

Table S1: The four diets used in the experiment.

	Maintenance	DR	C	HS
Water (ml)	1066	1000	1000	1000
Agar (g)	6.25	10	10	10
Dextrose (g)	86.26	-	-	-
Sucrose (g)	-	50	50	342
Molarity	-	0.15	0.15	1
Yeast (g)	21.6	100	200	200
Cornmeal (g)	40.8	-	-	-
Tegosept (g)	1.8	2.7	2.7	2.7
Ethanol (ml)	7.3	11	11	11

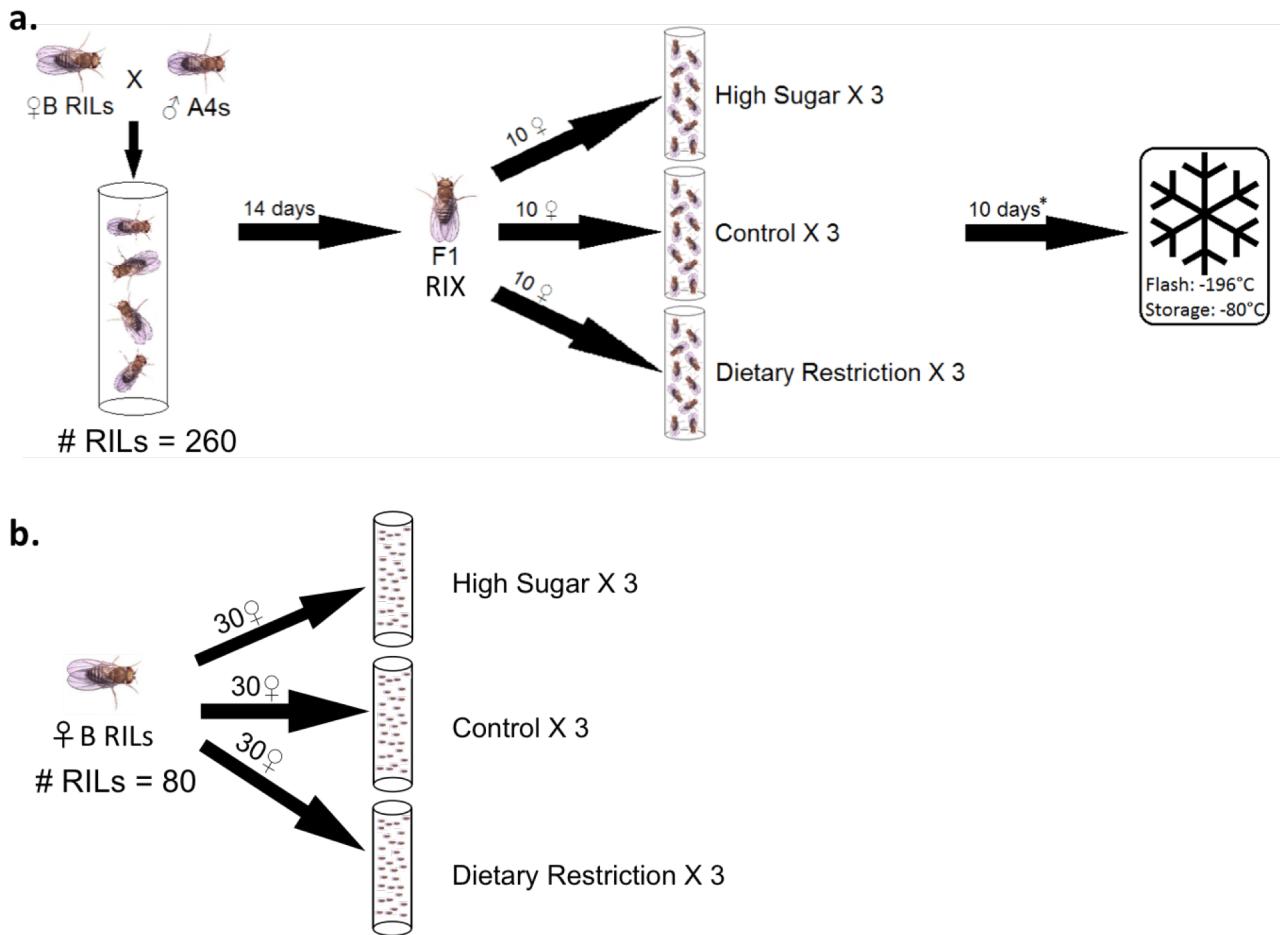


Figure S1: **a.** Schematic of our experimental design for assaying gene expression. We crossed pB RIL females with A4 males to create an F1 generation (RIX). Ten F1 females were placed in each replicate vial and subsequently pooled for a total of 30 flies per cross per treatment. **b.** Schematic of our experimental design for assaying lifespan. We reared three replicate vials each with 30 female flies from the inbred pB RILs on each of three diets.

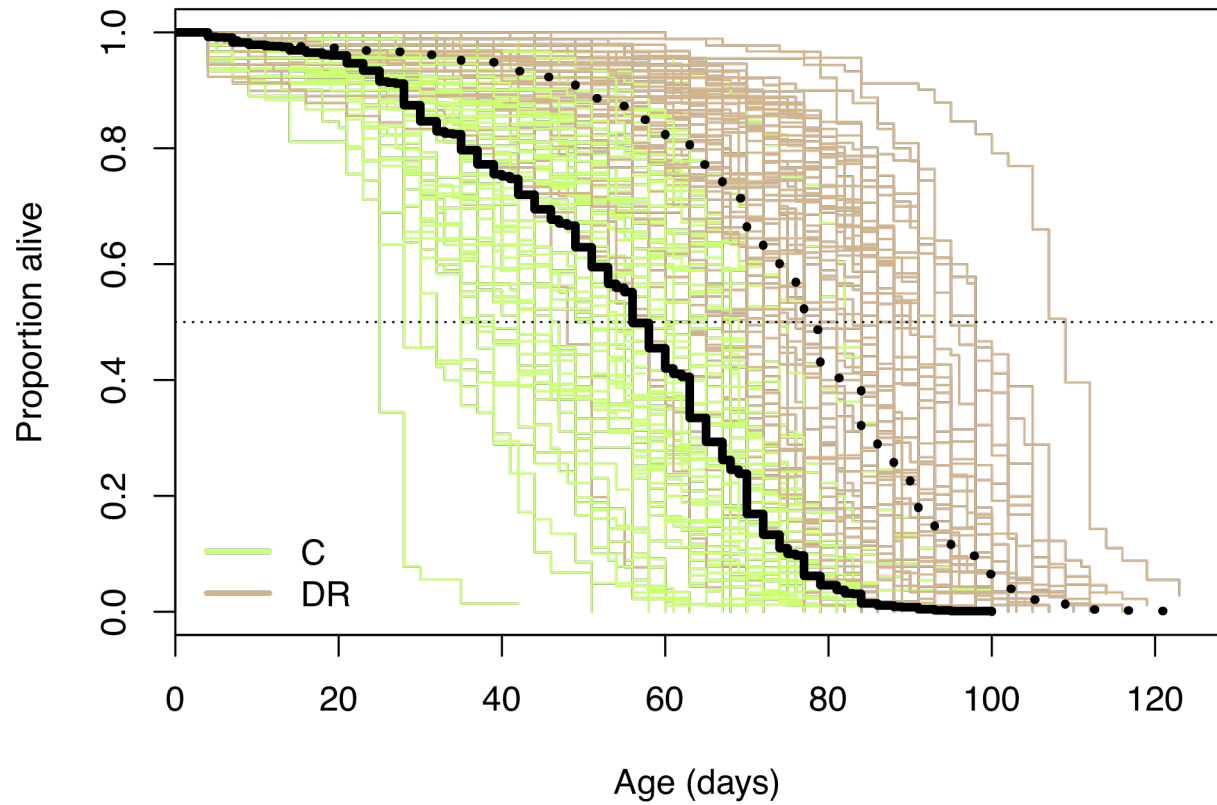


Figure S2: Survivorship curves for each RIL in each diet. Different colors denote different diets.

The solid black line is survivorship for the C diet over all RILs and the dotted black line is survivorship for the DR diet over all RILs.

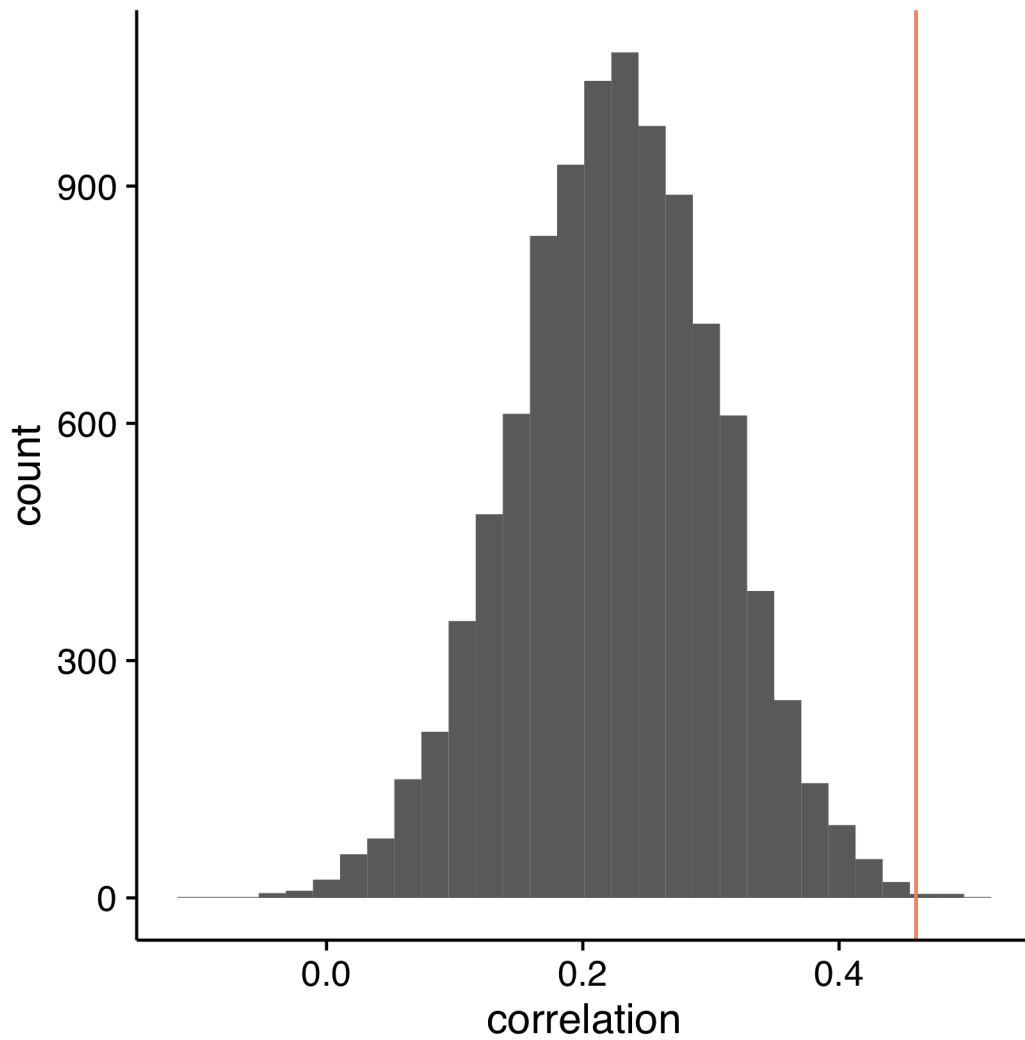


Figure S3: Histogram of correlations between median lifespan and the score on a linear discriminant following permuting gene expression measures. The observed correlation is noted with a vertical orange line.