Parental diet affects offspring immunity

November 27 2017

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A review of studies about parents' diet and the immunity of animal offspring has found a close relationship exists, with implications for wildlife conservation and livestock rearing as well as human health.

The meta-analysis – which shows the intergenerational immunological response continues even when the offspring are raised on a normal diet – looked at hundreds of results published in 38 published papers across a range of animal species, including rodents, primates and birds.

The findings are published today in the high-impact journal *Biological Reviews*.

The paper is a cross-disciplinary effort spearheaded at the University of Sydney, by lead author Dr Catherine Grueber who undertook the research at the Sydney School of Veterinary Science and including co-author Professor Stephen Simpson from the School of Life and Environmental Sciences, who directs the lifestyle diseases-focused Charles Perkins Centre.

Dr Grueber said the study showed the close relationship between diet and immunity exists across the animal kingdom and that poor nutrition can negatively affect many traits, including disease resistance.

"Our meta-analysis suggests that the effects of a parental diet on immunity can be inherited and that this 'signal' is maintained in offspring in the short term, even if offspring are on the normal diet for their species," Dr Grueber said.

"Researchers are now following a range of leads to discover exactly what that 'signal' is, what the long-term consequences are and whether the effects can be reversed if offspring continue to eat a healthy diet as they grow."

Professor Simpson said the results could be relevant to humans and add to the body of evidence in support of healthy diets while pregnant.

"We already know that parents need to be mindful of maintaining a healthy diet not only during pregnancy but also before they conceive," Professor Simpson said.

"This study demonstrates that the impacts of a parent's diet can extend beyond birth to affect the health of the child."

More information: Catherine E. Grueber et al. Intergenerational effects of nutrition on immunity: a systematic review and meta-analysis, *Biological Reviews* (2017). DOI: 10.1111/brv.12387