Title:	Unravelling the Developmental, IMmunolgical, and Regenerative terrain of the 'offspring' under Micronutrient Treatment using Mus Musculus and danio rerio
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Abstract:	Growing shreds of evidence now suggest that epigenetic changes in addition to genetic factors contribute to the health and disease of the offspring. The maternal lifestyle including dietary intake and the offspring's diet in its early development influences pathophysiological factors of the infants like later embryonic development and immune profile. A pool of scientific literature had previously shown physiological changes in the offspring associated with maternal dietary patterns during gestation. However, the effect of the dietary pattern of the mother during gestation and of the offspring in its early development on the immunological and the power of regeneration of the offspring is not well characterized. In the current study, we used a dual model of mice and zebrafish to supplement dietary changes and study the changes in immunological and regenerative response in the offspring. In the first study, we used dietary salt as the gestational intervention model with the aim of understanding the immunopathological changes induced by this dietary supplementation on the offspring as compared to the mice fed on a normal diet. To accomplish this, we used gestational C57BL/6 mice mothers with LSD (Low sodium diet) started post-confirmation of pregnancy and the pups from the two groups were used for behavioral and immunopathological assessment. Our data shows that LSD treatment was well tolerated in terms of heart physiology and the behavioral profile of the offspring. Notably, gestational LSD primed the offspring towards a slightly pro- inflammatory status characterized by a heightened NK cell profile. Future experiments need to be designed to investigate the possible outcomes of these changes in the immune profile and whether it may confer susceptibility or protection to infectious or non-communicable disease. 9In the second study, we used various concentrations of three representative salts, NaCl, KCl, and CaCl 2 for the zebrafish embryonic study. We dipped the eggs in these salts and subsequently analyzed their mortality rate, hatching rate, and body architecture. In addition, we also used same salts on adult fishes to understand the impact on caudal-fin regeneration. Our results showed that there is concentration-dependent mortality in all three salt sets and premature hatching in the CaCl 2 set, which was further confirmed using an EDTA chelation experiment. It was also depicted that KCl and CaCl 2 considerably slowed down the regeneration process. Further validation studies need to be undertaken to confirm these results and provide a mechanistic viewpoint to these observations, which could render translational significance to the field of regenerative medicine.
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