Aim 2: Examine the effect of early time-restricted feeding in the perinatal period on maternal health. Dams exposed to time-restricted feeding during gestation will be compared to age-matched ad libitum fed controls. Food intake, body composition, energy expenditure, gestation length, and mechanisms of insulin sensitivity will be evaluated.

Background:

Methods:

Animals:

C57Black6/J mice were previously used in the insulin resistance of pregnancy experiment were used in this experiment. At 134 days of age, age matched females were randomized to either ad libitum (AL) or early time-restricted eating (eTRF). Dams randomized to AL feeding had 24-hour access to chow (5% fat, 24% protein, 3.7% sucrose, 32% starch). Dams randomized to eTRF feeding were allowed ad libitum access to chow during 6 hours of the dark cycle (8pm-2am). At 2 am, all dams were moved to clean cages (Cite Panda here). Animals were held in a 12:12 light dark cycle, temperature and humidity-controlled facility. Food intake was monitored daily, with 6 hour and 24-hour intake calculated.

Mating:

Dams were singly housed for the course of the experiment. After a one-week acclimation period, males were added to the cages in monogamous pairs. Males were allowed to remain in cages until copulatory plug appeared, which was noted as day 0.5 of pregnancy.

Body Composition:

Once a week, Dams weight was measured weekly using an electronic scale (). Body composition including fat mass, lean mass, and free water was assessed indirectly via magnetic resonance imaging (EchoMRI).

Insulin Sensitivity:

Insulin sensitivity was assessed by insulin tolerance test 16 days after mating began. Gestational age during ITT was determined using plug data, body weight gain, and date of delivery. As a result, most dams were in the 1st or 3rd week of gestation during this time. After 6-hour fast, blood glucose was taken using a glucometer and tail clip. Females were given insulin injections (0.75 units/kg body weight; Humulin U100 in cold sterile, filtered Phosphate buffered saline (PBS)) and blood glucose was tested using a glucometer at 15-minute intervals for 2 hours. If animals began to exhibit moribund behaviors, 300 units of 10% glucose in cold sterile filtered PBS was administered and subsequent BG measurements were omitted from the ITT.

Energy Expenditure:

Digestive Physiology:

Expected Results and Potential Pitfalls:

* Lack of response in dams to