood DNA methylation patterns in relation to the risk of preterm birth in singleton pregnancies associated with Project Viva. Whereas women with the highest first trimester DNA methylation (LINE-1) had longer gestations, cord blood methylation levels were associated with preterm birth. The LINE-1 methylation levels may serve as both as a biomarker for preterm birth as well as provide insight into mechanisms associated with preterm labor.

**Vascular programming in twins: the effects of chorionicity and foetal therapy for twin-to-twin transfusion syndrome:** Gardiner and co-authors utilized a case control study to assess twin groups of monochorionic diamniotic pregnancies with TTTS, treated by amnioreduction or laser, as compared to monochorionic and dichorionic controls. Monochorionic control twins had lower blood pressure and arterial stiffness than did dichorionic control twins suggesting that shared circulations affect vascular development. Importantly, the vascular responses and laser treated TTTS monochorionic were similar to dichorionic twins, suggesting that an intervention may alter vascular programming.

**Placental measurements associated with intelligence quotient at age 7 years:** Misra et al analyzed nearly 13,000 offspring at age 7 years, correlating IQ with placental morphology measurements. The results confirmed that placental chorionic surface area in girls and disk thickness, independent of gender, are correlated with age 7-year IQ. These findings suggest that placental development, including arborization, may have significant effects on fetal growth and offspring cognitive development.

**Altered adipocyte structure and function in nutritionally programmed microswine offspring:** In this companion paper to a recently published report examining accelerated growth in nutritionally programmed microswine offspring<sup>1</sup>, DuPriest and colleagues demonstrate that perinatal maternal protein restriction can alter adipocyte structure and adipokine homeostasis, potentially predicting future cardiovascular and/or metabolic disease.

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### Reference

1. DuPriest EA, Kupfer P, Lin B, *et al.* Accelerated growth without prepubertal obesity in nutritionally programmed microswine offspring. *J Dev Orig Health Dis.* 2012; 3, 92–102.