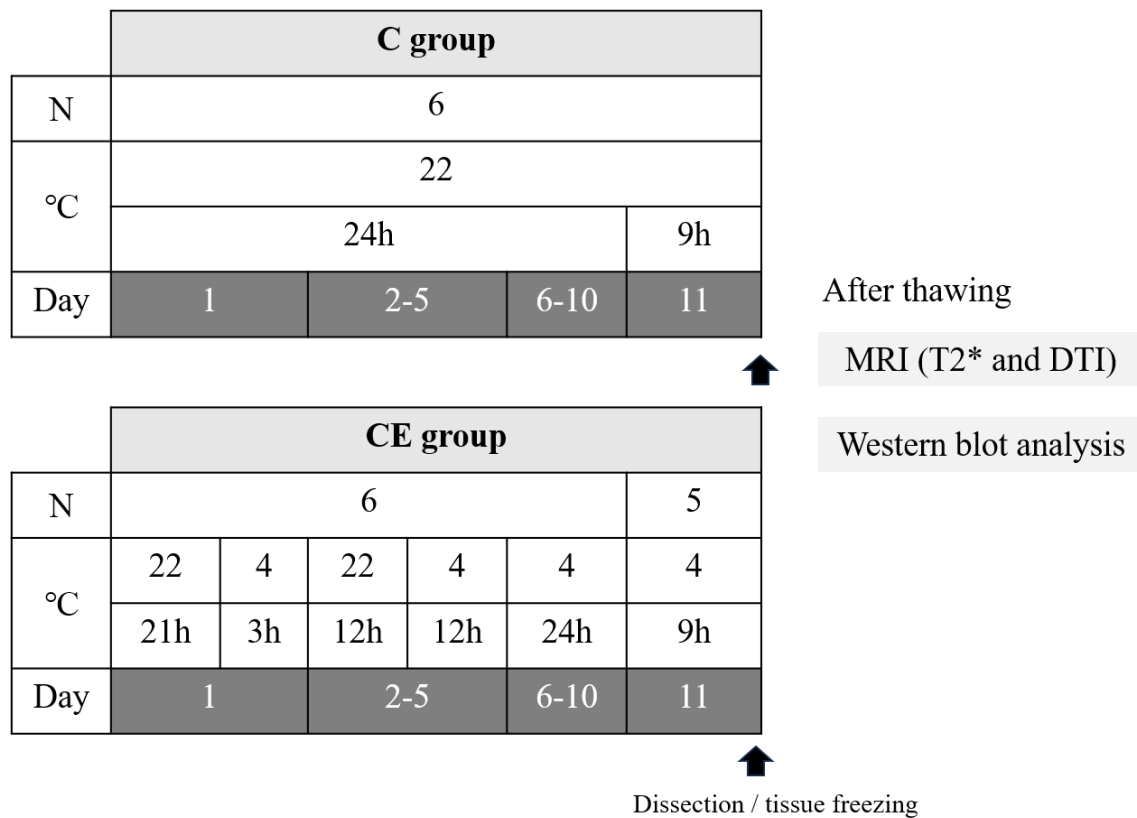
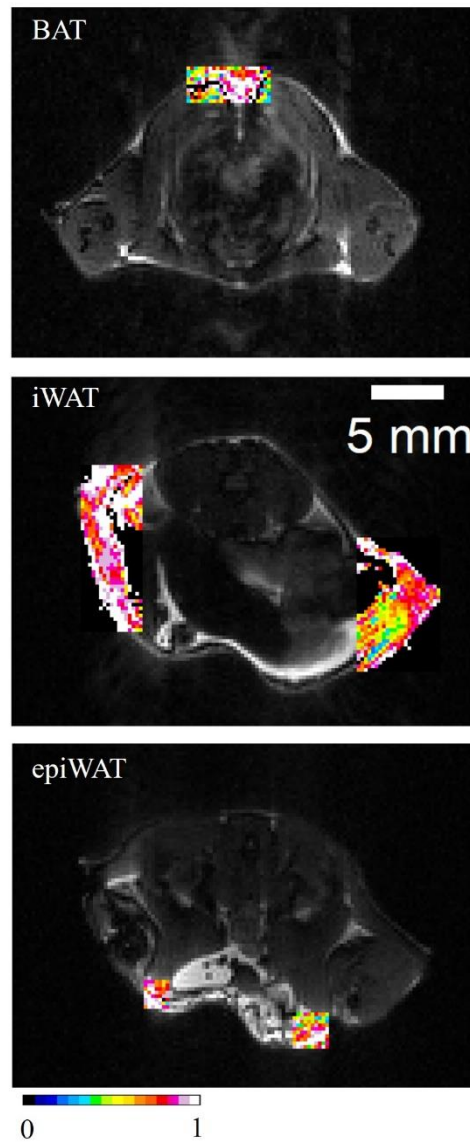
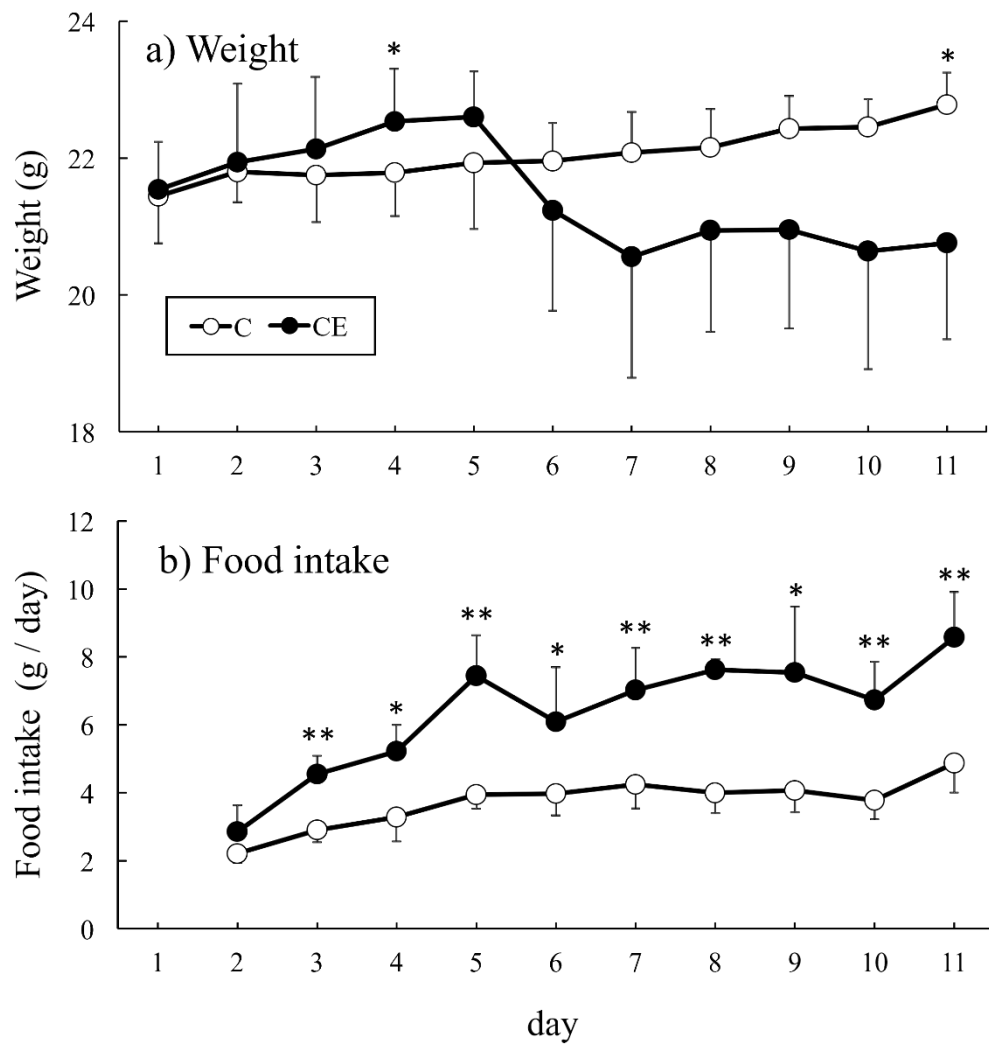




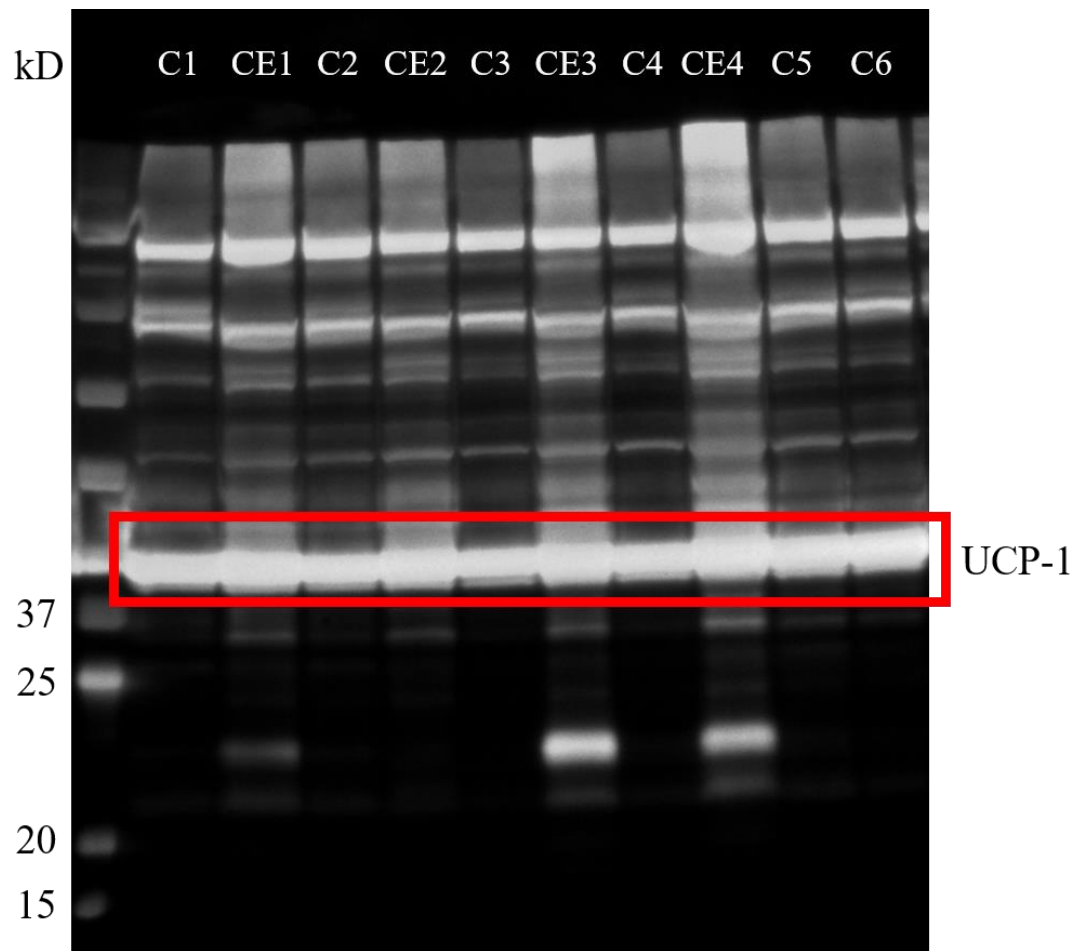
Supplementary Figure 1. Experimental scheme. Six mice served as the cold exposure (CE) group and were exposed to a cold environment at 4°C for 12 h for 5 days, followed by 24 h for another 5 days. One mouse died on day 11, leaving 5 mice in the CE group. Six mice served as the control (C) group and were maintained at 22°C throughout the experiment.



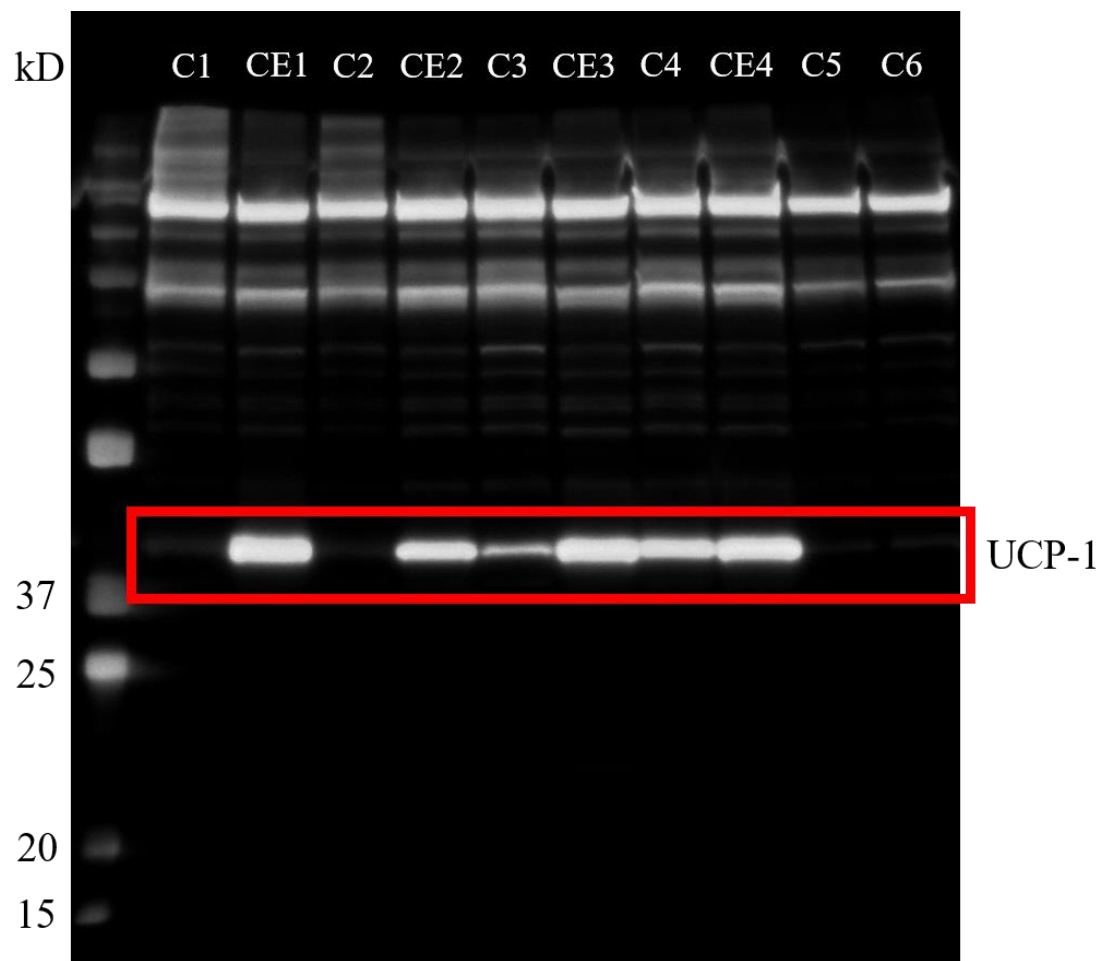
Supplementary Figure 2. Typical tissue regions of brown adipose tissue (BAT), inguinal white adipose tissue (iWAT), and epididymal white adipose tissue (epiWAT) magnetic resonance (MR) images *in vivo*. B0 image overlay fractional anisotropy (FA) map.



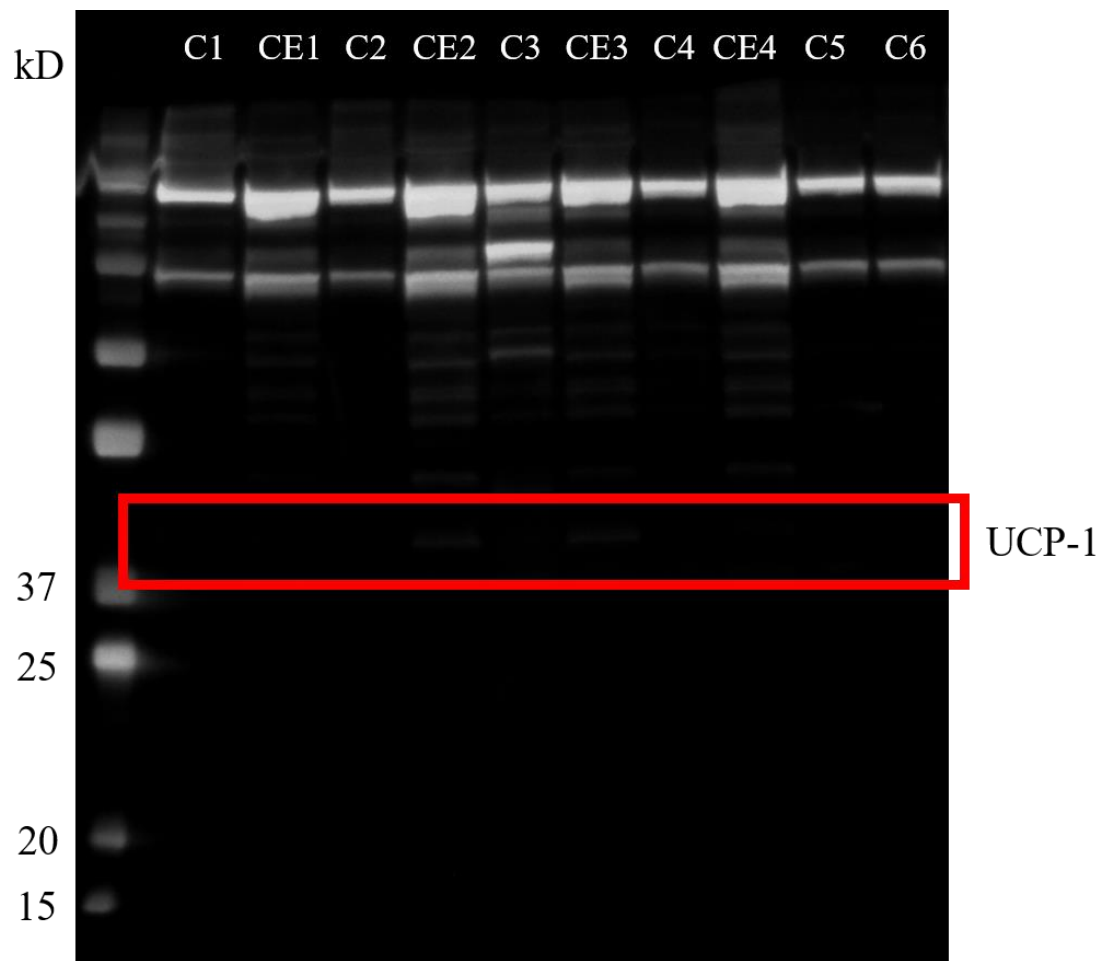
Supplementary Figure 3. (a) Body weight and (b) food intake in the control (C) and cold exposure (CE) groups. The results are presented as means $\pm$ SDs.



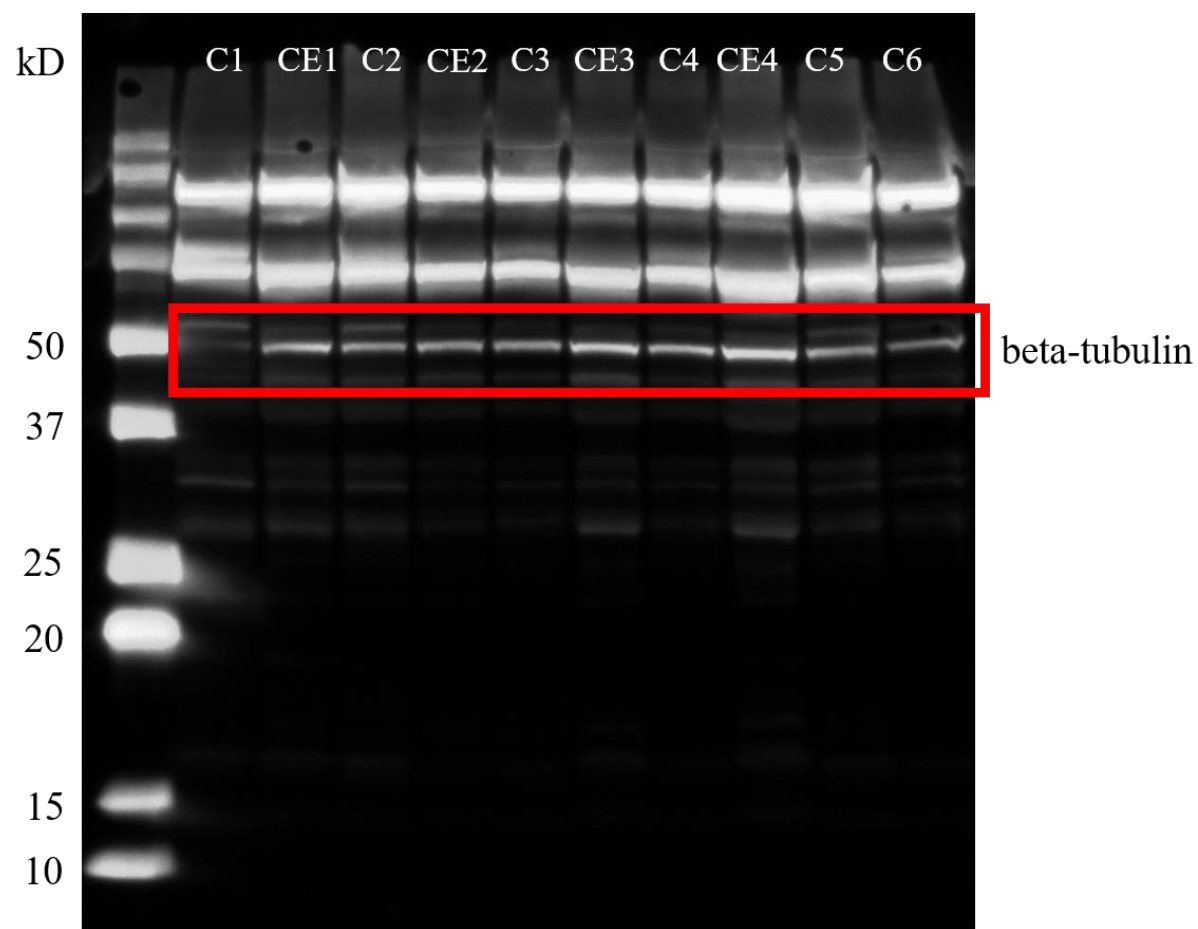
Supplementary Figure 4. The expression of uncoupling protein 1 (UCP-1) in brown adipose tissue in the control (C) and the cold exposure (CE) groups.



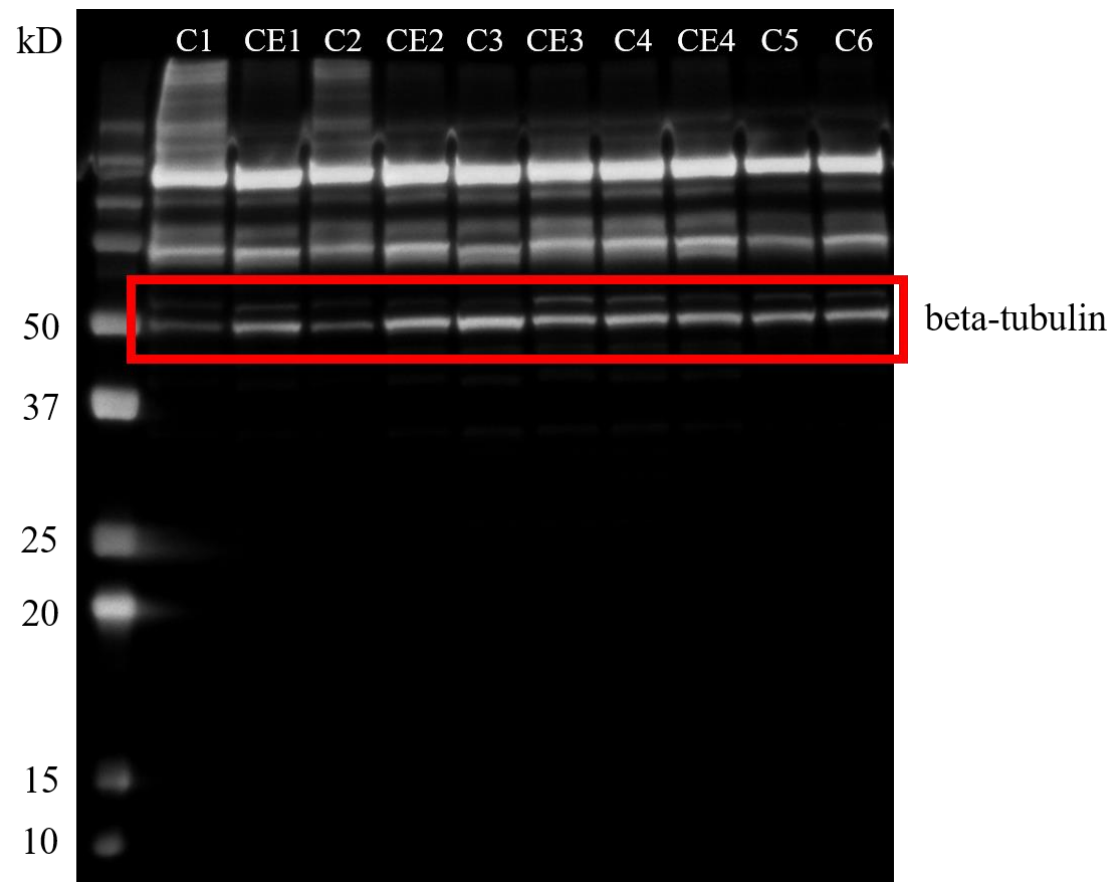
Supplementary Figure 5. The expression of uncoupling protein 1 (UCP-1) in inguinal white adipose tissue in the control (C) and the cold exposure (CE) groups.



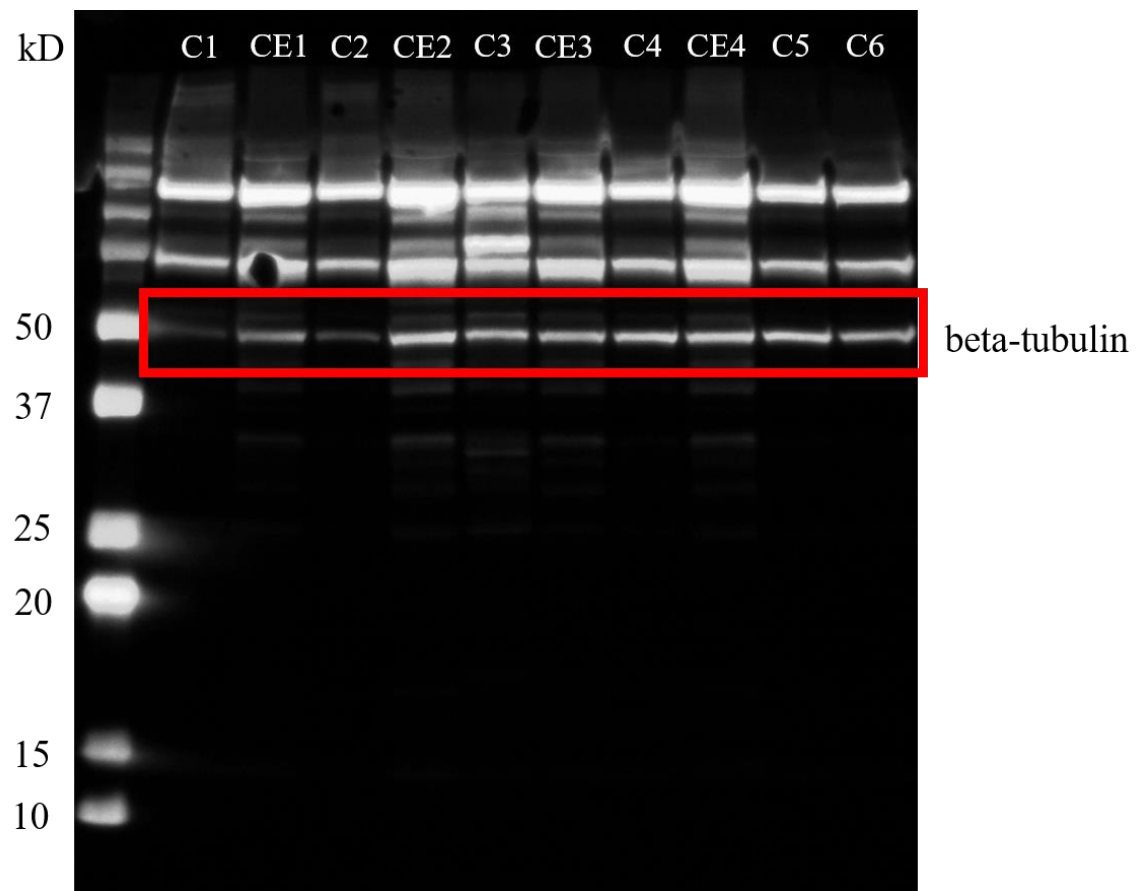
Supplementary Figure 6. The expression of uncoupling protein 1 (UCP-1) in epididymal white adipose tissue in the control (C) and the cold exposure (CE) groups.



Supplementary Figure 7. The expression of beta-tubulin in brown adipose tissue in the control (C) and the cold exposure (CE) groups.



Supplementary Figure 8. The expression of beta-tubulin in inguinal white adipose tissue in the control (C) and the cold exposure (CE) groups.



Supplementary Figure 9. The expression of beta-tubulin in epididymal white adipose tissue in the control (C) and the cold exposure (CE) groups.

Supplementary Table 1. Tissue sample weights in control (C) and cold exposure (CE) groups.

Tissue	C	CE	<i>P</i>
Muscle (g)	0.204 ± 0.007*	0.158 ± 0.027	0.003
BAT (g)	0.065 ± 0.007	0.068 ± 0.013	0.609
iWAT (g)	0.210 ± 0.276*	0.124 ± 0.043	0.003
epiWAT (g)	0.270 ± 0.038*	0.099 ± 0.071	0.001

The results were presented as the mean ± standard deviation (SD). *BAT* brown adipose tissue, *iWAT* inguinal white adipose tissue, *epiWAT* epididymal white adipose tissue

Supplementary Table 2. All the echo times (TE) for T2*.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TE (ms)	1.99	3.80	5.62	7.43	9.25	11.07	12.88	14.70	16.51	18.33	20.15	21.96	23.78	25.60	27.41	29.23	31.04	32.86	34.68	36.49

Supplementary Table 3. T2* values in the control (C) and cold exposure (CE) groups.

	Muscle			BAT			iWAT			epiWAT		
	C	CE	<i>P</i>	C	CE	<i>P</i>	C	CE	<i>P</i>	C	CE	<i>P</i>
T2*	12.1 ± 2.6	13.8 ± 3.2	0.213	6.3 ± 0.4	5.2 ± 0.6	0.011	8.9 ± 2.5	6.6 ± 1.1	0.085	11.0 ± 1.9	8.1 ± 2.0	0.062

The results were presented as the mean ± standard deviation (SD). *BAT* brown adipose tissue, *iWAT* inguinal white adipose tissue, *epiWAT*

epididymal white adipose tissue