Supplemental Materials and Methods

Body Weight- total n (from n unique litters) n = first generation (1Ch) male n = 18(12), female n = 18(12), 1(HF) male n = 26(12), female n = 22(12). 2nd generation (2Ch) male n = 14(5), female n = 11(4), 2HF(M) male n = 13(4), female n = 11(4), 2HF(P) male n = 12(4), female n = 12(4), 2HF(MP) male n = 8(3), female n = 9(3).

Chow intake- total n (from n unique litters)**:** first generation Chow male (1Ch) n = 18(12), female n = 18(12), HF male (1HF) n = 26(12), female n = 22(12). Second generation 2Ch male n = 14(5), female n = 11(4), 2HF(M) male n = 13(4), female n = 11(4), 2HF(P) male n = 12(4), female n = 12(4), 2HF(MP) male n = 8(3), female n = 9(3).

High fat diet intake- 1Ch male n = 12(10), female n = 11(10), 1HF male n = 14(10), female n = 10(9), Second generation 2Ch male n = 14(5), female n = 11(4), 2HF(M) male n = 13(4), female n = 11(4), 2HF(P) male n = 12(4), female n = 12(4), 2HF(MP) male n = 8(3), female n = 9(3).

Body Length- Total n (from n unique litters): First generation, E17 1Ch male n = 4(3), female n = 5(3), 1HF male n = 6(4), female n = 7(4). First generation, 18 weeks 1Ch male n = 5(4), female n = 4(3), 1HF male n = 6(4), female n = 5(4). Second generation 20-22 weeks 2Ch male n = 11(4), female n = 4(3), 2HF(M) male n = 11(4), female n = 11(4), 2HF(P) male n = 9(4), female n = 9(3), 2HF(MP) male n = 8(3), female n = 9(3).

Leptin- Total n (from n unique litters): Chow (1Ch) male n = 6(4), female n = 3(3), first generation HF (1HF) male n = 10(8), female n = 5(4), 2HF(M) male n = 10(4), female n = 11(4), 2HF(P) male n = 7(4), female n = 10(4), 2HF(MP) male n = 8(3), female n = 10(4).

Insulin- Total n (from n unique litters): Dams (sacrificed at E14-17) maternal chow (mCh) n = 4, maternal high fat diet (mHF) n = 8. 1Ch/2Ch male n = 7(7), female n = 7(7), 1HF male n = 8(6), female n = 5(4), 2HF(M) male n = 8(4), female n = 8(4), 2HF(P) male n = 7(4), female n = 7(4), 2HF(MP) male n = 8(3), female n = 8(3).

IGF-1- Total n (from n unique litters): First generation 1Ch male n = 5(4), female n = 3(3), first generation 1HF male n = 8(5), female n = 9(8), 2HF(M) male n = 12(4), female n = 10(4), 2HF(P) male n = 7(4), female n = 10(4), 2HF(MP) male n = 9(3), female n = 5(3).

Insulin Tolerance- Total n (from n unique litters) **Chow Diet**- first generation 1Ch male n = 5(3), female n = 2(2), 1HF male n = 6(6), female n = 4(2). Second generation 2Ch male n = 4(3), female n = 4(3), 2HF(M) male n = 10(4), female n = 9(4), 2HF(P) male n = 8(3), female n = 8(3), 2HF(MP) male n = 5(3), female n = 5(3). **On high fat diet**- first generation 1Ch male n = 4(3), female n = 2(2), 1HF male n = 6(5), female n = 3(2). Second generation 2Ch male n = 4(3), female n = 4(3), 2HF(M) male n = 10(4), female n = 8(3), 2HF(P) male n = 7(3), female n = 8(3), 2HF(MP) male n = 4(3), female n = 5(3).

Glucose Tolerance- Total n (from n unique litters): **Chow Diet-** first generation 1Ch male n = 10(9), female n = 9(9), first generation 1HF male n = 7(6), female n = 4(4), second generation 2Ch male n = 4(3), female n = 5(5), second 2HF(M) male n = 7(4), female n = 5(2), 2HF(P) male n = 3(3), female n = 10(3), 2HF(MP) male n = 3(3), female n = 3(3). **On high fat diet-** first generation 1Ch male n = 10(9), female n = 11(10), 1HF male n = 10(8), female n = 10(8). Second generation 2Ch male n = 4(3), female n = 4(3), 2HF(M) male n = 7(3) female n = 6(3), 2HF(P) male n = 4(3), female n = 4(2), 2HF(MP) male n = 5(3), female n = 6(3).

Bisulfite Sequencing of GHSR- Total n (from n unique litters)- 2Ch male n = 4(4), female n = 5(4), 2HF(M) males n = 5(4), female n = 6(4), 2HF(P) male n = 6(4), female n = 6(4), 2HF(MP) male n = 5(3), female n = 5(3).