



**Supplementary Figure S1.** (a-o) Male Wistar rats were fed with standard chow diet (SC) for 12 weeks and drinking water was optionally supplemented with an antibiotic cocktail (ABx) for 35d at the end of the experimental setup. Bars indicate Mean+SEM, sample sizes as indicated within bars reflect numbers of tissue from different animals. Mann-Whitney, unpaired t-test (if normal distribution) or ANOVA testing was used to calculate p values as indicated in graphs; (a) Body weight change 35 d after indicated treatment; (b) Cumulative energy intake over 35 d of treatment; (c) Body fat measurement after 35 d of antibiotics treatment; (d) estimated resting energy expenditure (eREE); (e) Rectal body temperature after cold exposure for 12h at 4°C; (f-k) Gene expression analysis via RT-qPCR of thermogenesis marker genes in brown adipose tissue (BAT) using beta-actin as reference gene, relative gene expression indicates comparison of SC-ABx to SC group; (l) Quantification of UCP1 protein expression shown as Western Blot in m; (m) Western Blot to detect UCP1 protein expression (lines and numbers show molecular weight marker in kDa, Ponceau stain used as loading control, n); (o) immunohistochemistry stain for UCP1 in brown adipose tissue; (p-s) H&E immunohistochemistry staining of subcutaneous (sWAT, p,q) and visceral white adipose tissue (vWAT, r,s), shown is one representative image, scale bar 100 µm; (p,r); cell size distribution analysis of sWAT (q) and vWAT (s).

