

Australian Perspectives: Outcomes from the 2016 ANZ DOHaD Scientific Meeting

The papers in this themed issue represent work presented and discussed at the 2016 ANZ DOHaD (Australia and New Zealand DOHaD) scientific meeting in Melbourne. The issue opens with a tribute to Associate Professor Sue Sayers (Menzies School of Health Research), whose passing was felt across the Australian DOHaD community. Gurmeet Singh provides a heartfelt summary of Sue's contribution to the DOHaD field.¹

The ANZ DOHaD convened workshops prior to the main meeting, across two areas of DOHaD, Epigenetics and the Microbiome, to identify gaps in knowledge and foster collaboration to close these gaps. Bianco Miotto *et al.* summarise the discussions of the epigenetics and DOHaD workshop and identified important new areas for further investigation including understanding the role of the microbiome in altering the epigenetic signature of an individual, an area that offers potential of identifying specific biomarkers for individuals at increased risk for later life poor health.²

Prize winners at the 2016 ANZ DOHaD scientific meeting were invited to prepare and submit a manuscript based on their presented data. We congratulate the prize winners whom were Khaled Kanakri (University of Adelaide) Carly Herbison (University of Western Australia), Stephanie Segovia (The University of Auckland), Zoya Gridneva (University of Western Australia) and Belinda Davison (Menzies School of Health Research).

Global health agency recommendations for humans to increase dietary omega-3 long chain polyunsaturated fatty acid consumption prompted Kanakri *et al.* to explore the capacity to enhance or inhibit chicken meat concentrations of omega-3 long chain polyunsaturated fatty acid by exposure to increased supply of α -linolenic acid or omega-3 long chain polyunsaturated fatty acids (LCPUFA) *in ovo*.³ The authors find no impact of *in ovo* exposure to maternal α -linolenic acid supplementation of omega-3 LCPUFA synthesis in offspring, suggesting that increasing the supply of short-chain precursor omega-3 fatty acids during development does not provide an effective strategy for improving the subsequent capacity of the offspring to accumulate omega-3 LCPUFA fatty acids in their tissues.

Segovia *et al.* review the impact of maternal obesity on key inflammatory pathways and the implications of this for pregnancy and offspring outcomes.⁴ They note a knowledge gap in understanding the role of maternal obesity-mediated alterations in inflammatory processes as a mechanism underpinning developmental programming in offspring. They suggest a need for further investigation of the use of anti-inflammatory agents as

an intervention strategy to ameliorate or reverse the impact of adverse developmental programming in the setting of maternal obesity.

Davison *et al.* report cross sectional mental health data from young adults (21–27 years) participating in the Life Course program based in Northern Territory, Australia.⁵ The authors report high rates of psychological distress in remote and urban residing Indigenous and urban non-Indigenous young adults. Interestingly, this rate was more pronounced in young women. The authors suggest a focus on improving the environs of young adults by lowering levels of stress, improving access to adequate housing, educational and employment opportunity, will assist in improving the emotional health of young adults.

Two teams present their data on fetal growth restriction using animal models. Dickinson *et al.* report on the establishment of a new model of fetal growth restriction, using the spiny mouse.⁶ This methodology paper details the placement of a silastic cuff around the left side uterine artery to reduce blood flow for the last 10 days of gestation (gestation is 39 days in this species). The paper reports a low mortality rate of offspring (<5%) after surgery, a feature not commonly seen in small animal models of growth restriction. The growth parameters of these animals at term show a 21% reduction in fetal weight between growth restricted and sham operated offspring. The authors will now utilise the experimental model to investigate antenatal therapies to improve fetal growth. Allison *et al.* report on the combined effect of fetal growth restriction and preterm birth on the vulnerability of fetal sheep to develop ventilation induced brain injury.⁷ The paper reports increased evidence of brain injury in growth restricted preterm animals after an acute period of ventilation compared to normally grown preterm animals. At least in the lamb, these studies suggest the vulnerability of the preterm infant to ventilation induced brain injury differs depending on whether it is appropriately grown or growth restricted.

Stevens *et al.* provide a timely review of current techniques for the measurement of lipids for metabolic and cardiovascular disease, a knowledge gap in the DOHaD field.⁸ The short review covers biochemical methods, imaging modalities including *in vitro* and the opportunity for further development of *in vivo* imaging technologies to allow longitudinal monitoring of cardiometabolic diseases.

The ANZ DOHaD branch continues to grow, foster collaboration and highlight excellent research in our region through prizes and the opportunity for early career researchers to publish their work in our disciplines' journal.

References

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