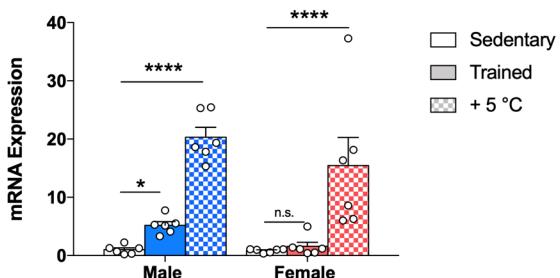


**Table S1**

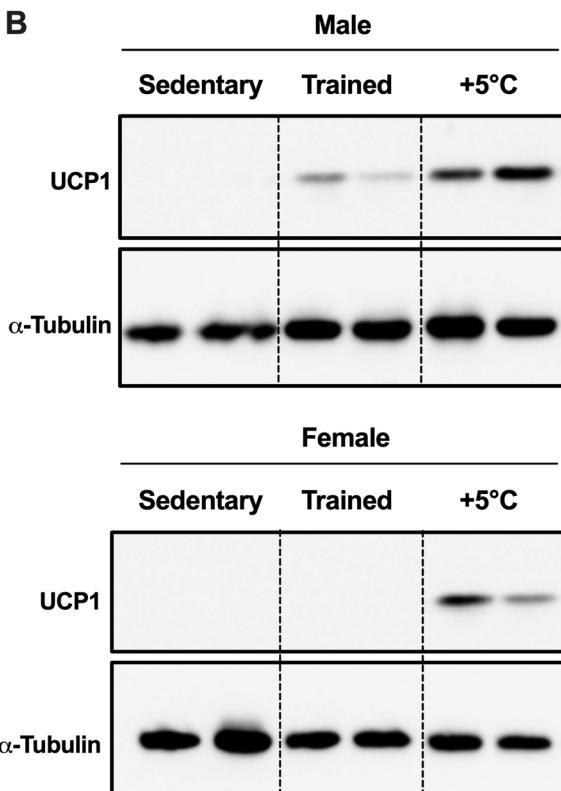
<b>Gene Name</b>	<b>Forward</b>	<b>Reverse</b>
18s	GTAACCCGTTGAACCCCATT	CCATCCAATCGGTAGTAGCG
Actb	AACCGTAAAAGATGACCCAGATCA	AGCACAGCCTGGATGGCTACGTACA
AdipoQ	TGTCCTCTTAATCCTGCCA	CCAACCTGCACAAGTCCCTT
Ar	CCTGGATGGAGAACTACTCCG	TCCGTAGTGACAGCCAGAAGCT
Cidea	TGCTCTCTGTATCGCCCAGT	GCCGTGTTAAGGAATCTGCTG
Crisp1	CCAAGTTGCATGTGGAGTTGCTG	ACAACTGGCACACGGTTCTCC T
Dio2	GGTGGTCAACTTGGTTCAGCC	AAGTCAGCCACCGAGGAGAAC T
Daxx	CTCACACTGGAGAGATGCCAG	GGATGGCATAGGCTGGACACTT
Esr1	TCTGCCAAGGAGACTCGCTACT	GGTGCATTGGTTTAGCTGGAC
Esr2	GGTCCTGTGAAGGATGTAAGGC	TAACACTTGCAGTCGGCAGG
Esrra	AGCAAGCCCCGATGGA	GAGAGGCCTGGGATGCTCTT
Lep	GAGACCCCTGTGTCGGTT	CTGCGTGTGTGAAATGTCATTG
Lipe	GCTCATCTCCTATGACCTACGG	TCCGTGGATGTGAACAACCAGG
Mfn1	CCAGGTACAGATGTCACCACAG	TTGGAGAGCCGCTCATTCACCT
Mfn2	GTGGAATACGCCAGTGAGAAGC	CAACTTGCTGGCACAGATGAGC
Ncoa1	GAGCGGCATAAAATTCTGCACCG	CACTGACACAGCAGTAGAGGCT
Ncoa4	TGCCATTGGTCTTCAGGCTCCT	CAGGCATCGCTGAAGAAACTGC
Opa1	TCTCAGCCTGCTGTGTCAGAC	TTCCGTCTCTAGGTTAAAGCGCG
Pias1	CTGCACAGACTGTGACGAGATAC	CGCTACCTGATGCTCCAATGTG
Pnpl2a	GGAACCAAAGGACCTGATGACC	ACATCAGGCAGCCACTCCAAC A
Ppargc1a	GAATCAAGCCACTACAGACAC CG	CATCCCTCTTGAGCTTCGTG
Prdm16	TATGGAGCTAGGCAGGGACA	TCCATACATCAGGGAGCAGA
Prkaa1	GGTGTACGGAAGGCAAAATGGC	CAGGATTCTCCTCGTACACGC
Slc2a1/Glut1	CCAGCTGGGAATCGTCGTT	CAAGTCTGCATTGCCATGAT
Slc2a4/Glut4	GTGACTGGAACACTGGCCT	CCAGCCAGTTGCATTGTAG
Srd5a1	GCCGATACTTGAGCCAGTTGC	CTCAGATTCCGCAGGATGTGGT
Srd5a2	CATCCACAGTGACTGCATGCTG	AAGGCTGGAACAGACCAAGTGG
Sts	CCAACTGCTCCTCATGGACGA	GTTCCCTCCGCAGGAAGAGCGC
Tle3	TGGTGAGCTTGAGCTGTT	CGGTTCCCTCCAGGAAT
Ucp1	ACTGCCACACCTCCAGTC ATT	CTTGCCTCACTCAGGATTGG
Vegfa	CTGCTGTAACGATGAAGCCCTG	GCTGTAGGAAGCTCATCTCTCC
<b>ChIP qPCR assay</b>		
Ucp1_ARE	CCTCCTCTCCAGCGAGTGA	TGGGGCCAGAAAGATGATGC

# Fig.S1

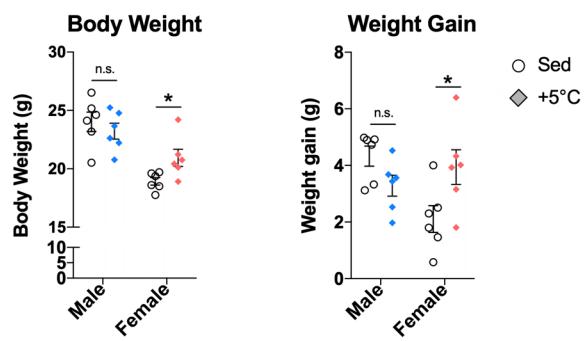
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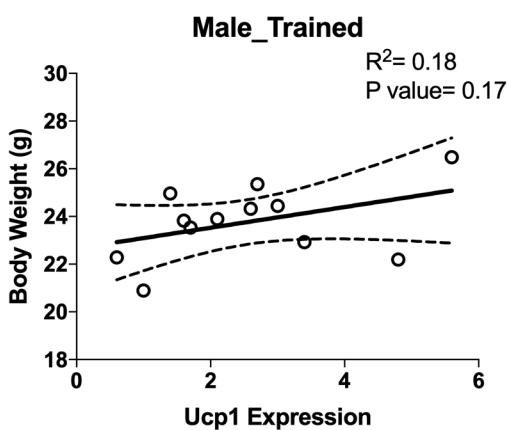
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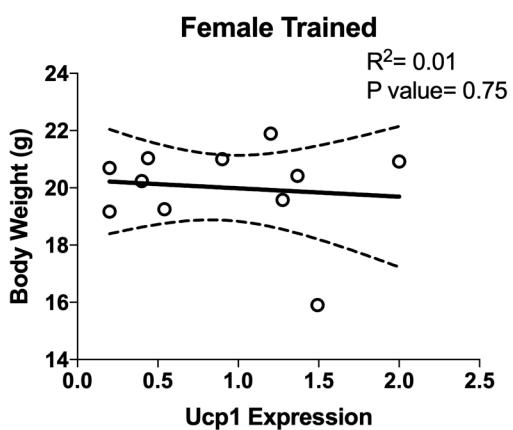
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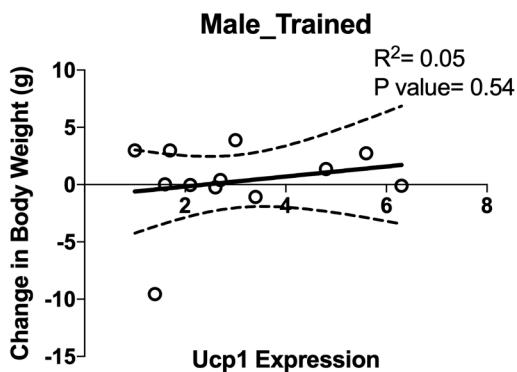
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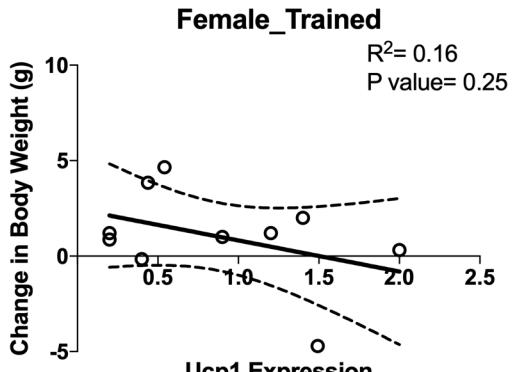
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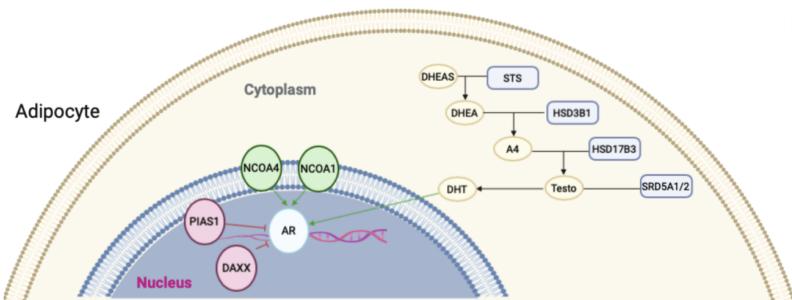
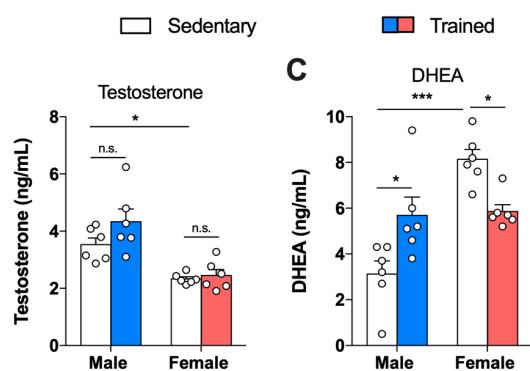
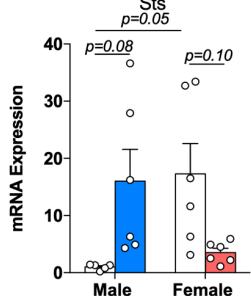
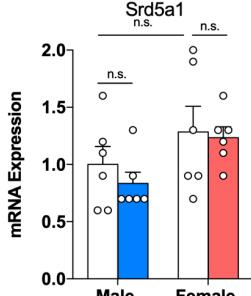
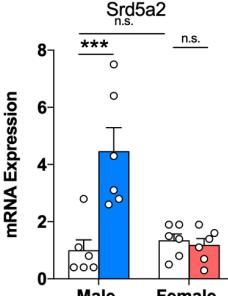
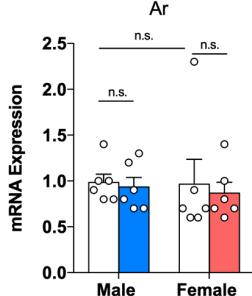
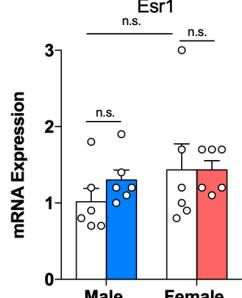
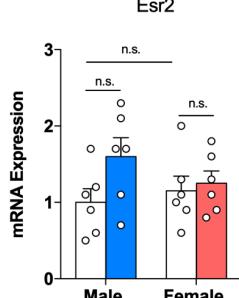
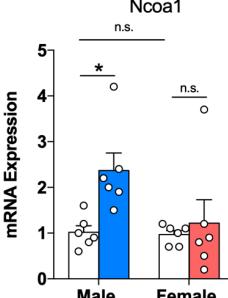
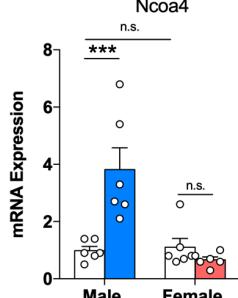
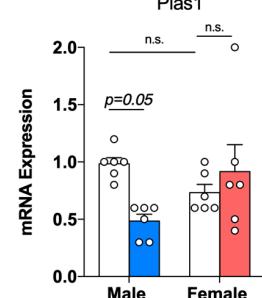
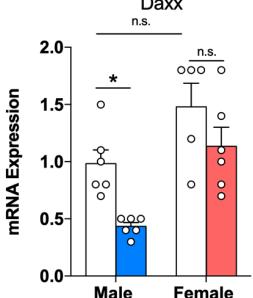
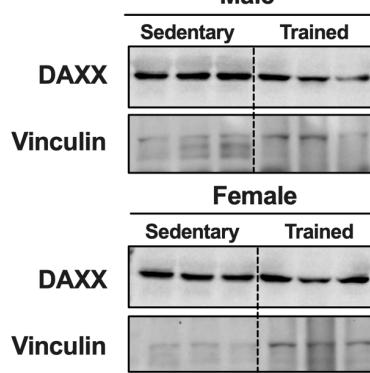
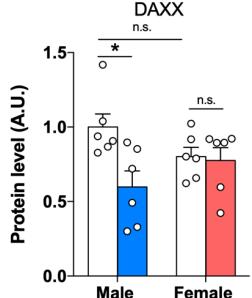
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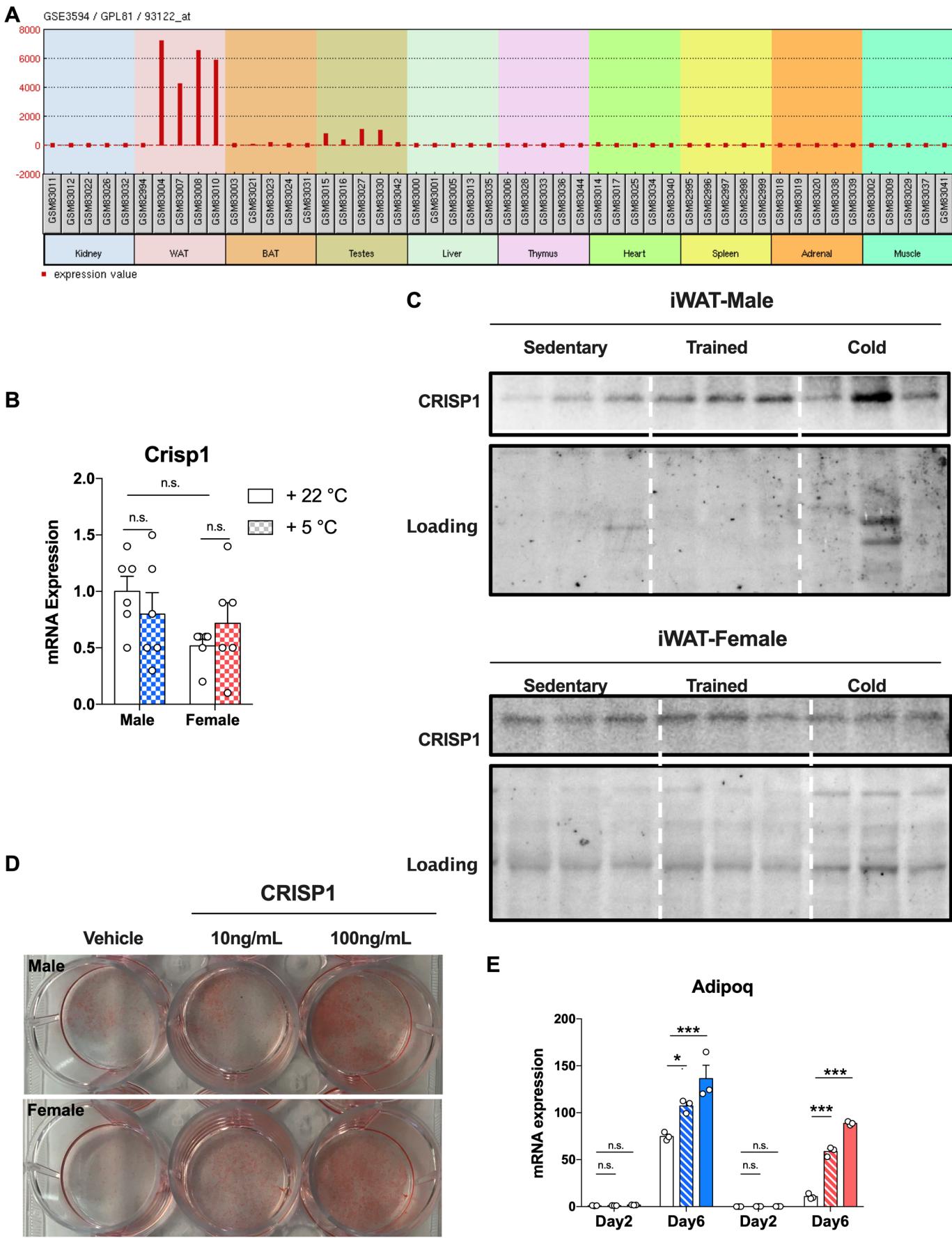
G



# Fig.S2

**A**

**B**

**D**

**E**

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**G**

**H**

**I**

**J**

**K**

**L**

**M**

**N**

**O**


# Fig.S3



## SUPPLEMENTARY DATA

Supplementary Table 1- Primer sequences used in RT-qPCR

Figure S1- Cold exposure increases Ucp1 expression in male and female mice.

A and B: Ucp1 mRNA expression (A) and protein content in iWAT from male and female mice after 11 days of cold exposure (n=6-7 group). C : Body weight and weight gain after 11 days in sedentary and cold exposure male and female mice (n=6-7/group). D-E: Relation between Ucp1 mRNA expression and body weight in male (D) and female (E) mice (n=10-12/group). F-G: Relation between Ucp1 mRNA expression and change in body weight for male (F) and female (G) mice (n=10-12/group). Data are expressed as mean ± SEM. n.s. indicates not significant difference. \*\*\*P < 0.001 as indicated.

Figure S2- Voluntary wheel running increased androgen receptor transcriptional activity in male iWAT.

(A) Model of androgens' metabolism and androgen receptor (Ar) in iWAT adipocyte. B and C: testosterone (B) and DHEA (C) serum level in male and female mice after 11 days of VWR (n=6/group). D-F: mRNA expression of genes involved in androgens metabolism Sts (D) Srd5a1 (E) and Srd5a2 (F) on iWAT from male and female (n=6/group). G-I: mRNA expression of the sex hormones nuclear receptor such as androgen receptor (G) and the two isoforms of estrogen receptor Esr1(H) and Esr2 (I) on iWAT from male and female (n=6/group). J-M: mRNA expression of androgen receptor coactivators Ncoa1 (J) and Ncoa4 (K) and corepressors Pias1 (L) and Daxx (M) (n=6/group). (N) DAXX protein expression by western blot on iWAT from male (up) and female (down) sedentary and trained mice and relative quantification(n=6/group). Data are expressed as mean ± SEM. n.s. indicates not significant difference. \*P < 0.05; \*\*\*P < 0.001 as indicated.

Figure S3- CRISP1 is a protein expressed and secreted by WAT exclusively with exercise training. (A): Full chart for Crisp1 mRNA expression on several tissues from 5 different strains (AJ, C3H, 129, B6, and BL6) obtained by Affymetrix GeneChip Expression Analysis dataset (GSE3594). B and C: Crisp1 mRNA and protein expression on iWAT from male and female after 11 day of cold exposure. (D)Representative images of primary ASCs from iWAT of male (up) and female (down) mice after 6 days of differentiation with or without CRISP1 recombinant protein (10-100ng/ml). (E) Adipoq mRNA expression on primary ASCs from iWAT of male and female mice during the adipogenesis differentiation period (n=3/group). Data are expressed as mean ± SEM. n.s. indicates not significant difference. \*P < 0.05; \*\*\*P < 0.001 as indicated.