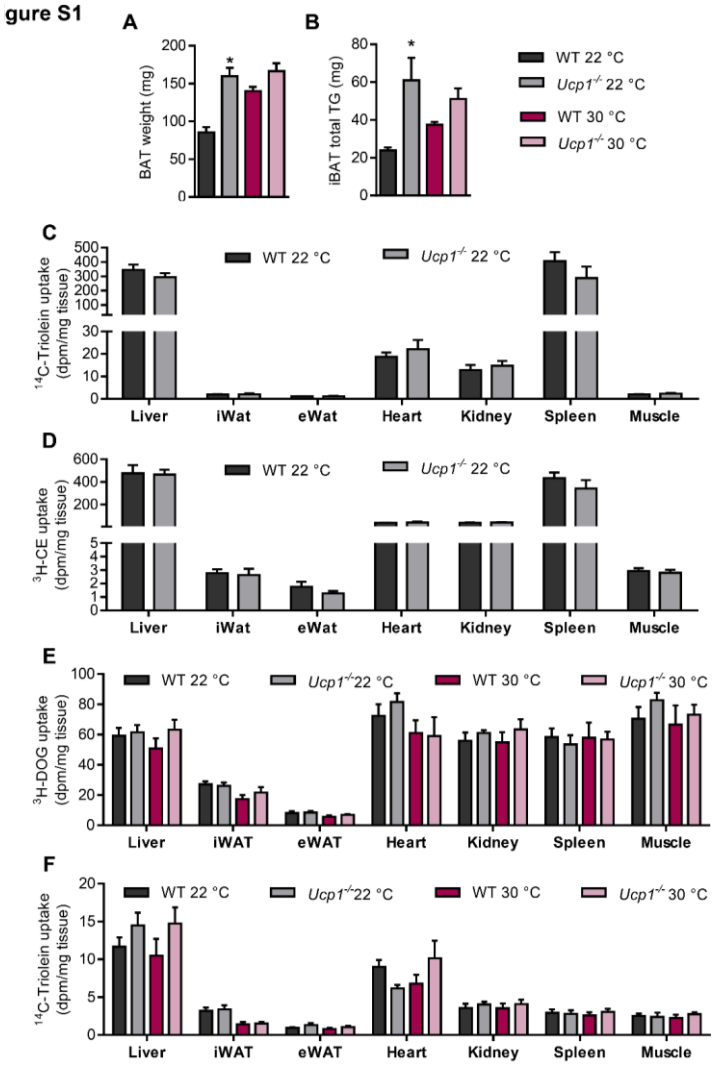
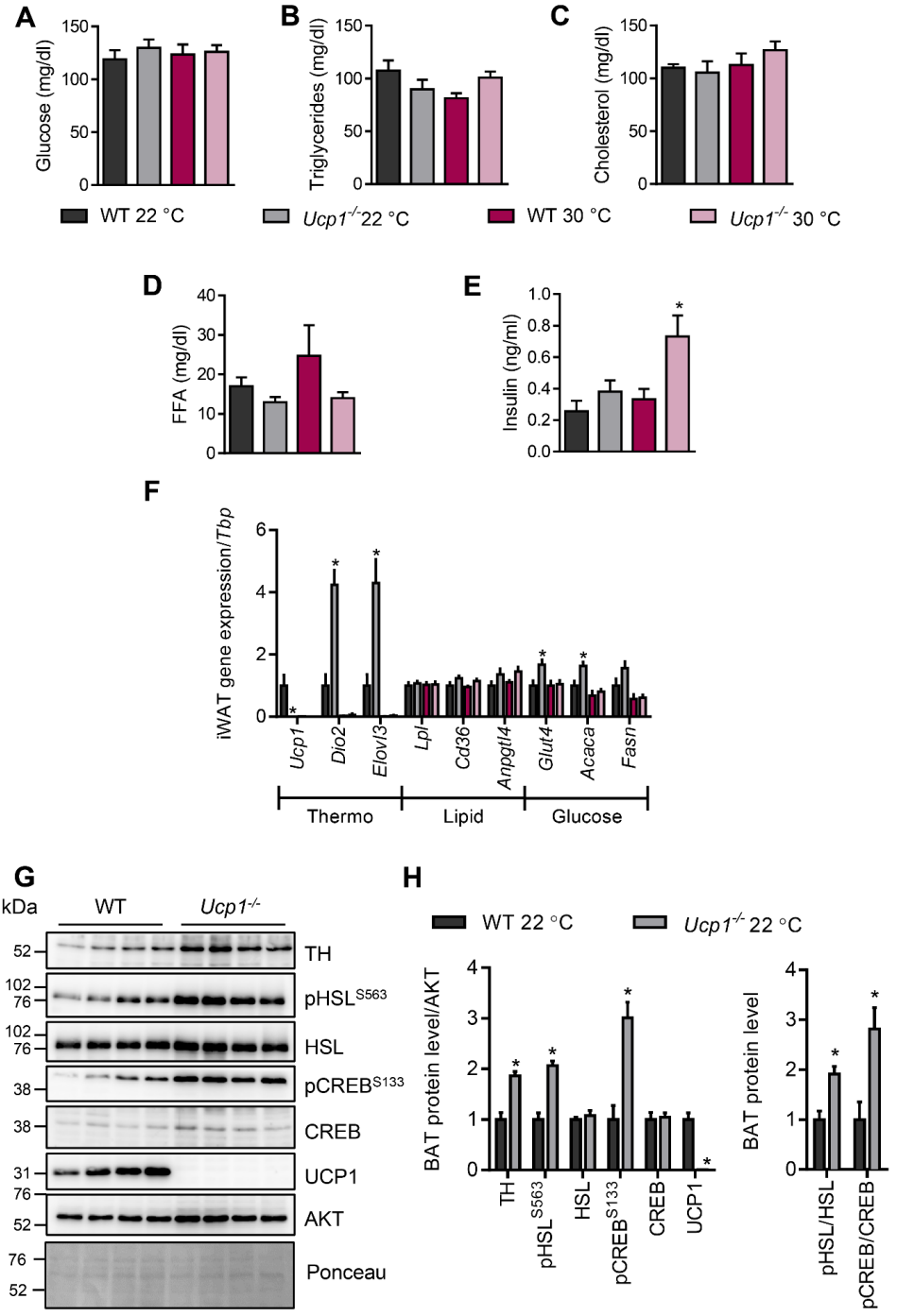
Supplementary Figure S1



Supplementary Figure S1. Male WT and *Ucp1*$^{-/-}$ mice were acclimated to 22°C or 30°C. (A) iBAT weights and (B) iBAT triglyceride content following oral lipid gavage in WT and *Ucp1*$^{-/-}$ mice (n=4-5). (C, D) Uptake of recombinant TRL labelled with ^{3}H-cholesterolether (^{3}H-CE) and ^{14}C-triolein in mice housed at 22°C (n=7-8). Specific organ uptake of (C) ^{14}C-triolein and (D) ^{3}H- CE. (E, F) Oral combined glucose and fat tolerance test traced with ^{14}C-triolein and ^{3}H-deoxyglucose (^{3}H-DOG) in WT and *Ucp1*$^{-/-}$ mice housed at 22°C or 30°C (n = 5-6). Specific organ uptake of (E) ^{14}C-triolein and (F) ^{3}H-DOG. * indicates $p < 0.05$ by Student's T-test or 2-way ANOVA. Only significant differences between genotypes in the same interventional group are indicated.

Supplementary Figure S2

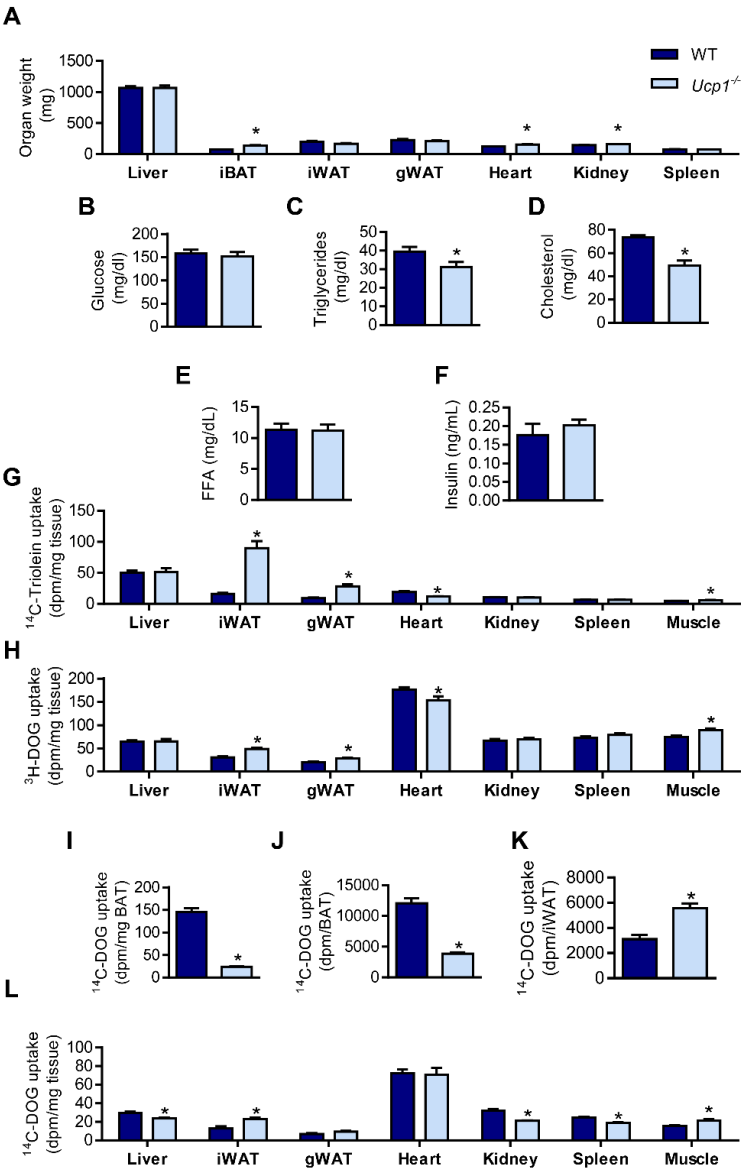


Supplementary Figure S2. Plasma parameters in male WT and *Ucp1*$^{-/-}$ mice acclimated to 22°C or 30°C were measured (n=5-6). (A) plasma glucose, (B) plasma triglycerides, (C) plasma cholesterol, (D) plasma free fatty acids (FFA) and (E) plasma insulin.

Inguinal WAT samples from male WT and *Ucp1*$^{-/-}$ mice acclimated to 22°C or 30°C were harvested for mRNA and protein analyses (n=5-6). (F) mRNA expression of indicated genes in iWAT, values are shown relative to WT 22°C.

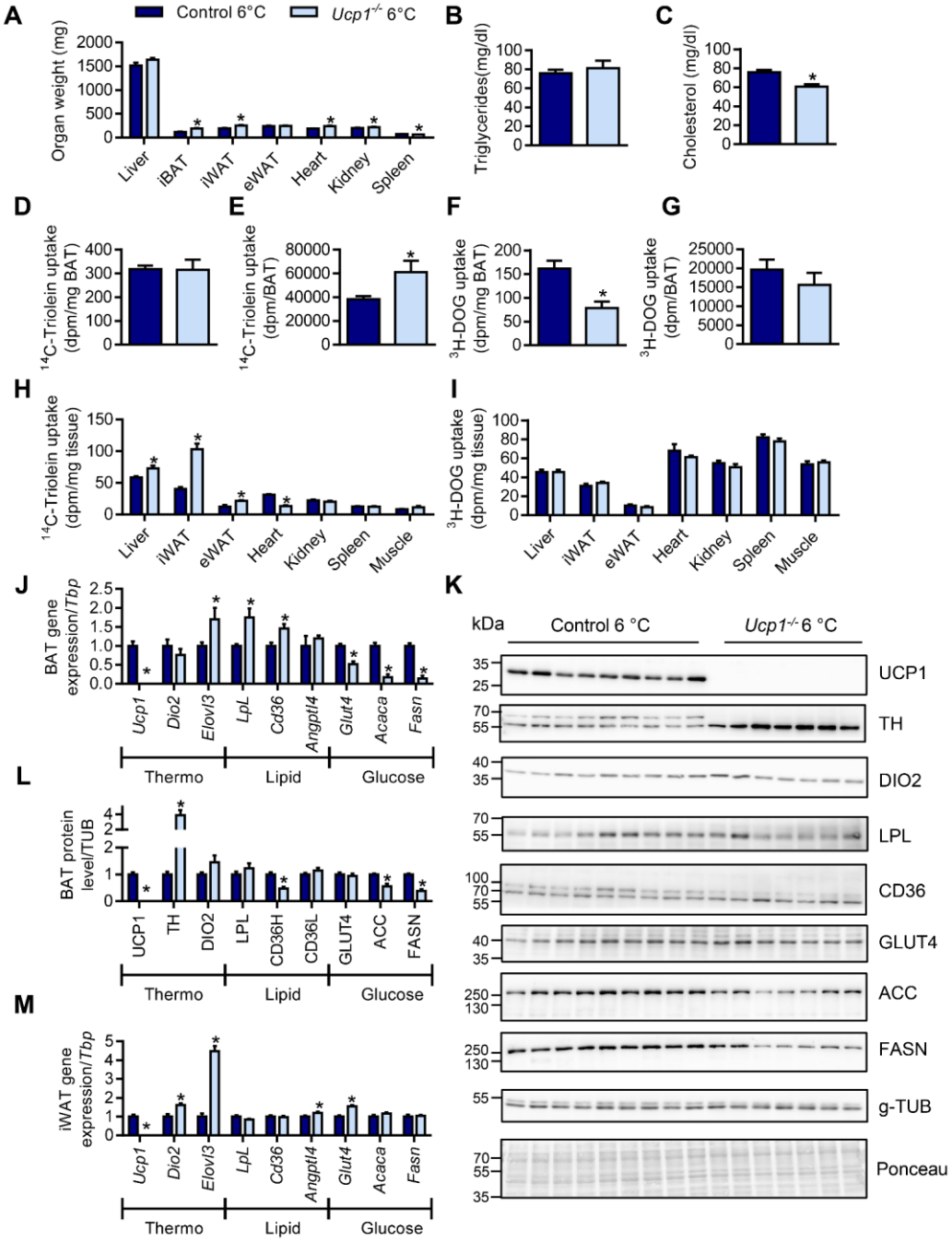
Markers of adrenergic signalling were analysed by Western blotting in brown adipose tissue from male WT and *Ucp1*$^{-/-}$ mice acclimated to 22°C (n=4). (G) Western blot and (H) quantification of protein levels in BAT. * indicates $p < 0.05$ by 2-way ANOVA or Student's t-test. Only significant differences between genotypes in the same interventional group are depicted.

Supplementary Figure S3



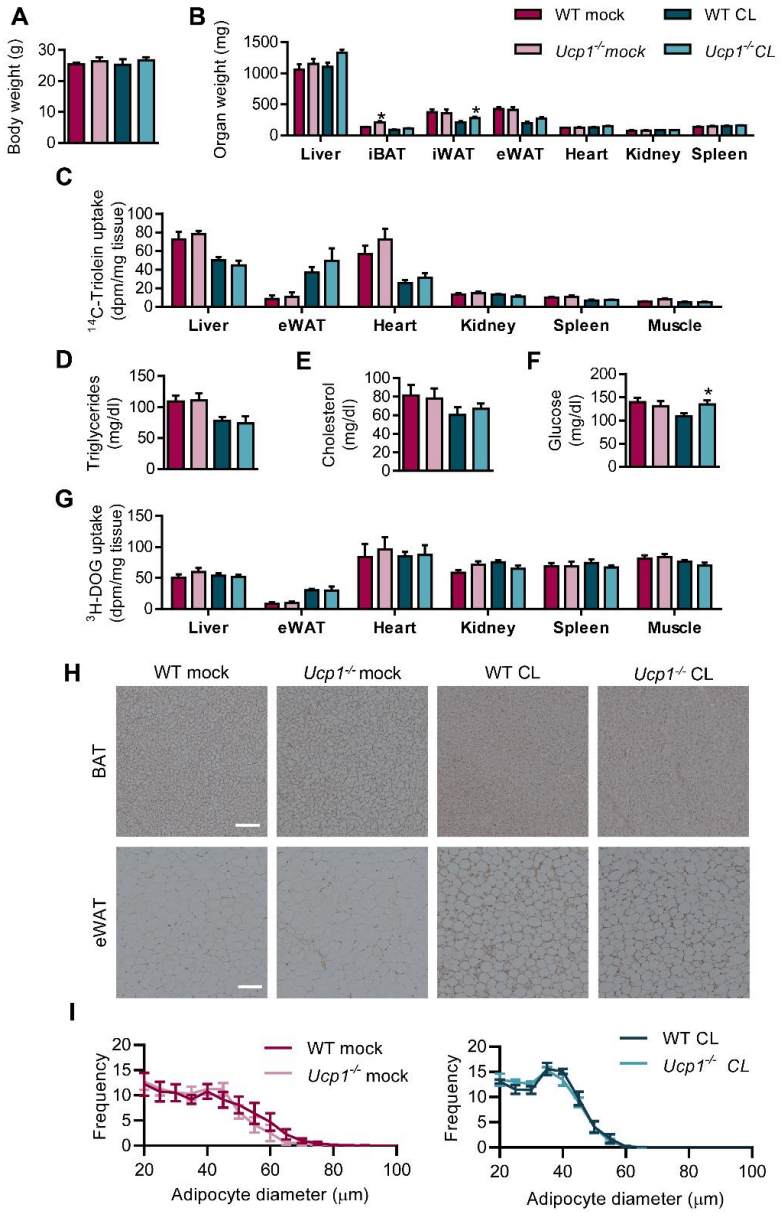
Supplementary Figure S3. Female WT and *Ucp1*$^{-/-}$ mice were gradually acclimated to 6°C and gene expression as well as nutrient uptake were measured. For this purpose, mice were kept for 1 week at 18°C and then acclimated to 6°C for 3 weeks before being subjected to an oral glucose and fat tolerance test (n = 8-10). (A) Organ weights, (B) plasma glucose, (C) plasma triglycerides, (D) plasma cholesterol levels, (E) plasma free fatty acids (FFA), (F) plasma insulin, (G) specific ^{14}C-triolein organ uptake and (H) specific ^{3}H-DOG organ uptake. Female WT and *Ucp1*$^{-/-}$ mice were acclimated to 6°C as described above and subjected to an oral glucose tolerance test (n=8-9). (I) Specific and (J) total ^{14}C-DOG uptake into iBAT. (K) total ^{14}C-DOG uptake into iWAT and (L) specific ^{14}C-DOG organ uptake. * indicates $p < 0.05$ by Student's T-test.

Supplementary Figure S4



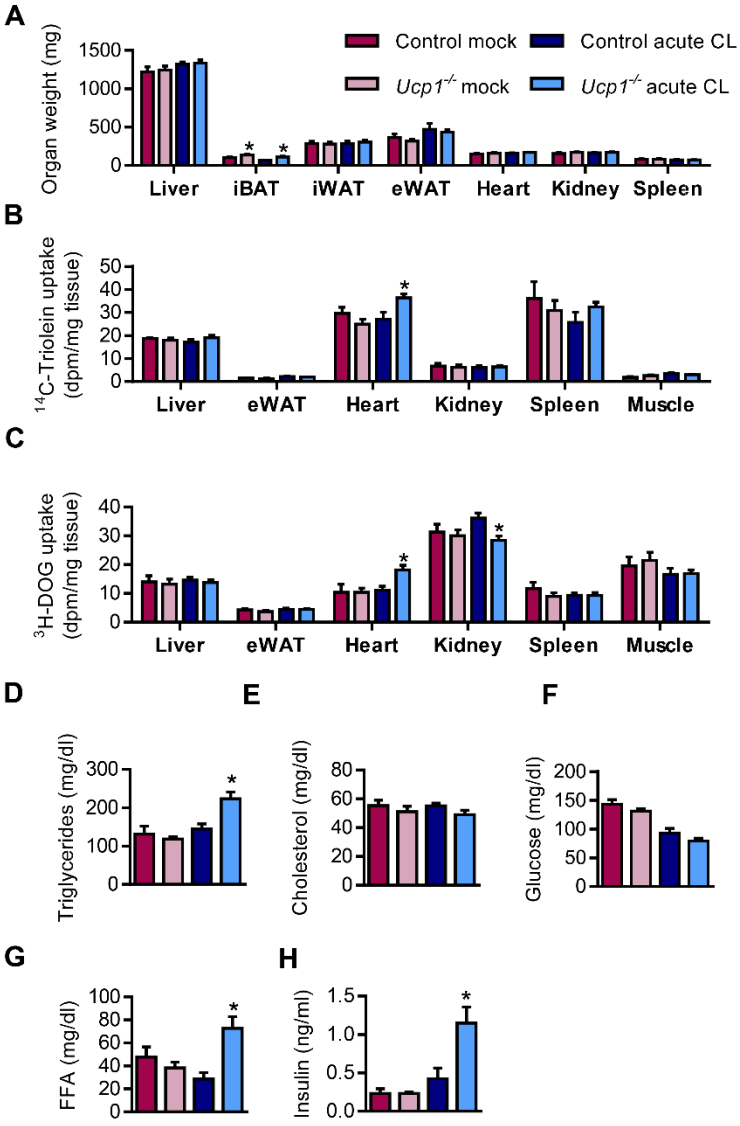
Supplementary Figure S4. Male control and *Ucp1*$^{-/-}$ mice were gradually acclimated to 6°C and gene expression as well as nutrient uptake were measured. For this purpose, mice were kept for 1 week at 18°C and then acclimated to 6°C for 3 weeks before being subjected to an oral glucose and fat tolerance test (n = 7-9). (A) Organ weights, (B) plasma triglycerides, (C) plasma cholesterol, (D) specific and (E) total ^{14}C-triolein uptake into iBAT. (F) Specific and (G) total ^{3}H-DOG uptake into iBAT. (H) Specific ^{14}C-triolein organ uptake and (I) specific ^{3}H-DOG organ uptake. Expression of (J) mRNA shown relative to control and (K) protein by Western blot of iBAT samples. (L) Quantification of Western Blots, values were normalized to gamma tubulin (g-TUB) and shown relative to control. (M) iWAT gene expression normalized to *Tbp*, values are shown relative to Controls. * indicates $p < 0.05$ by Student's T-test.

Supplementary Figure S5



Supplementary Figure S5. Male WT and *Ucp1*$^{-/-}$ mice were housed at 30°C for 1 week and injected daily with 1 mg/kg CL316,243 or vehicle before an oral glucose and fat tolerance test was performed (n = 6-8). (A) Body weights, (B) organ weights, (C) specific ^{14}C-triolein organ uptake, (D) plasma triglycerides, (E) plasma cholesterol, (F) plasma glucose, and (G) specific ^{3}H-DOG organ uptake. (H) HE staining of BAT and epididymal WAT (eWAT), scale bar: 100 µm. (I) Quantification of adipocyte diameter in eWAT. * indicates $p < 0.05$ by 2-way ANOVA. Only significant differences between genotypes in the same interventional group are depicted.

Supplementary Figure S6



Supplementary Figure S6. Male control and *Ucp1*$^{-/-}$ mice were housed at 30°C for 1 day and injected acutely with 1 mg/kg CL316,243 or vehicle. Then, 4 hours after CL316,243 injection ^{14}C-triolein-labelled TRL and a tracer dose ^{3}H-DOG were administered (n = 5-6). (A) Organ weights, (B) specific ^{14}C-triolein organ uptake, (C) specific ^{3}H-DOG organ uptake, (D) plasma triglycerides, (E) plasma cholesterol, (F) plasma glucose, (G) plasma free fatty acids (FFA) and (H) plasma insulin. * indicates $p < 0.05$ by 2-way ANOVA. Only significant differences between genotypes in the same interventional group are depicted.