SUPPLEMENTAL EXPERIMENTAL PROCEDURES

OPT clearing

The adipose organ was fixed in 4 % paraformaldehyde (Sigma-Aldrich) for 3 h at room temperature (RT) with agitation, followed by 15 min wash step with Phosphate Buffered Saline (PBS) 1X at RT. The wash step was repeated two more times. The sample was placed in 1 % low melting agarose (Sigma-Aldrich). The agarose volume was approximately 24.5 cm^3 (3.5 cm height and 1.5 cm diameter). The inguinal fat pad was immersed in a 10 % methanol (VWR) solution for 2 h at RT (with agitation). Afterwards 10 % increasing steps were performed every day until dehydration in 100 % methanol was reached (RT with agitation). The replacement of the methanol with 1:2 mixture of benzyl alcohol (Merck) and benzyl benzoate (Merck) was performed in 15 % increasing steps every day until clarification was reached.

Sympathetic neuronal cultures

Sympathetic neurons of primary cultures of SCG were performed from postnatal day 30 *TH-Cre* X *Rosa26-LSL-ChR2-YFP* mice. Briefly, after decapitation, both SCG of each animal were removed and cleaned of all visible adipose tissue and surrounding connective tissue before transfer to Hank's Balanced Salt Solution (HBSS). Then, SCG were treated enzymatically in two steps to yield single neurons. First, SCG were subjected to enzymatic dissociation in collagenase solution (2.5 mg/mL) in HBSS, followed by trypsin solution (0.25 %) in PBS at 37 ºC with agitation. The SCG were next mechanically dissociated into a suspension of single cells. Isolated sympathetic cells were plated in a final concentration of 2500 cells per coverslip (6 mm) coated with poly-D-lysine and growth factor-reduced Matrigel, and cultured for 7 days *in vitro* (DIV) in Neurobasal medium supplemented with 2 % B-27, 10 % fetal bovine serum, 1 % penicillin/streptomycin, nerve growth factor

(100 ng/mL) and 5-fluoro-2'-deoxyuridine (5 µM).

DT injections

General anesthesia was induced and maintained with isofluorane. After application of local anesthetics (lidocaine), a small incision of the skin was made above the supra-pelvic flank. A Hamilton syringe (10 µl) is inserted into the incision aiming at the inguinal WAT. Each DT injection is made slowly, over period of 30 minutes. Posology was 10 ng/g.