Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplementary Table 1. Characteristics of subjects for medical check-up and patients for cancer surveillance.

	Medical Check-up (N=16699)		Cancer Surveillance (N=14389)	
	BAT negative (N=16435)	**BAT positive (N=264)**	**BAT negative (N=14243)**	**BAT positive (N=146)**
Female-no. (%)	5485(33.37)	179(67.80)	5906(40.81)	94(64.38)
Age-years	47.78±9.45	40.00±8.17	55.02±14.12	43.70±13.38
Weight(kg)	68.78±12.51	58.47±10.13	63.10±11.56	58.20±9.10
Outdoor temperature(℃)	18.01±9.81	12.22±10.96	17.36±9.32	12.99±10.19

Note: There were 16 missing values for weight in medical check-up subjects and 17 missing values for weight in cancer surveillance patients.

Supplementary Table 2. Geographic coordinates and average monthly temperature of four locations

	Shanghai	Boston	Sherbrooke	Nottingham
Geographic coordinates	31°12’N	42°21’N	45°24’N	52°58’N

Average temperature(℃)	Annual	16	11	5	9
	Jan	4	-1	-9	2
	Feb	5	-1	-10	3
	Mar	8	3	-3	5
	Apr	15	9	4	7
	May	20	15	11	11
	June	23	20	16	14
	July	28	24	19	16
	August	27	22	17	15
	Sep.	23	19	13	13
	Oct.	18	13	7	9
	Nov.	12	7	/	6
	Dec.	6	1	-6	3

Note:From www.weatherbase.com

Supplementary Figure 1. The evaluation of detectable BAT and fatty liver via 18^{F}-FDG PET/CT.

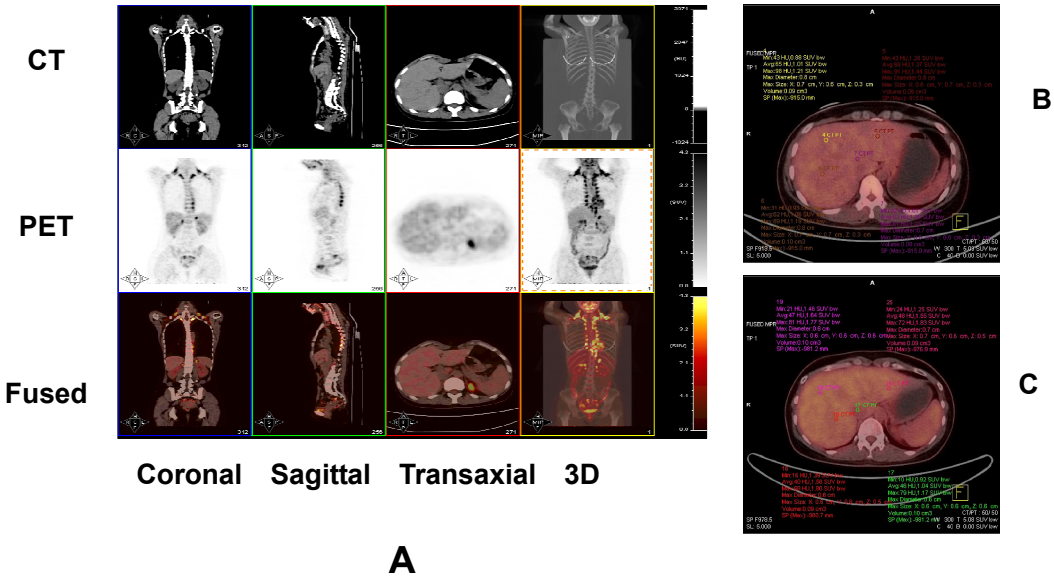
Figure 1A show the coronal, sagittal, transaxial and 3D pictures of CT, PET and fused imaging of a subject with active BAT. The intense yellow regions in the PET/CT images correspond to the cervical, supraclavicular, mediastinal BAT depots. Figure 1B and 1C show transaxial liver images of fused PET/CT. The values were CT attenuation measured as described in Methods. Figure 1B was the image from a subject without fatty liver while Figure 1C from a subject with fatty liver.

Supplementary Figure 2. Correlation between the Prevalence of Active Brown Adipose Tissue and Temperature.

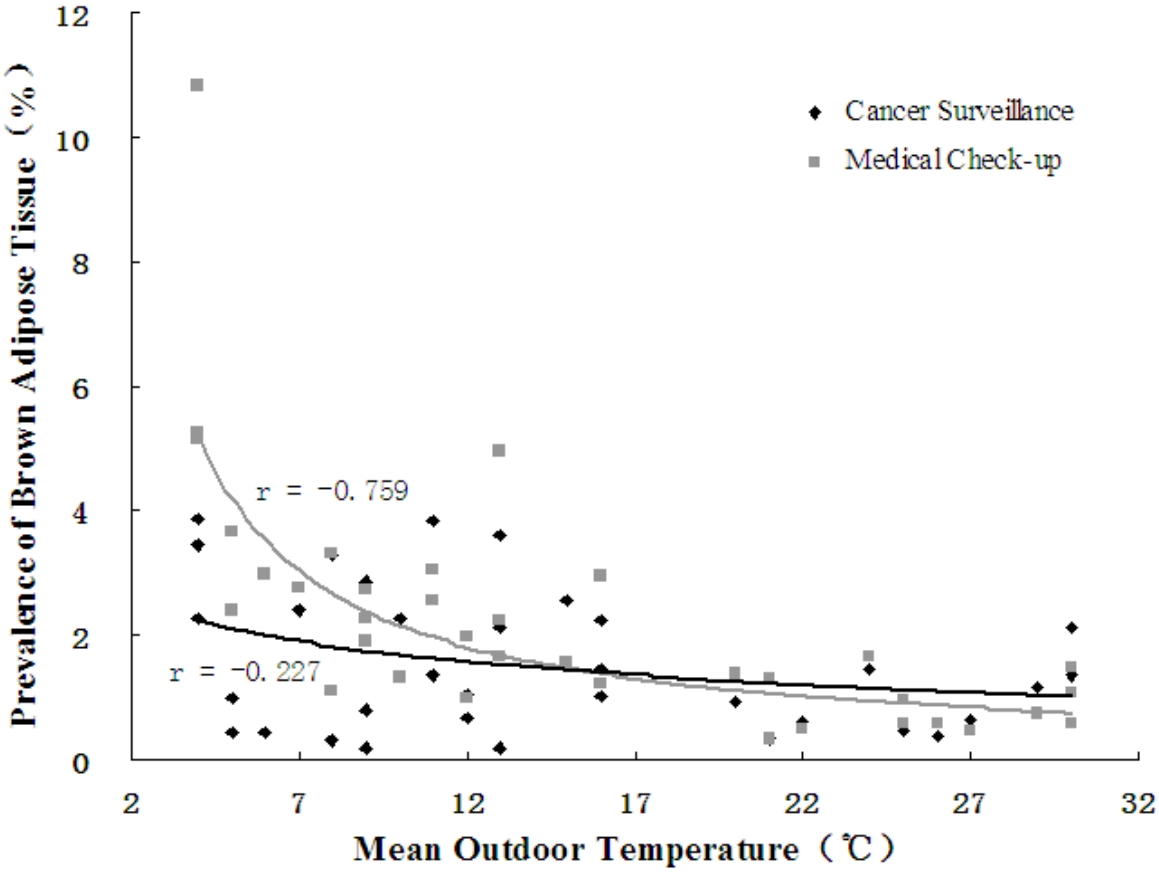
The prevalence of active brown adipose tissue is plotted against the mean monthly outdoor temperature in Shanghai in logistic regression. In both cancer surveillance group (r = -0.227，

P=0.196) and medical check-up group (r = -0.759，P<0.0001), the probability of BAT decreased with increasing outdoor temperature.

Supplementary Figure 1



Supplementary Figure 2


Prevalence of Brown Adipose Tissue（%）
12
10
8
6
4
2
0
2
7
12
17
22
27
32
Mean Outdoor Temperature（℃）
Cancer Surveillance
Medical Check-up
r = −0.759
r = −0.227