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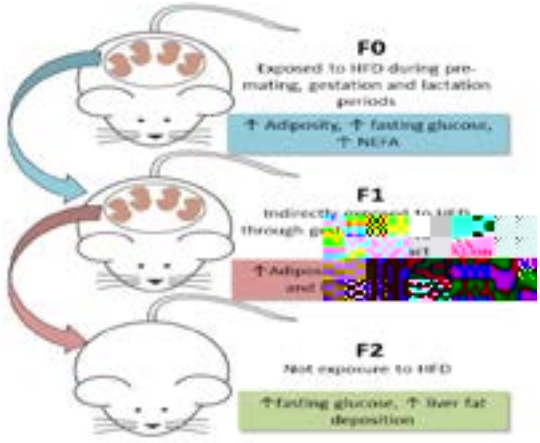
Changes in nutritional status in embryonic development and lactation period, as an excessive caloric intake, may lead to a phenomenon known as metabolic programming. Moreover, recent studies have shown that maternal obesity can have transgenerational e ects, a ecting not only the F1 generation, but also future generations. ese e ects, transmitted across generations, can be triggered by epigenetics mechanisms, such as miRNA expression. e miRNA Let-7 is shown to be involved in glucose homeostasis and here, we aimed to evaluate its expression in the liver of F1 o spring from obese mothers and the impacts of its modulation to the F2 generation.

Female Swiss mice were fed with a HF or control diet for an adaptation period and through gestation and lactation. Weaned o spring received control diet until d28. Part of female o spring remained in control diet until mating to generate F2 o spring, which were weaned and received control diet until d28.

A er the adaptation period, F0 females that consumed a HFD were divided in two groups: Obese prone (OP) or obese resistant (OR), according to their weight gain. OP presented higher body weight, adiposity, serum glucose and NEFA than OR. Male and female o spring from OR and OP (OR-O and OP-O) showed an increase in body weight and adiposity at d28, but OP-O presented impaired glucose tolerance and insulin sensitivity, besides higher serum lipid biomarkers. F1 OP-O also had an overexpression in hepatic Let-7 and down-regulation of AMPK, a predicted mRNA target of this miRNA. F2 o spring showed no alteration in body weight and adiposity, but F2 OP-O presented higher fasting glucose as early as d0 and d28, and an elevated liver fat content.

Nutritional overload in critical periods of development leads o spring to epigenetic changes that may have transgenerational negative impacts.



Summary of the experimental design and results found in the present study.

Laís Simino is a Nutritionist and pursuing her PhD at State University of Campinas – UNICAMP. She belongs to the Obesity and Comorbidities Research Center (OCRC) and Laboratory of Metabolic Diseases, a laboratory that has been specializing in fetal programming research, especially triggered by maternal consumption of high fat diets.

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