

In This Issue

This issue of *Journal of Developmental Origins of Health and Disease* (J DOHaD) contains a special themed issue of the work presented and discussed at the 2016 Australia and New Zealand DOHaD Scientific Meeting in Melbourne. The editorial written by Hayley Dickinson and Janna Morrison highlight the published papers from the meeting, which focused on the relation between developmental programming and epigenetics and the microbiome. In addition to the ANZ themed issue, we have six original articles in this issue of J DOHaD.

Increased birth weight is associated with altered gene expression in neonatal foreskin. Reynolds *et al.* utilized foreskin samples from circumcised newborns to compare gene expression between highest birth weight infants and controls. The authors found that gene expression related to glycemic control, appetite/energy balance, obesity and information were altered in tissue from babies with elevated birth weight, providing a unique window of programming changes in human macrosomic newborns. These findings demonstrate the utility of newborn foreskin as a tissue for developmental programming.

Effective combined IUGR and prenatal stress on the development of the hippocampus in a fetal guinea pig model. Cumberland *et al.* utilized a guinea model to examine how intrauterine growth restricted (IUGR) and prenatal stress alter the neurosteroid pathway and potentially fetal neurodevelopment. Exposure to reduced uterine blood flow resulted in reduced hippocampal CA1 MBP immunostaining as well as altered allopregnanolone levels. These findings raise important considerations for the effects of IUGR on long-term offspring neurodevelopment.

Is maternal periconceptional smoking associated with 2D:4D digit ratio in their children? Valez *et al.* hypothesized that maternal periconceptional smoking may alter homeostasis of fetal androgens and thus differential development of the second to fourth finger ratio. In a human cohort with smoking prevalence of 12%, the mean 2D:4D did not differ among children whose mothers had smoked during their periconceptional

period compared with those who had not, although boys had lower 2D:4D ratios compared to girls. These findings suggest that the 2D:4D ratio is not an objective marker of prenatal smoking.

Searching the Web: a survey on the quality of advice on postnatal sequelae of intrauterine growth restriction and the implication of developmental origins of health and disease. Perzel *et al.* searched the Web using terms intrauterine growth restricted (IUGR) consequences and FGR consequences, analyzing the citations. The analysis suggested a dichotomy between the evidence regarding IUGR-related sequelae and lack of current guidelines, leaving parents without clear directions. Based on these findings the authors suggest that healthcare workers should not encourage patients to use web sites to research consequences of IUGR on offspring.

Hepatic calcifications in fetal populations studied by autopsies in Bogota, Columbia. Olaya-C *et al.* utilized a fetal autopsy database to examine the association of hepatic calcifications with clinical findings. Fetal hepatic calcifications were associated with chromosomal disorders, suggesting that if diagnosed prenatally by ultrasound or at pathology, one should consider chromosomal alterations as the etiology.

Small size at birth predicts decreased cardiomyocyte number in the adult ovine heart. Vranas *et al.* examined the effects of placental restriction on cardiac outcomes in young adult sheep. The authors demonstrated that cardiomyocyte number in the adult left ventricle correlated positively with birth weight, but not with adult weight. Thus, intrauterine growth directly influences the cardiomyocyte number in the adult heart. The authors suggest that reduced cardiomyocyte number of low birth weight offspring may impair cardiac responses to subsequent challenges of obesity and aging.

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