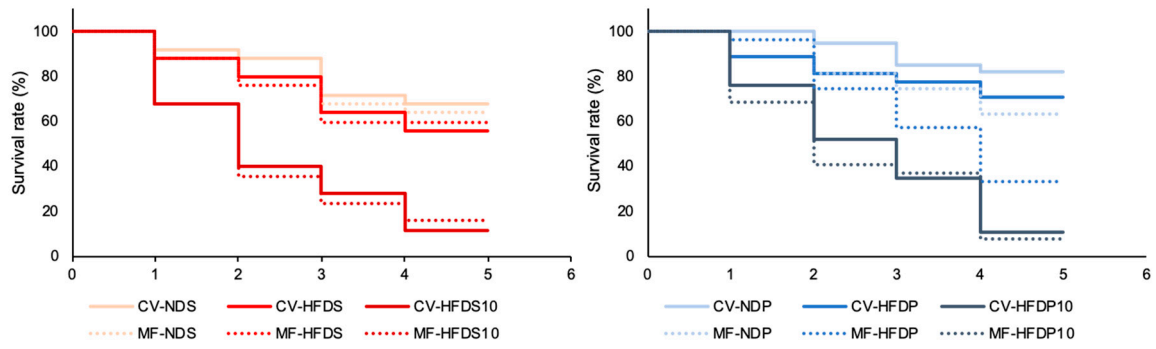


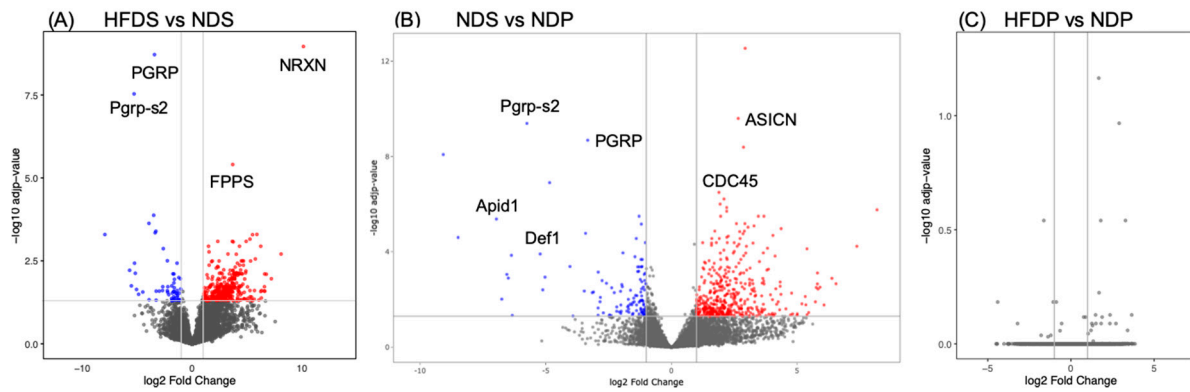
Supplementary Materials: Supplementary Table 1, Supplementary Figure 1 and 2.

Supplementary Table 1. Diet nutrient and energy composition in each diet.

	NDS		NDP		HFDS		HFDP	
	g %	kcal %	g %	kcal %	g %	kcal %	g %	kcal %
Protein	4	4	4	4	4	3	4	3
Carbohydrate	94	92	94	93	88	80	88	80
Fat	2	4	2	4	8	17	8	16
kcal/g	4.1		4.1		4.4		4.4	
Ingredient	g	kcal	g	kcal	g	kcal	g	kcal
Casein	2	8	2	8	2	8	2	8
Sucrose	50	200	50	200	50	200	50	200
Soybean oil	0.918	8.262			4.59	41.31		
Palm oil			0.912	8.208			4.56	41.04
Total	52.918	216.262	52.912	216.208	56.59	249.31	56.56	249.04



Supplementary Figure 1. Survival rates of honey bees in preliminary experiments. Dashed and solid lines correspond to MF and CV bees. Each line represents the average value of bee individuals ($n = 25$) from three cup cages. ND, HFD and HFD10 represent for fed with normal dietary fat (1%), high fat diet (5% fat) and extra high fat diet (10% fat). S and P stands for soybean oil and palm oil. Day 0 is the first day feeding dietary fats to bees.



Supplementary Figure 2. Volcano plots of DEGs between (A) HFDS and NDS, (B) NDS and NDP, (C) HFDP and NDP (from left to right).