Figure 1 Experimental Protocol and Timing

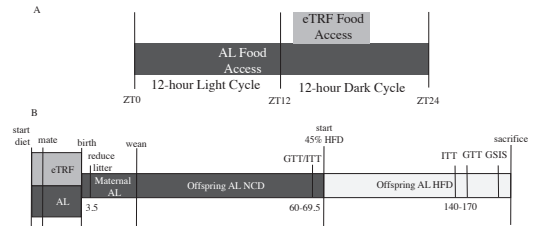


Figure 2: Early Life Body Composition, Food Intake, and Glycemic Control

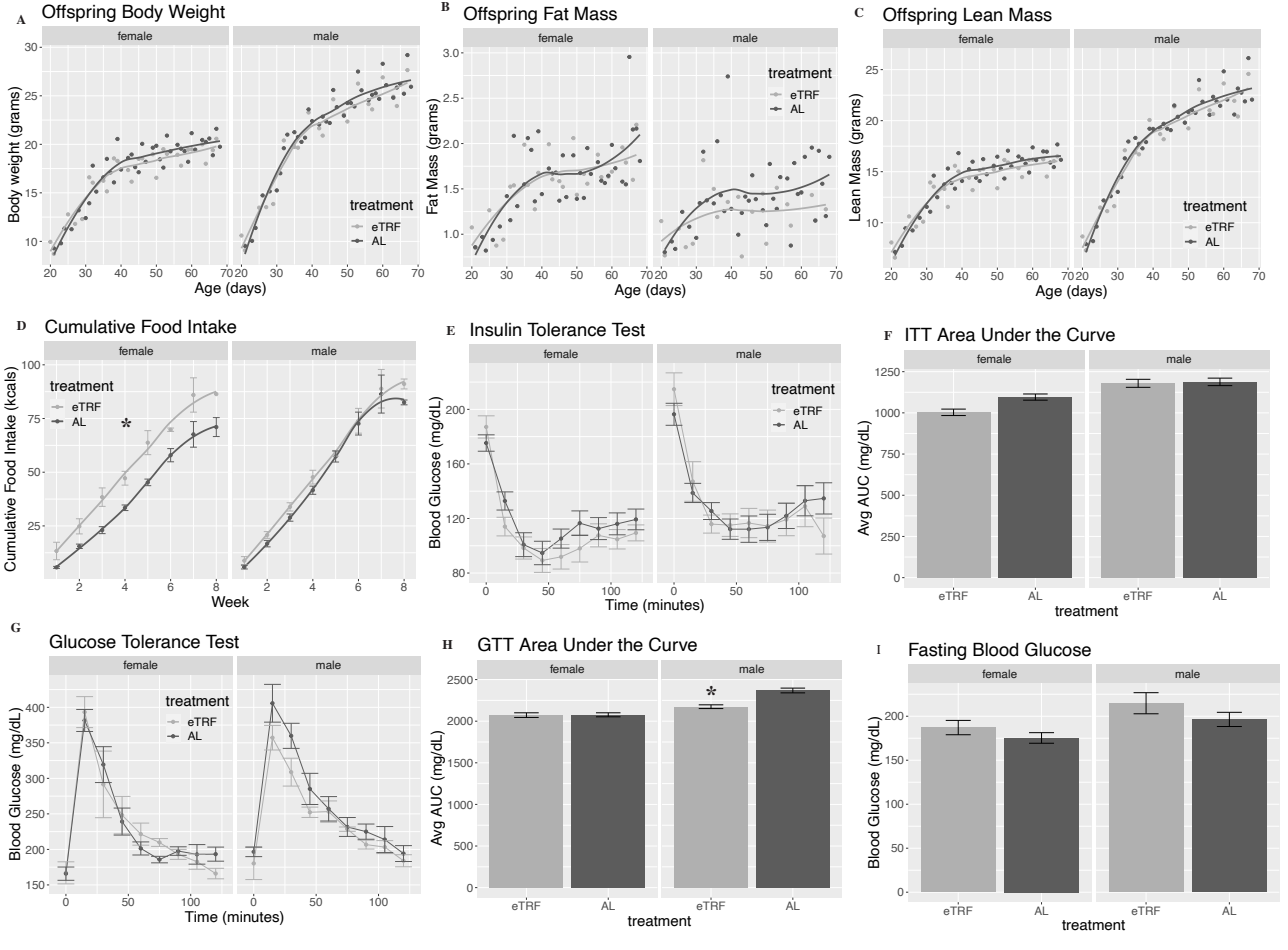
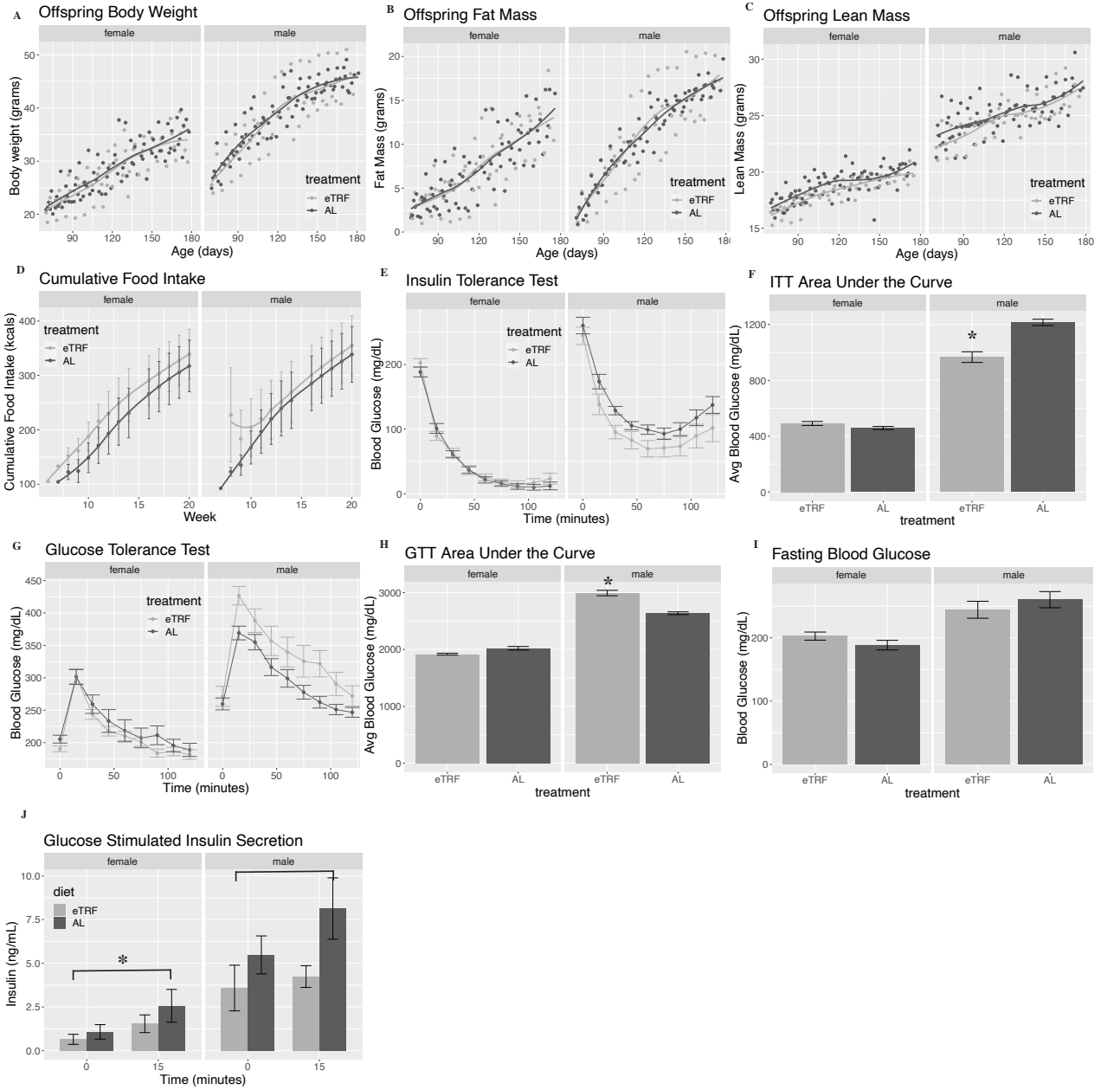


Figure 3: Body Composition, Food Intake, and Glycmic Response to High Fat Diet Feeding in Adulthood



Supplemental Figure 1: Feeding Efficiency

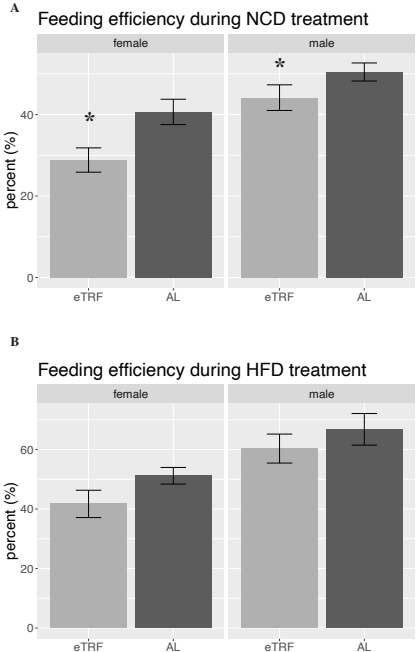


Figure Legends

Fig 1 Legend:
A) Food availability and timing for dams during pregnancy. Food access began at ZT13 for early Time-Restricted Feeding dams (eTRF, light gray, n=8) and continuted until ZT19, total of 6 hours. Food was available 24 hours a day for *ad libitum* dams (AL, dark gray, n=9)**B)** Offspring experimental protocol. After birth, all dams had AL access to laboratory chow (NCD). Litters were reduced to 4 (2 males, 2 Females when possible) on post natal day (PND) 3. Offspring were weaned by sex and maternal restriction at PND 21 and maintained on AL NCD for 70 days. Weekly body composition and food intake were measured throughout the experiment. At 70 days, Insulin tolerance tests (ITT) and glucose tolerance tests (GTT) were conducted before switching all animals to a 45% high fat diet (HFD). Animals were on HFD for 10 weeks before repeating ITT and GTT, and an *in vitro* Glucose stimulated insulin secretion test (GSIS). Animals were sacrificed after these tests ~ PND 175. Abbreviations: zeitgeber time (ZT), ZT 0 = lights on, ZT 12 = lights off.

Fig 2 Legend:
Early life body composition, food intake, and glycemic homeostasis
A) Body weight in grams from PND 21-PND 70 in males and females, averaged by age, maternal reestriction and sex. B) Fat mass in gram from PND 21-PND70 in males and females C) Lean mass in grams from PND21-PND70 in males and females D) Food intake in kcals per mouse per day averaged by week, maternal restriction and sex. Asterisk indicates p-value for effect of diet. E) Insulin Tolerance test (ITT) ~ PND 70, averaged by maternal restriction, sex, and time in minutes. F) Area under the curve (AUC) for insulin tolerance test, averaged by maternal restriction and sex. G) Glucose tolerance test (GTT) ~PND 70, averaged by maternal restriction, sex, and time in minutes. H) AUC for GTT, averaged by maternal restriction and sex. Asterisk indicates p-value for effect of diet in males I) Fasting blood glucose (FBG) PND 70, averaged by maternal restriction and sex. (animals included in body composition measurements, FBG, ITT, and GTT, n = eTRF Males 11, AL males 16, eTRF Female 19, AL female 17) Cages in the food intake analysis: (5 Male AL, 4 Male eTRF, 5 Female AL, 4 Female eTRF)

Fig 3 Legend:
Body composition, food intake, and glycemic response to high fat diet feeding in adulthood
A) Body weight in grams from PND 70-PND 175 in males and females, averaged by age, maternal restriction and sex. B) Fat mass in gram from PND 70-PND 175 in males and females C) Lean mass in grams from 70-PND 175 in males and females D) High fat diet intake in kcals per mouse per day averaged by week, maternal restriction and sex E) Insulin Tolerance test (ITT) after 10 weeks HFD, averaged by maternal restriction, sex, and time in minutes. F) Area under the curve (AUC) for insulin tolerance test, averaged by maternal restriction and sex. Asterisk indicates p-value for effect of diet in males. G) Glucose tolerance test (GTT) after 10 weeks HFD, averaged by maternal restriction, sex, and time in minutes. H) AUC for GTT, averaged by maternal restriction and sex. Asterisk indicates p-value for effect of diet in males. I) Fasting blood glucose (FBG) after 10 weeks HFD, averaged by maternal restriction and sex. J) Glucose stimulated insulin secretion test (GSIS), averaged by maternal restriction, sex, and time. Asterisk indicates p-value for effect of sex. (animals included in body composition measurements, FBG, ITT, GTT, and GSIS: n = eTRF Males 11, AL males 16, eTRF Female 19, AL female 17)
Cages in the food intake analysis: (5 Male AL, 4 Male eTRF, 5 Female AL, 4 Female eTRF)

Supplemental Fig 1 Legend:
Feeding efficiency of offsprng through adulthood
A) Feeding efficiency (%) in both males and females calculated based on food intake and body composition changes during the NCD period (before PND 70). Efficiency is lower in eTRF offsprng, in both males and females, but males have higher feeding efficiency than females (P_{sex}<0.0001, P_{diet}= 0.002). B) Feeding efficiency in males and females during the HFD period (after PND 70). Efficiency continued to be higher in males than in females (P_{sex}=0.00023) and trended lower in eTRF offsprng than AL offsprng but failed to reach statistical significance (P_{diet}= 0.093).