AIM AND OBJECTIVES
2.1. Aim:

To examine the effect of maternal nutrition during the pre/periconceptional period on the transcription factors involved in the fatty acid metabolism.

2.2. Objectives of the Animal Study:

1. To examine the effect of folic acid / vitamin B₁₂ deficiency and omega-3 fatty acid supplementation starting from the pre-conception period and continuing throughout pregnancy and lactation on
   A. Number and phases of the oestrous cycle; morphology of the mammary gland and ovaries; and birth outcome.
   B. Oxidative stress marker (MDA); placental levels of proinflammatory cytokines interleukin-6 (IL-6) and tumor necrosis factor- α (TNF-α); plasma, erythrocyte, placental and liver fatty acids in dams at end of pregnancy
2. To examine changes in placental PPARγ expression as a consequence of altered maternal micronutrients.
3. To investigate whether maternal micronutrients and omega-3 fatty acids affect global methylation patterns in the placenta and liver of the offspring at postnatal d22.
4. To examine the effect of omega-3 fatty acid supplementation on the expression of PPARγ, PPARα, LXR, RXR and SREBP-1c in the liver of the offspring at postnatal d22.

2.3. Objectives of the Human Study:

1. To compare the levels of long chain polyunsaturated fatty acids at various time points across the gestation in women delivering low birth weight (LBW) babies and normal birth weight babies (NBW).
2. To compare the placental fatty acid profile of women delivering LBW and NBW babies.
3. To examine the placental mRNA levels of PPARγ, PPARα, SREBP-1c, LXR and RXR in women delivering LBW and NBW babies.