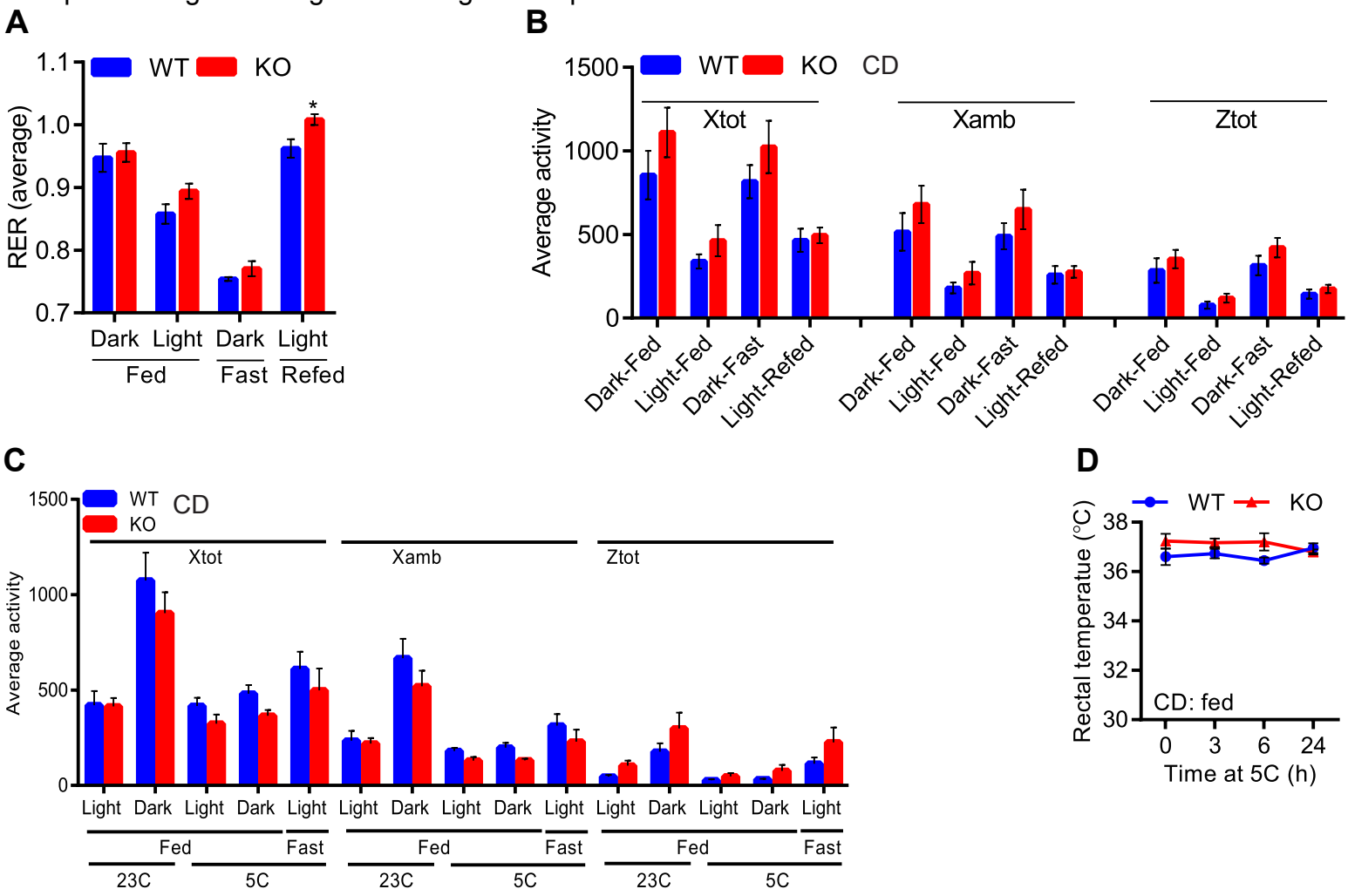
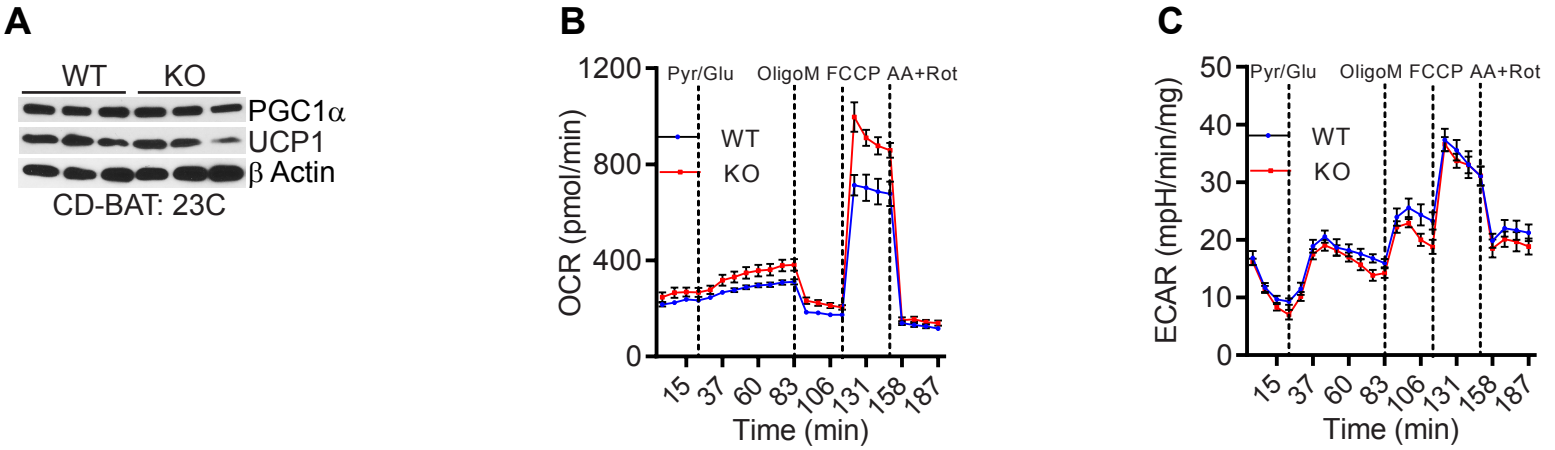
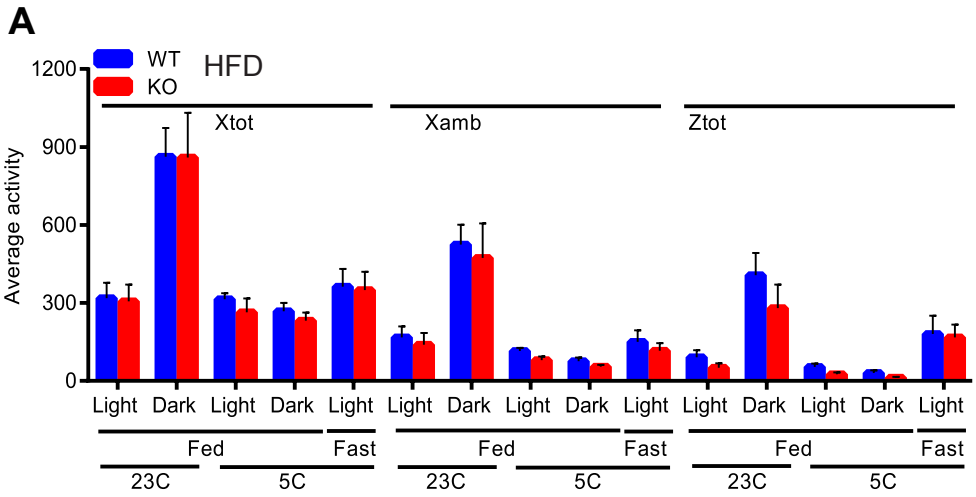
Supplementary Figure 1: CD-fed IP6K1-KO mice display enhanced carbohydrate oxidation mediated EE upon fasting/refeeding or following cold exposure

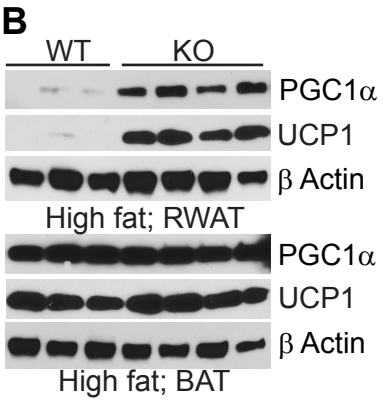


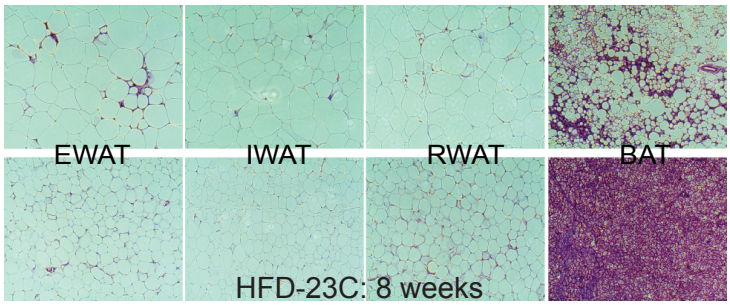
Supplemental Figure 2: Global IP6K1 deletion stimulates adipose tissue browning

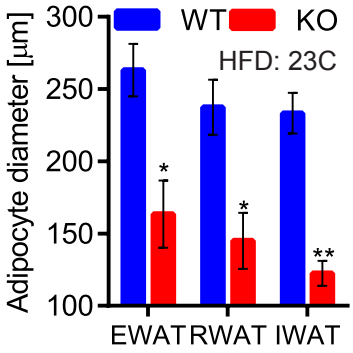


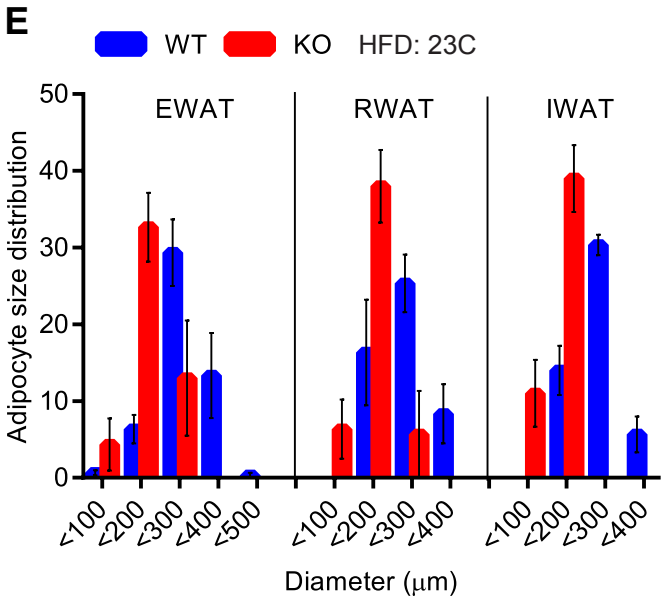
Supplementary Figure 3: HFD-fed IP6K1-KO mice exhibit higher fat oxidation at 23C, albeit switch to carbohydrate oxidation at 5C



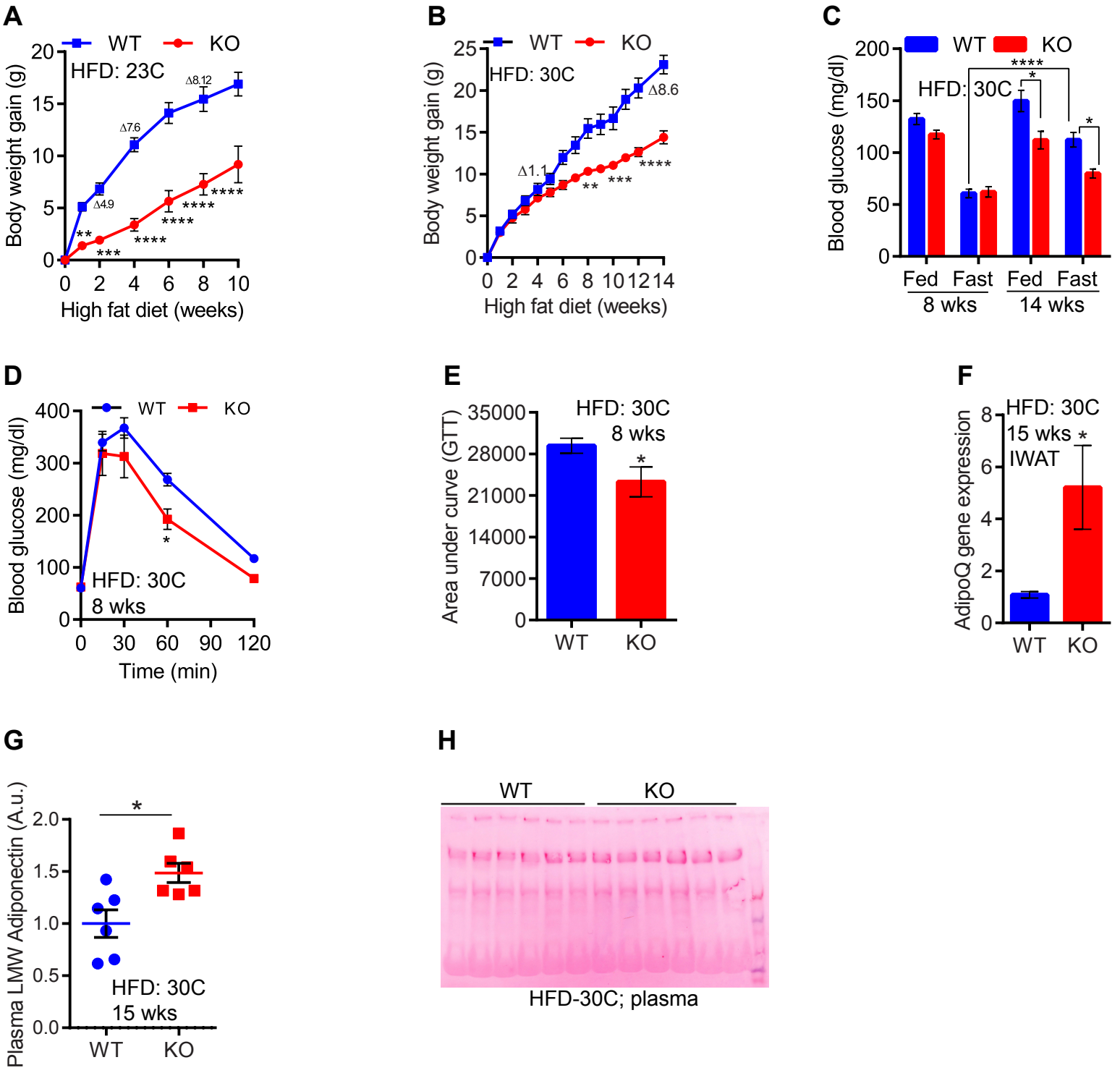




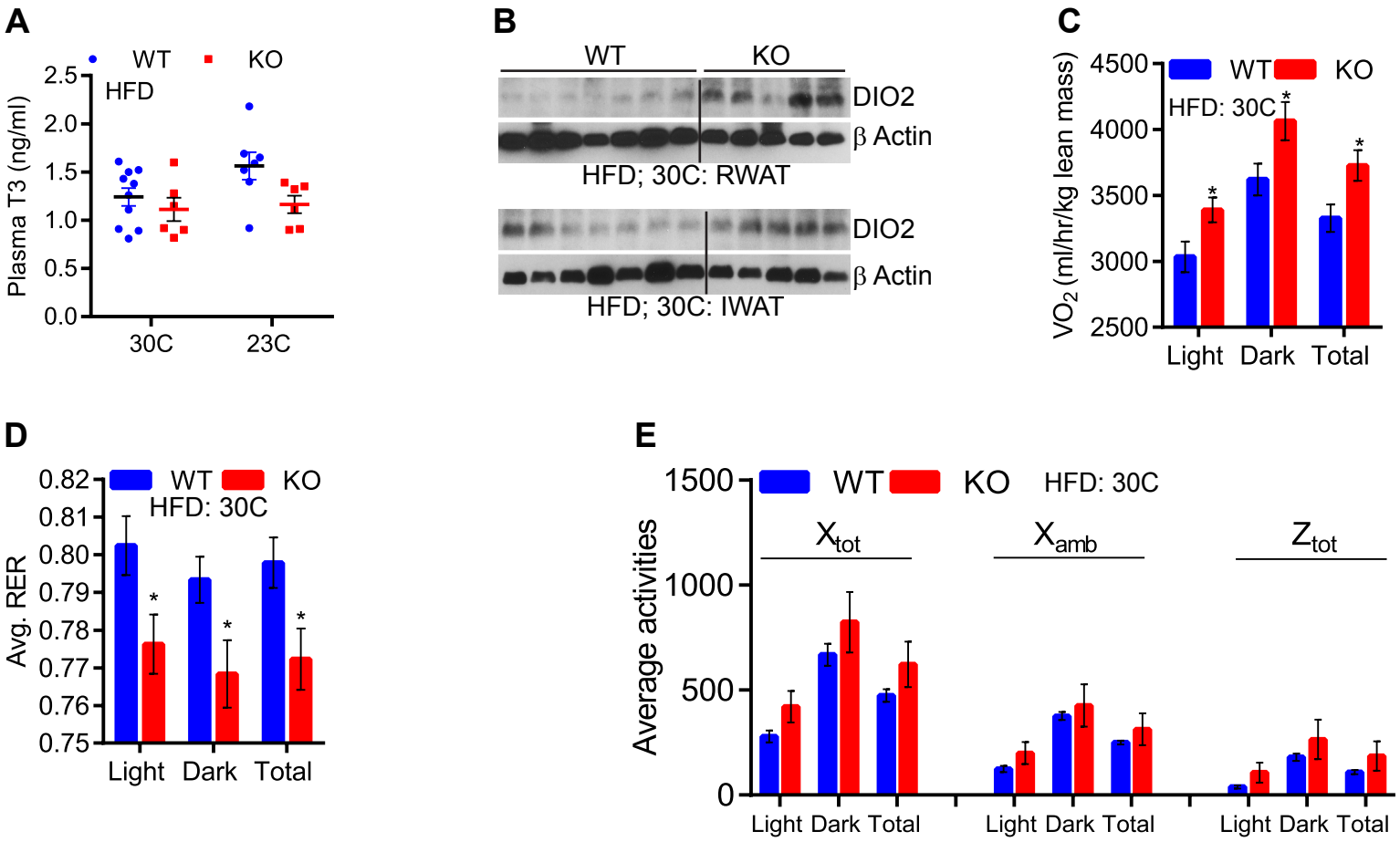




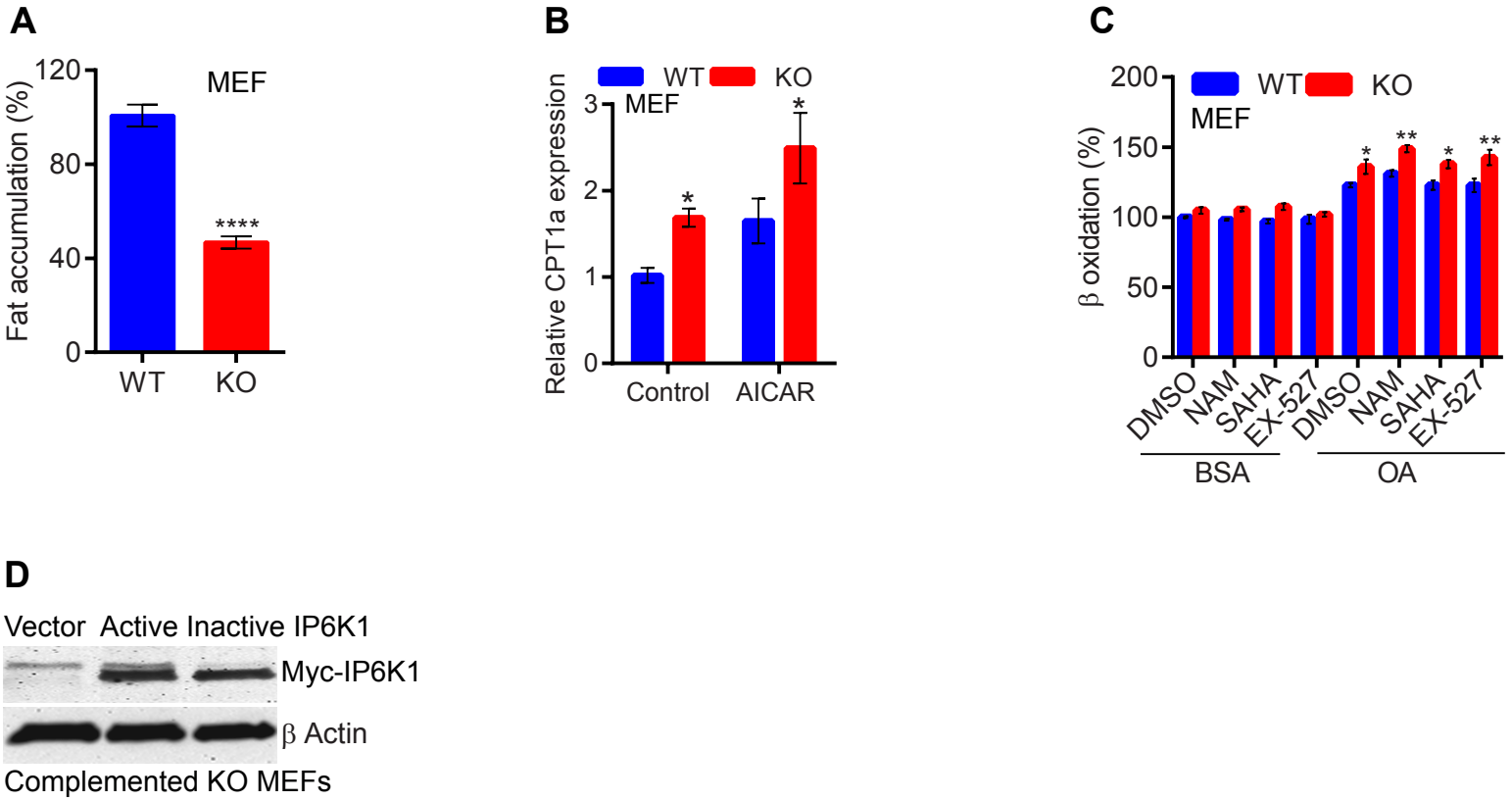
Supplementary Figure 4: Thermoneutrality delays yet, does not abolish the lean phenotype of HFD-fed IP6K1-KO mice



Supplemental Figure 5: HFD-fed IP6K1-KO mice display greater fat oxidation mediated EE at 30C



Supplementary Figure 6: IP6K1 enhances cellular fat accumulation by diminishing AMPK mediated energy metabolism



Supplementary Table 1: Food intake in CD-fed mice, under ad libitum and refeeding conditions

Energy	**Chow group (n)**	
	WT (7)	KO (9)
Daily intake (kcal)	9.16 ± 0.58	7.83 ± 0.33
Daily intake (kcal/g BW)	0.34± 0.02	0.33 ± 0.01
Daily meal size (kcal)	1.11± 0.10	0.95 ± 0.06
Daily meal number	8.64 ± 0.89	8.36 ± 0.39
4h Refed intake (kcal)	4.15± 0.67	4.79 ± 0.11
4h Refed intake (kcal/g BW)	0.15± 0.03	0.21± 0.01 ($p<0.05$)
4h Refed meal size (kcal)	1.93 ± 0.32	2.31 ± 0.11
4h Refed meal number	2.14 ± 0.26	2.11 ± 0.11

Supplementary Table 2: Food intake in mice, at the onset of HFD-feeding

Energy	**HFD Group (n)**	
	WT (9)	KO (7)
Daily intake (kcal)	19.93 ± 2.94	19.70 ± 2.42
Daily intake (kcal/g BW)	0.76 ± 0.12	0.85 ± 0.11
Daily meal size (kcal)	3.76 ± 0.82	4.43 ± 0.92
Daily meal number	6.28 ± 0.67	5.10 ± 0.57