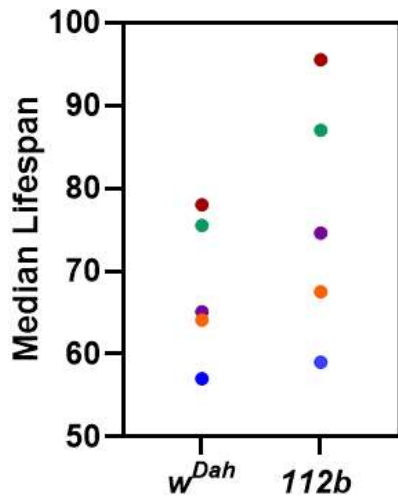


Table S1 - Increased FMRP expression upon loss of DmGluRA activity is required for lifespan extension, related to Figure 6

Genotype	Median Lifespan (days)	n Dead	n Censored	% Increase	p-value (log rank) vs control	Control
<i>w^{Dah}</i>	69	129	4			*
<i>DmGluRA^[112b]</i>	76	137	0	10	2.133E-30	
<i>dFmr1^[392]</i>	71	117	3	3	2.142E-10	
<i>dFmr1^[392]; DmGluRA^[112b]</i>	71	152	2	3	2.708E-08	
Cox Proportional Hazard (CPH) analysis						
Details	Coefficient	Coefficient (estimate)	exp(coeff)	SE (coeff)	z	p
dead = 544	<i>w^{Dah}</i> vs <i>DmGluRA^[112b]</i>	-1.7472	0.1743	0.1408	-12.413	<2E-16
censored = 7	<i>w^{Dah}</i> vs <i>dFmr1^[392]</i>	-0.5648	0.5685	0.1296	-4.357	3.20E-05
Effect of <i>DmGluRA^[112b]</i>	<i>w^{Dah}</i> vs <i>dFmr1^[392]; DmGluRA^[112b]</i>	1.6802	5.3699	0.1855	9.057	<2E-16
mutation analysed using a priori contrasts.						

A

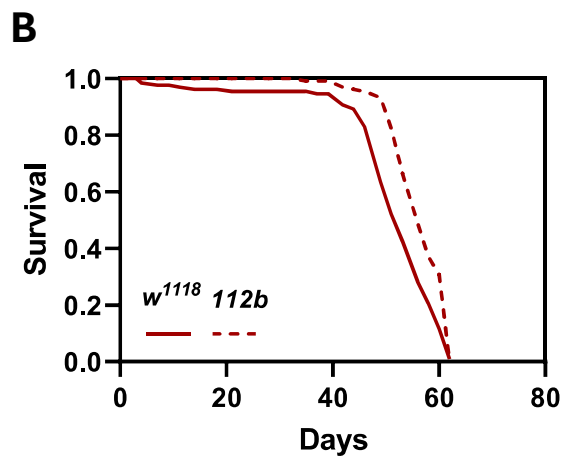
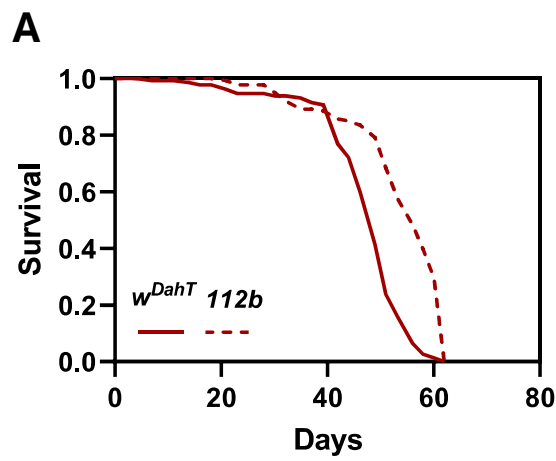


B

Experiment/Genotype	Median Lifespan (Days)	n Dead	n censored	% increase	p-value (log rank) vs control	Control
Experiment 1						
<i>wDah</i>	75.5	136	6	15	4.64727E-23	*
<i>112b</i>	87	117	19			
Experiment 2						
<i>wDah</i>	78	133	11	22	4.67583E-33	*
<i>112b</i>	95.5	151	7			
Experiment 3						
<i>wDah</i>	64.1	124	8	12	2.69596E-05	*
<i>112b</i>	71.6	110	12			
Experiment 4						
<i>wDah</i>	57	111	28	4	0.003455884	*
<i>112b</i>	59	117	27			
Experiment 5						
<i>wDah</i>	65.1	138	8	4	0.001247704	*
<i>112b</i>	67.5	146	6			

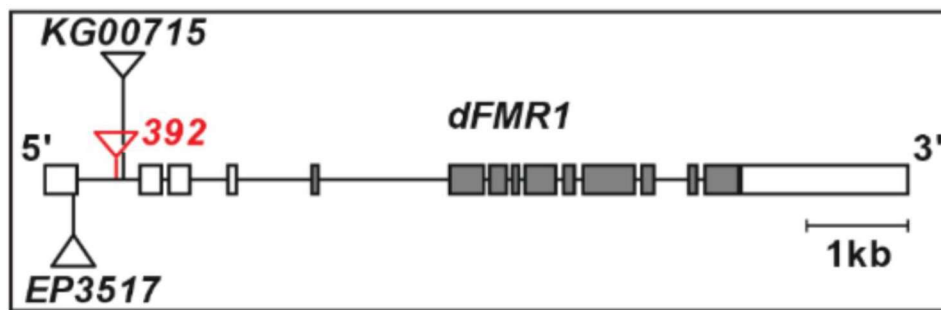
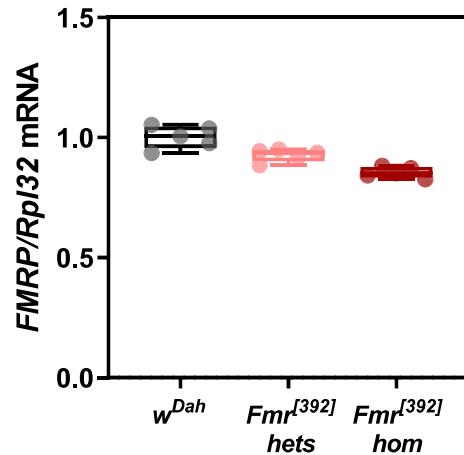
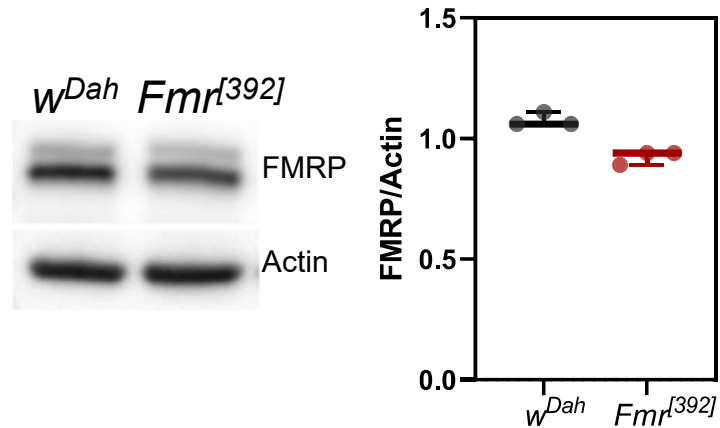
Supplementary Figure S1. Survival data for repeat independent experiments comparing *DmGluRA*^[112b] homozygous females to *w^{Dah}* controls.

(A) Median survival for *w^{Dah}* and *DmGluRA*^[112b] females across 5 independently replicated experiments. Colours indicate individual experiments. (B) Numbers of individuals (deaths and censors) and Log-rank *p*-values for the experimental data displayed in (A).



Supplementary Figure S2. Mutation of *DmGluRA* extends female lifespan irrespective of *Wolbachia* status or genetic background.

(A) Survival of female *DmGluRA*^[112b] homozygous mutant flies after backcrossing into the *Wolbachia*-deficient *w*^{*DahT*} genetic background. (*w*^{*DahT*} controls: n = 116 dead/ 22 censored; *DmGluRA*^[112b] homozygous mutants: n = 127 dead/ 15 censored; $p = 2.5 \times 10^{-16}$, Log-rank test). (B) Survival of female *DmGluRA*^[112b] homozygous mutant flies after backcrossing into the *w*¹¹¹⁸ genetic background. (*w*¹¹¹⁸ controls: n = 123 dead/ 12 censored; *DmGluRA*^[112b] homozygous mutants: n = 125 dead/ 15 censored; $p = 1.6 \times 10^{-6}$, Log-rank test).

A**B****C**

Supplementary Figure S3. Reduced *dFmr1* transcript and protein expression in *dFmr1³⁹²* mutants.

(A) Schematic of the *Drosophila dFmr1* locus showing the position of the *dFmr1³⁹²* p-element insertion. Black boxes represent exons and shaded boxes indicate the *dFmr1* coding sequence. (B) Quantitative RT-PCR analysis of *dFmr1* mRNA relative to *rpl32* in 10-day old female flies of the indicated genotypes (hets represent heterozygous and hom represents homozygous *dFmr1³⁹²* mutants). (n = 5 replicates of 15 female flies, p<0.05, ANOVA). (C) Representative Western blot showing FMRP protein expression in head extracts of 10-day old *dFmr1³⁹²* homozygote females compared to *w^{Dah}* controls. Box plots represent the relative expression of FMRP normalised to actin from three replicate Western blots (scaled to batch average). Data were analysed with a mixed effects linear model with sample batch as a random effect. The effect of genotype was significant (n=3, p< 0.05).