

**Supplementary Table 2:** Expression of genes involved in metabolic regulation in retroperitoneal VAT of WT, Global-ARKO and PC-AR Gene Replacements males fed a high caloric diet at 6 weeks of age for 18 weeks.

Gene	Gene Symbol	Function	WT Chow	ARKO Chow	PC-AR Replacement Chow	WT HCD	ARKO HCD	PC-AR Replacement HCD
CCAAT/enhancer-binding protein alpha	Cebp $\alpha$	Adipogenesis	100 $\pm$ 81 (10)	70 $\pm$ 35 (7)	329 $\pm$ 344* (8)	37 $\pm$ 25 (8)	59 $\pm$ 81 (6)	178 $\pm$ 152 (11)
Acetyl-coenzyme A carboxylase alpha	Acaca	Lipogenesis	100 $\pm$ 41 (10)	76 $\pm$ 40 (7)	189 $\pm$ 151 (9)	73 $\pm$ 51 (8)	49 $\pm$ 16 (6)	105 $\pm$ 104 (11)
Adipose triglyceride lipase 2	Pnpla2	Lipolysis	100 $\pm$ 75 (10)	65 $\pm$ 46 (7)	64 $\pm$ 50 (9)	35 $\pm$ 17 (8)	32 $\pm$ 27 (6)	67 $\pm$ 65 (11)
Peroxisome proliferator-activated receptor alpha	Ppar $\alpha$	Fatty acid metabolism	100 $\pm$ 101 (10)	165 $\pm$ 173 (7)	368 $\pm$ 370 (8)	33 $\pm$ 32 (7)	86 $\pm$ 74 (6)	210 $\pm$ 311 (11)
Stearoyl-coenzyme A desaturase 1	Scd1	Fatty acid metabolism	100 $\pm$ 85 (10)	48 $\pm$ 28 (7)	90 $\pm$ 56 (9)	62 $\pm$ 27 (8)	49 $\pm$ 27 (6)	78 $\pm$ 65 (11)
Leptin	Lep	Energy regulation	100 $\pm$ 112 (10)	53 $\pm$ 41 (7)	32 $\pm$ 29 (9)	181 $\pm$ 168 (8)	225 $\pm$ 100 (6)	205 $\pm$ 205 <sup>#</sup> (11)

mRNA normalized to *Ppia* and expressed relative to WT fed Chow (arbitrary units). Values are mean  $\pm$  SD, n/group shown in parentheses. \* $P$ <0.05 versus ARKO within diet, <sup>#</sup> $P$ <0.05 versus chow within genotype.