

Supplementary Figure 1

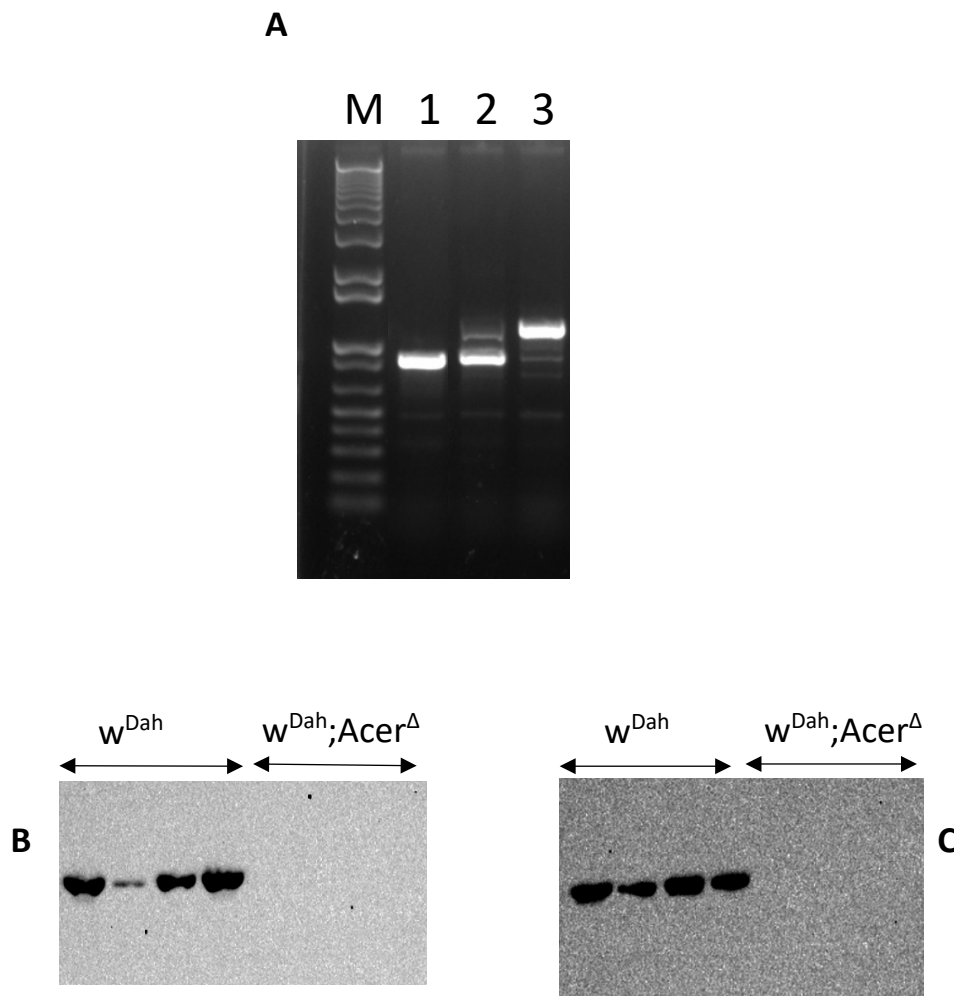


Figure S1: (A) PCR analysis of the *Acer* deletion in the w^{Dah} background. Lane M: marker. Lane 1: The $Acer^{\Delta 168}$ deletion homozygote with a strong band at 850 bp. Lane 2: The $Acer^{\Delta 168}$ deletion heterozygote with a strong band at 850 bp and a weaker band at 1,150 bp. Lane 3: The w^{Dah} control background with a strong band at 1,150 bp. (bp = base pairs). **(B-C)** Western blot analysis of the $Acer^{\Delta 168}$ deletion in the w^{Dah} background showing absence of *Acer* protein in $w^{Dah};Acer^{\Delta}$ males and females. Four independent protein extractions per genotype and sex were performed using 5 flies per sample. **(B)** Females. **(C)** Males.

Supplementary Figure 2

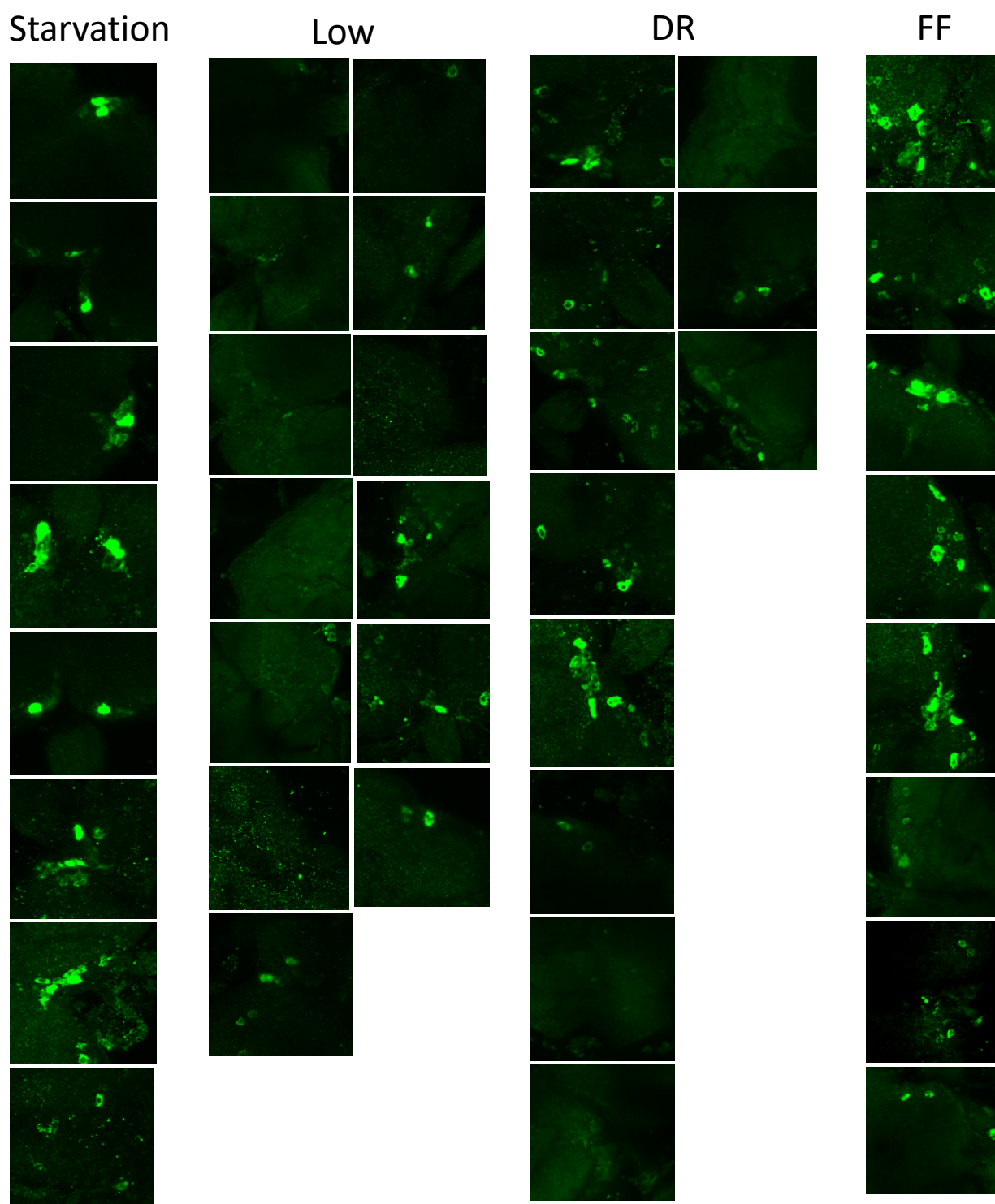


Figure S2. Immunohistochemical analysis of DILP5 protein in *w^{Dah}* 10 day old female brains following 48 h treatment with Starvation, Low, DR and FF diets.

Supplementary Figure 3

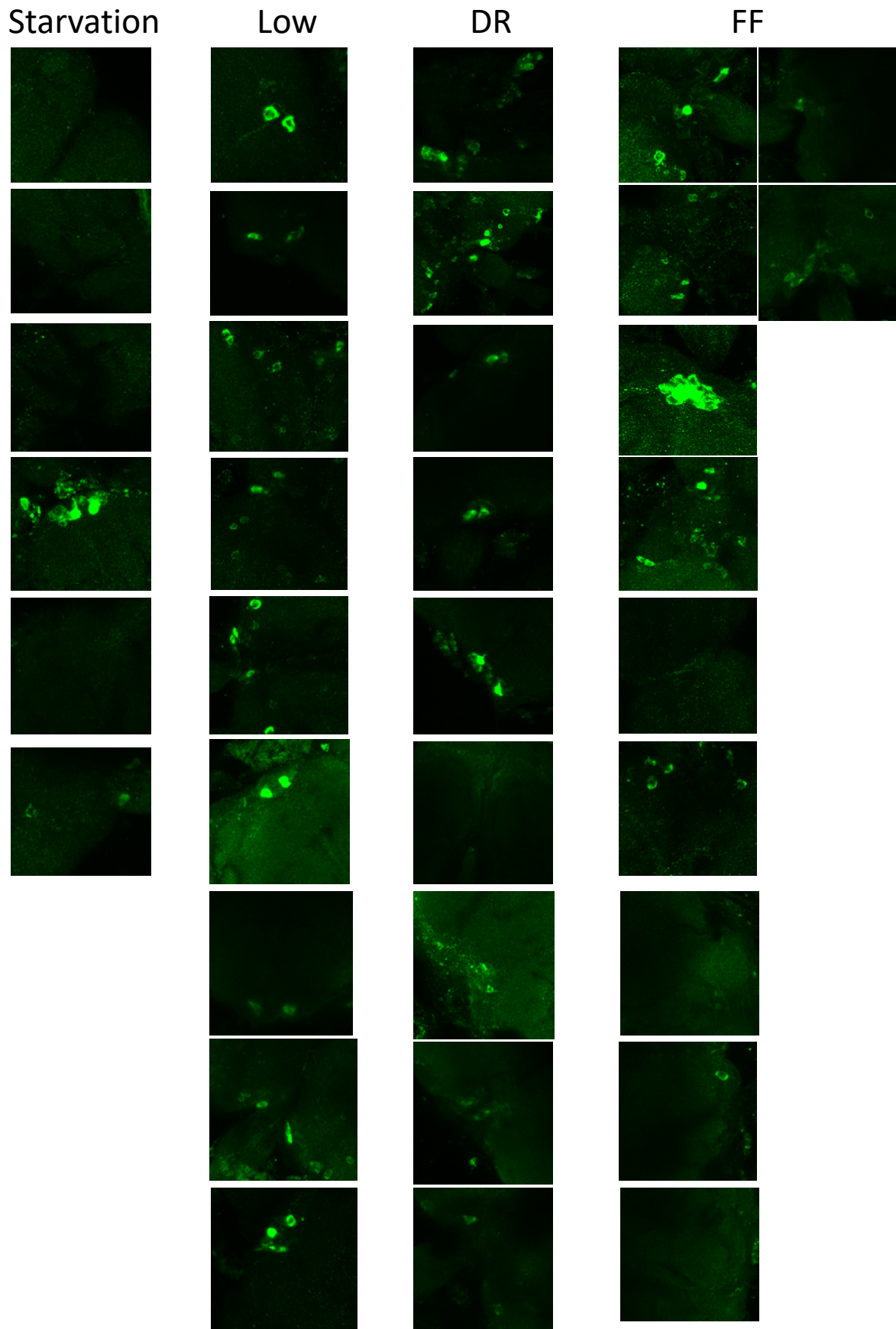


Figure S3. Immunohistochemical analysis of DILP5 protein in *w^{Dah};Acer^Δ* 10 day old female brains following 48 h treatment with Starvation, Low, DR and FF diets.

Table S1: Statistical analysis of female sleep data presented in Figure 1. P values of planned comparisons of means for the effect of diet on sleep parameters in $w^{Dah};Acer^{\Delta}$ and w^{Dah} females, performed using Tukey HSD. Numbers in bold indicate significant differences ($p < 0.05$).

Genotype	Food comparison	Activity/day	Total Sleep/day	Day-time sleep	Night-time sleep	Number of bouts	Bout duration
w^{Dah}	Low-DR	0.3932	0.2001	0.1636	0.4309	0.0102	0.9681
	Low-FF	0.0152	0.0004	0.0003	0.0212	0.2113	0.0019
	DR-FF	0.2641	0.054	0.0497	0.2823	0.3849	0.0039
$w^{Dah};Acer^{\Delta}$	Low-DR	0.9714	0.6333	0.7747	0.9997	0.0053	0.0529
	Low-FF	0.1709	0.0799	0.6831	0.0054	0.8687	0.014
	DR-FF	0.0702	0.3109	0.9793	0.0026	0.0016	<0.0001

Table S2: Statistical analysis of male sleep data presented in Figure 2. P values of planned comparisons of means for the effect of diet on sleep parameters (Number of bouts) in $w^{Dah};Acer^{\Delta}$ and w^{Dah} males, performed using Tukey HSD. Numbers in bold indicate significant differences ($p < 0.05$).

Genotype	Food comparison	Number of bouts
w^{Dah}	Low-DR	0.025
	Low-FF	0.0392
	DR-FF	0.9738
$w^{Dah};Acer^{\Delta}$	Low-DR	0.8802
	Low-FF	0.8953
	DR-FF	0.9991