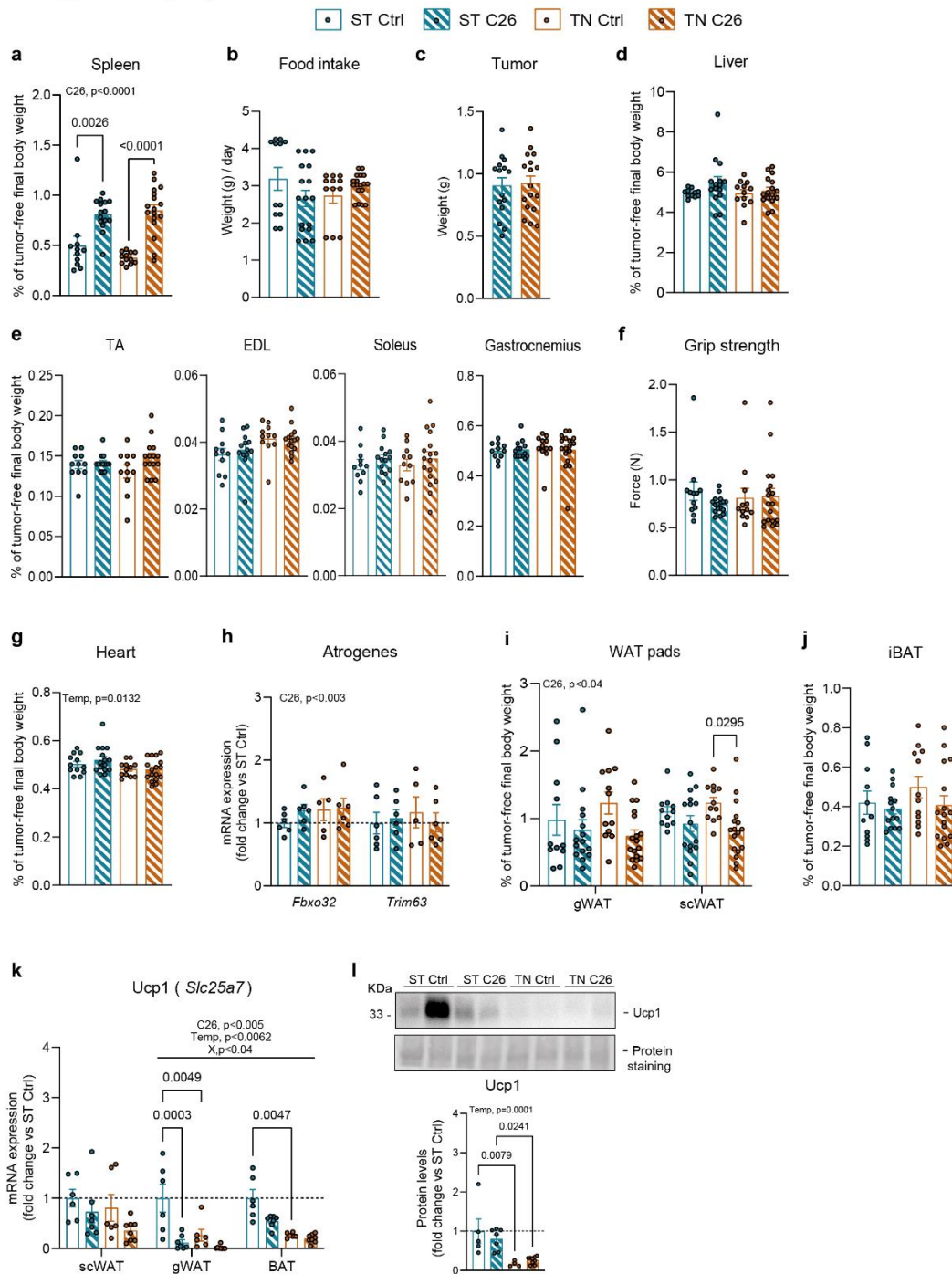


# SUPPLEMENTARY MATERIAL

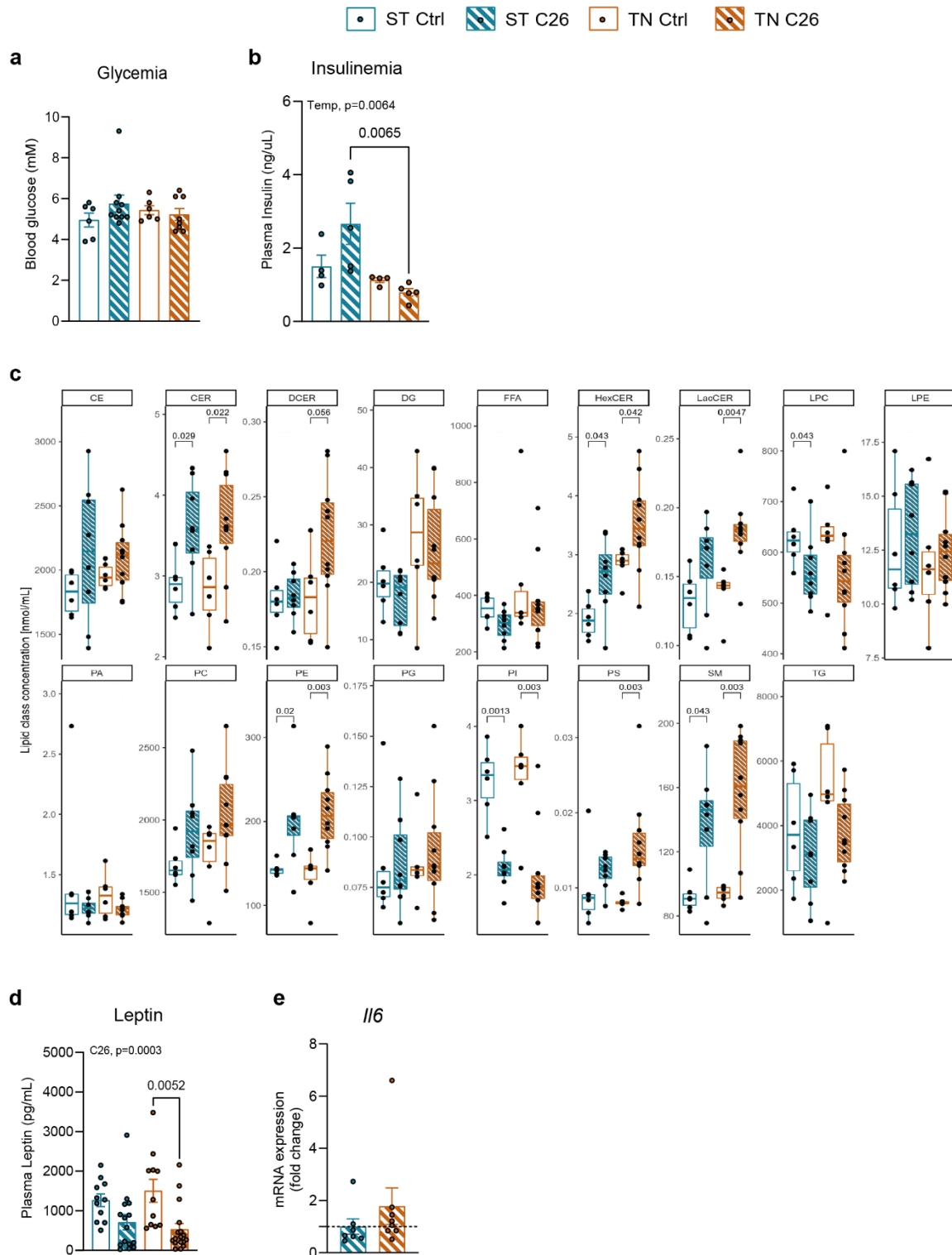
## Figures

Supplementary Figure 1



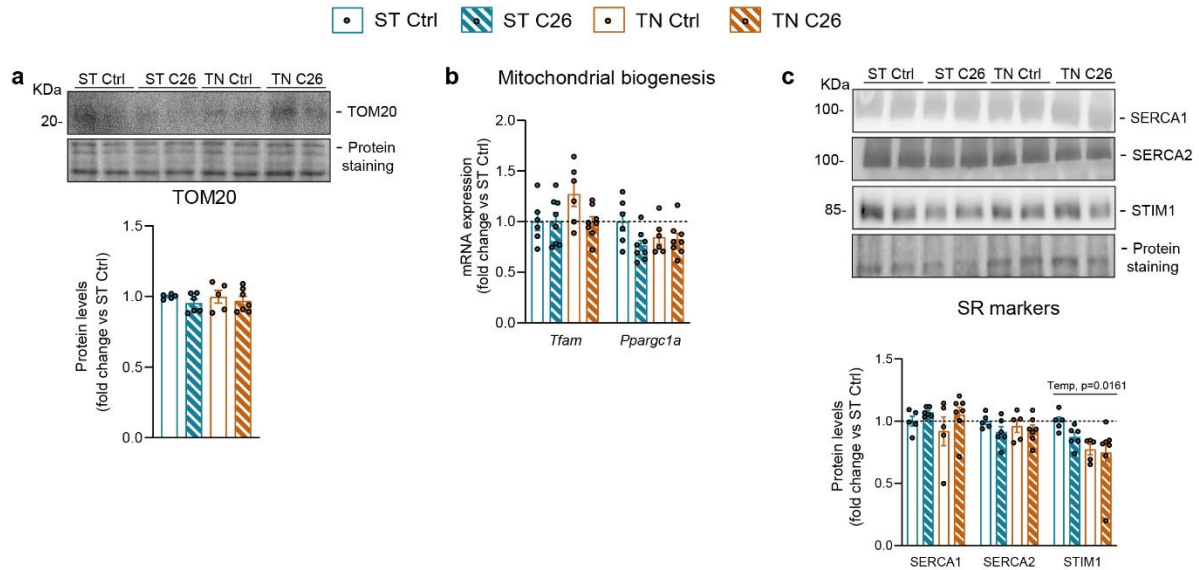
**Supplementary Figure 1.** (a) Spleen weight relative to tumor-free final body weight. (b) Average food intake per mouse and day over the last 4 to 7 days of intervention. (c) Tumor weight. (d) Liver weight relative to tumor-free final body weight. (e) Muscle weights relative to tumor-free final body weight. (f) Grip strength quantification. (g) Heart weight relative to tumor-free final body weight. (h) Atrogenes expression in heart. (i) Weights of WAT depots relative to tumor-free final body weight. (j) iBAT weight related to tumor-free final body weight. (k) Ucp1 gene expression. (l) Representative immunoblot of Ucp1 and band quantification in BAT. Data are expressed as mean  $\pm$  SE including individual values where applicable. (a, c-l) Two-way ANOVA with Tukey's post-hoc test. (b) Student's T test. C26, main cancer effect; Temp, main temperature effect; X, interaction between cancer and temperature.

## Supplementary Figure 2



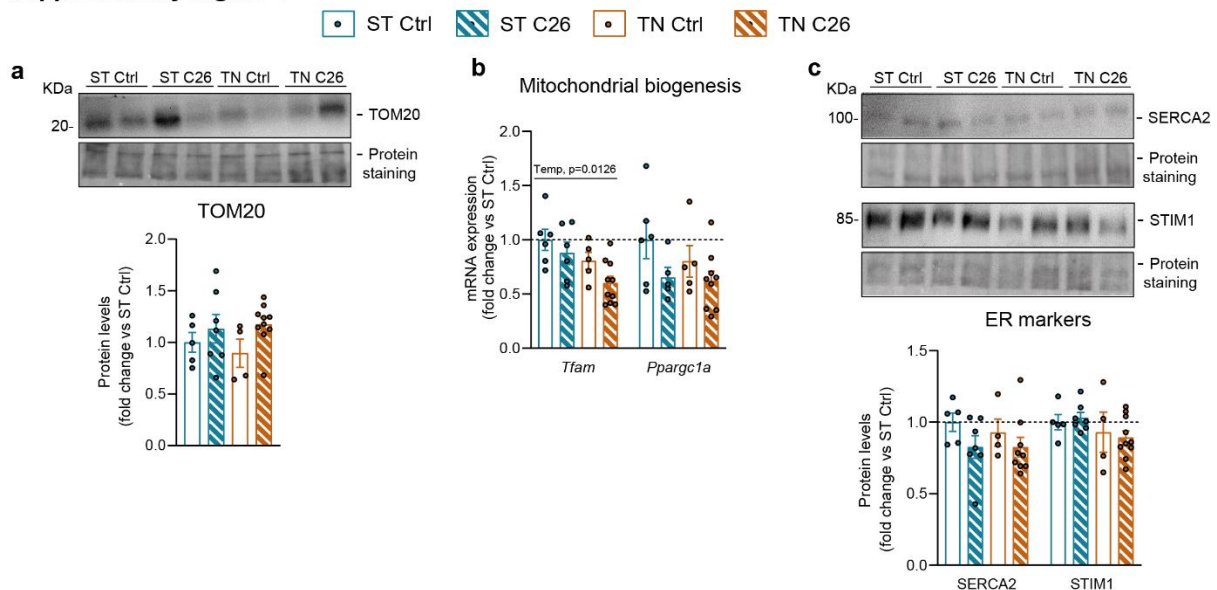
**Supplementary Figure 2.** (a) Fasting blood glucose. (b) Fasting blood insulin. (c) Plasma lipid class sum concentration. (d) Plasma leptin levels. (e) IL-6 gene expression in tumors. Data are expressed as mean  $\pm$  SE including individual values where applicable. (a, b, d) Two-way ANOVA test with Tukey's post-hoc test. (c) Wilcoxon test. (e) Student's T-test. C26, main cancer effect; Temp, main temperature effect.

### Supplementary Figure 3



**Supplementary Figure 3.** (a) Representative immunoblot of TOM20 and band quantification in SkM. (b) *Tfam* and *Ppargc1a* mRNA levels SkM. (c) Representative immunoblots of SR markers and band quantification in SkM. Data are expressed as mean  $\pm$  SE including individual values where applicable. (a-c) Two-way ANOVA test with Tukey's post-hoc test. Temp, main temperature effect.

### Supplementary Figure 4



**Supplementary Figure 4.** (a) Representative immunoblot of TOM20 and band quantification in BAT. (b) *Tfam* and *Ppargc1a* mRNA levels BAT. (c) Representative immunoblots of ER markers and band quantification in BAT. Data are expressed as mean  $\pm$  SE including individual values where applicable. (a-c) Two-way ANOVA test with Tukey's post-hoc test. Temp, main temperature effect.

**Supplementary Table 1: SYBR green mouse primers**

<i>Targeted gene</i>	<i>Forward sequence</i>	<i>Reverse sequence</i>	<i>Source</i>
<i>4ebp1</i>	CACGCTCTTCAGCACCAC	GGAGGCTCATCGCTGGTAG	Ninfali et al 2018 doi: <a href="https://doi.org/10.1093/nar/gky835">10.1093/nar/gky835</a>
<i>Fbxo32</i>	GCAAACACTGCCACATTCTCTC	CTTGAGGGGAAAGTGAGACG	Ninfali et al 2018 doi: <a href="https://doi.org/10.1093/nar/gky835">10.1093/nar/gky835</a>
<i>Trim63</i>	TGTCTGGAGGTCGTTTCCG	ATGCCGGTCCATGATCACTT	Ninfali et al 2018 doi: <a href="https://doi.org/10.1093/nar/gky835">10.1093/nar/gky835</a>
<i>Slc25a7</i>	AGGCTTCCAGTACCATTAGGT	CTGAGTGAGGCAAAGCTGATTT	Rupar et al 2023 doi: <a href="https://doi.org/10.1111/febs.16716">10.1111/febs.16716</a>
<i>Cebpa</i>	CAAGAACAGCAACGAGTACCG	GTCACTGGTCAACTCCAGCAC	Primerbank
<i>Cepbd</i>	CGACTTCAGCGCCTACATTGA	CTAGCGACAGACCCACAC	Primerbank
<i>Leptin</i>	GAGACCCCTGTGTGCGTTC	CTGCGTGTGTGAAATGTCATTG	Primerbank
<i>Dio2</i>	AGTCAAGAAGGTGGCATTCTG	ACAGCTTCTCCTAGATGCCT	Yoshizawa et al 2022 doi: <a href="https://doi.org/10.1038/s41467-022-35219-z">10.1038/s41467-022-35219-z</a>
<i>Elvol3</i>	TTGGGGATAGGGGGTGTGTG	TCTCCCCTCCCCTCCAAGTC	Yoshizawa et al 2022 doi: <a href="https://doi.org/10.1038/s41467-022-35219-z">10.1038/s41467-022-35219-z</a>
<i>Sirt7</i>	TGCCAGGCACTTGGTTGTCT	TAGGCTCCGCTTCGCTTAGG	Yoshizawa et al 2022 doi: <a href="https://doi.org/10.1038/s41467-022-35219-z">10.1038/s41467-022-35219-z</a>
<i>Il6</i>	TAGTCCTTCTACCCCAATTTCC	TTGGTCCTTAGCCACTCCTTC	Irazoki et al 2023 doi: <a href="https://doi.org/10.1038/s41467-022-35732-1">10.1038/s41467-022-35732-1</a>
<i>Tfam</i>	ATCCGAAGTGTTTTCCAGCA	TCTGAAAGTTTTGCATCTGGGT	Primerbank
<i>Ppargc1a</i>	TATGGAGTGACATAGAGTGTGCT	CCACTTCAATCCACCCAGAAAG	Primerbank
<i>Atp2a1</i>	TGTTTGTCTATTTTCGGGGTG	AATCCGCACAAGCAGGTCTTC	Primerbank
<i>Atp2a2</i>	GAGAACGCTCACACAAAGACC	CAATTCGTTGGAGCCCAT	Primerbank
<i>Sln</i>	GCTCCTCTTCAGGAAGTGAAG	TGGCCCCTCAGTATTGGTAGG	Pant et al 2015 doi: <a href="https://doi.org/10.1242/jeb.119164">10.1242/jeb.119164</a>
<i>b-actin</i>	GGTCATCACTATTGGCAACGA	GTCAGCAATGCCTGGGTACA	Irazoki et al 2023 doi: <a href="https://doi.org/10.1038/s41467-022-35732-1">10.1038/s41467-022-35732-1</a>
<i>36b4</i>	TCATCCAGCAGGTGTTTGACA	GGCACCGAGGCAACAGTT	Self-designed

**Supplementary Table 2: Primary antibodies**

<i>Target</i>	<i>Catalog no.</i>	<i>Company</i>	<i>Dilution</i>
Anti-OXPHOS cocktail	MS604-300	Abcam	1:1000
Anti-UCP1	Ab155117	Abcam	1:1000
Anti-TOM20	Sc-17764	Santa Cruz Biotechnology	1:1000
Anti-SERCA1	MA3-912	Invitrogen	1:1000
Anti-SERCA2	MA3-910	Invitrogen	1:1000
Anti-STIM1	4916	Cell Signaling	1:1000