

SUPPLEMENTAL FIGURES AND TABLES

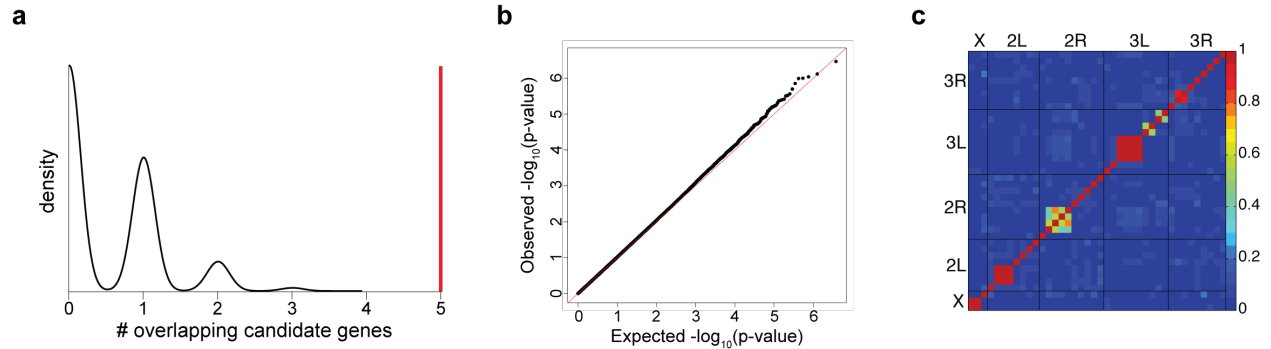


Figure S1. a) Bootstrap distribution ($n = 1000$) of the number of overlapping genes between our candidate genes and a random set of candidate genes (black kernel density estimate) vs. the observed number of overlapping genes (red line) between our candidate genes and 552 candidate genes previously associated with fecundity (Durham *et al.* 2014). For each bootstrap sample, a random set of 552 candidate genes was chosen without replacement from a list of genes associated with DGRP variants (annotation based on FlyBase release 5.57). **b)** QQ plot comparing observed and expected p -values, with the red line showing a 1:1 relationship. **c)** Linkage disequilibrium heat map for all the variants identified ($p < 1E-4$).

Table S1. Heritability estimates for the means of the four phenotypes. HPD = highest posterior density.

Phenotype	Heritability Estimate	95% HPD Interval
Mean ♀ Weight	0.64	0.55 - 0.72
Mean ♂ Weight	0.73	0.65 - 0.80
Number of ♀	0.47	0.37 - 0.57
Number of ♂	0.48	0.39 - 0.58

Table S2. Variants significantly associated with offspring number and mass ($p < 1E-5$).
Chromosome coordinates represented in dm5 assembly coordinates. MAF = minor allele frequency, Del = deletion, Ins = insertion, and numbers in parentheses represent the number of basepairs to the closest gene.

Phenotype	Chr	Pos	MAF	Effect	p-value	Gene	Class
Number of Females	2R	10148146	0.14	7.62	7.0E-07	<i>β4GalNAcTA</i>	3' UTR
	3L	18174169	0.49	-5.42	8.7E-07	<i>hid</i>	Intron
	2R	10186017	0.13	7.43	1.9E-06	<i>lh</i>	3' UTR
	3R	14116444	0.34	-5.38	4.1E-06	<i>l(3)05822</i>	Synonymous
	2L	3581756	0.06	-9.98	2.9E-06	<i>sob</i>	Upstream (987bp)
	2R	10191983	0.06	10.46	3.2E-06	—	—
	2L	14965948	0.18	-6.49	5.3E-06	<i>CG42313</i>	Intron
	X	643776	0.13	7.08	3.6E-06	<i>CG13362</i>	3' UTR
	2R	10148180	0.17	6.40	4.1E-06	<i>β4GalNAcTA</i>	3' UTR
	2R	10146515	0.14	6.85	5.4E-06	<i>β4GalNAcTA</i>	Upstream (22bp)
	X	641893	0.13	6.98	4.9E-06	<i>sdk</i>	3' UTR
	2R	10185376	0.07	9.29	4.6E-06	<i>lh</i>	Intron
	X	641442	0.15	6.66	5.3E-06	<i>sdk</i>	Non-synonymous
	X	631854	0.10	7.87	7.5E-06	<i>sdk</i>	Intron
	3R	14116456	0.34	-5.15	1.1E-05	<i>l(3)05822</i>	Synonymous
	3R	14149420	0.46	4.78	8.9E-06	<i>CG31235</i>	Intron
	X	642549	0.13	6.92	9.3E-06	<i>sdk</i>	3' UTR
	3L	21865887	0.11	7.27	1.1E-05	<i>mub</i>	Intron
	X	16619471	0.33	-4.94	1.2E-05	<i>CG32572</i>	Intron
	3L	10113202	0.16	6.34	9.4E-06	<i>dpr6</i>	Del (Intron - 5bp)
	3L	12486916	0.30	5.43	4.4E-06	<i>CG10657</i>	Intron
	3L	7345189	0.25	-5.31	1.3E-05	<i>qm</i>	Synonymous

	2L	16599284	0.14	-6.72	1.3E-05	CG42389	Intron
	3L	4016311	0.15	6.43	9.9E-06	—	—
Number of Males	3L	7345189	0.25	-5.90	4.4E-07	<i>qm</i>	Synonymous
	3L	18174169	0.50	-5.27	5.8E-07	<i>hid</i>	Intron
	2R	8813359	0.29	-5.62	8.8E-07	<i>sug</i>	Intron
	3R	6693370	0.06	-10.05	1.2E-06	<i>SeIR</i>	Intron
	2R	10148146	0.14	7.03	2.3E-06	<i>β4GalNAcTA</i>	3' UTR
	3L	6947531	0.15	-6.71	2.5E-06	CG10077	Synonymous
	X	2325264	0.39	-4.84	4.3E-06	—	—
	2L	14965948	0.18	-6.21	5.2E-06	CG42313	Intron
	2R	18403072	0.15	-6.84	5.6E-06	<i>px</i>	Ins (Intron - 1bp)
	3L	4675361	0.25	-5.40	5.9E-06	<i>axo</i>	Intron
	3L	4675401	0.26	-5.35	6.1E-06	<i>axo</i>	Synonymous
	X	11099804	0.05	-10.59	6.2E-06	—	—
	3R	14149420	0.46	4.72	6.6E-06	CG31235	Intron
	2L	6232135	0.06	-9.86	7.3E-06	—	—
	3R	18523958	0.06	9.32	7.7E-06	<i>Cyp6d4</i>	Upstream (83bp)
	2L	6232116	0.06	-9.84	7.7E-06	—	—
	X	2325239	0.38	-4.68	9.9E-06	—	—
	3R	6809568	0.05	-10.31	1.1E-05	CG34114	Intron
Female Mass	3L	14106797	0.45	-0.03	3.1E-07	<i>Sox21b</i>	Del (Intron - 12bp)
	2L	14413190	0.05	-0.08	3.2E-07	—	—
	2L	14413193	0.06	-0.08	3.8E-07	—	—
	2L	14413263	0.05	-0.08	6.3E-07	—	—
	3R	7783311	0.05	-0.08	1.1E-06	<i>Hsp70Ab</i>	Upstream (946bp)
	2L	3420660	0.32	-0.04	1.3E-06	<i>pgant2</i>	Intron
	3L	10798301	0.42	-0.04	1.6E-06	—	—

3L	10798304	0.41	-0.04	1.9E-06	—	—
2R	8519796	0.16	-0.05	2.2E-06	<i>muskelin</i>	Upstream (10bp)
2R	20700416	0.27	0.04	2.3E-06	—	—
3L	10798314	0.41	-0.04	2.4E-06	—	—
X	7894692	0.26	-0.04	2.7E-06	<i>Tbh</i>	Intron
2L	10356660	0.10	-0.06	4.3E-06	<i>CG5367</i>	Upstream (63bp)
2R	19783544	0.39	-0.04	4.4E-06	<i>CG17658</i>	Synonymous
2R	18428402	0.05	-0.08	4.6E-06	<i>px</i>	Synonymous
3R	10285026	0.05	-0.08	4.7E-06	<i>cv-c</i>	Intron
2L	7803209	0.32	-0.04	5.6E-06	<i>cdc14</i>	Intron
2L	16431797	0.13	-0.05	6.1E-06	<i>CG5888</i>	Intron
2L	6615656	0.06	-0.07	6.3E-06	<i>CG11050</i>	Intron
2R	20700303	0.25	0.04	6.4E-06	—	Del (7bp)
3L	5507205	0.05	-0.08	6.4E-06	<i>Lkr</i>	Intron
3L	14106868	0.44	-0.03	6.6E-06	<i>Sox21b</i>	Intron
2R	13551054	0.30	-0.04	6.7E-06	—	—
3L	10798335	0.41	-0.04	6.8E-06	—	—
3L	21865641	0.08	-0.06	6.9E-06	<i>mub</i>	Intron
2L	10578180	0.08	-0.06	6.9E-06	<i>Trim9</i>	Intron
2R	16280567	0.35	-0.03	7.0E-06	—	—
3L	16206075	0.16	-0.05	7.4E-06	<i>CG13073</i>	Downstream (76bp)
3L	17541363	0.05	-0.07	7.7E-06	<i>Jon74E</i>	Synonymous
3R	1838453	0.07	0.07	7.8E-06	<i>CG10280</i>	Upstream (799bp)
3L	16206105	0.16	-0.05	8.0E-06	<i>CG13073</i>	Downstream (46bp)
2R	19814320	0.13	-0.05	8.0E-06	<i>CG2812</i>	3' UTR
2R	14546992	0.23	-0.04	8.2E-06	<i>CG42306</i>	3' UTR
3L	9215863	0.46	-0.03	8.3E-06	—	—

	3L	16206101	0.17	-0.04	8.5E-06	<i>CG13073</i>	Downstream (50bp)
	2R	14224958	0.07	-0.06	9.4E-06	<i>sbb</i>	Intron
	2R	13551239	0.12	-0.05	1.0E-05	—	—
	2R	16359945	0.12	-0.05	1.0E-05	<i>CG12484</i>	Intron
	3L	16206102	0.17	-0.04	1.0E-05	<i>CG13073</i>	Downstream (49bp)
	2R	20700409	0.29	0.04	1.2E-05	—	—
	3R	20156538	0.05	-0.07	1.5E-05	<i>CG5728</i>	Non-synonymous
	3L	7242967	0.39	-0.03	1.5E-05	<i>MED4</i>	Non-synonymous
	3L	10798320	0.40	-0.03	1.5E-05	—	—
	2R	20393373	0.07	-0.06	1.5E-05	—	—
	3L	7089314	0.09	-0.06	2.6E-05	<i>form3</i>	Intron
Male Mass	2R	7295988	0.13	-0.04	2.8E-07	<i>CG30026</i>	Downstream (93bp)
	2L	10356660	0.10	-0.04	5.5E-07	<i>CG5367</i>	Upstream (63bp)
	2R	17096829	0.08	-0.04	6.0E-07	<i>CG44245</i>	Intron
	3R	19368973	0.12	-0.04	6.1E-07	—	—
	2R	8519796	0.16	-0.04	6.1E-07	<i>muskelin</i>	Upstream (10bp)
	3L	10798314	0.41	-0.03	7.0E-07	—	—
	3L	10798301	0.42	-0.02	7.1E-07	—	—
	2L	21060741	0.16	-0.03	7.2E-07	<i>CG9265</i>	Intron
	2R	10631750	0.15	-0.03	7.7E-07	<i>CG12858</i>	Intron
	2R	17090919	0.18	-0.03	7.8E-07	<i>CG44245</i>	Intron
	2R	17090932	0.18	-0.03	8.2E-07	<i>CG44245</i>	Intron
	2R	17090956	0.18	-0.03	8.2E-07	<i>CG44245</i>	Intron
	3R	5437737	0.09	-0.04	9.8E-07	<i>CG8312</i>	Ins (Intron - 24bp)
	3L	10798304	0.41	-0.02	9.9E-07	—	—
	2R	10632503	0.06	-0.05	1.1E-06	<i>CG12858</i>	Intron
	3L	20829836	0.15	-0.03	1.2E-06	<i>CG3288</i>	Synonymous

2R	17096825	0.09	-0.04	1.2E-06	CG44245	Intron
2R	10623262	0.06	-0.05	1.6E-06	—	Del (3bp)
3L	21865641	0.08	-0.04	1.6E-06	<i>mub</i>	Intron
2R	10631745	0.15	-0.03	2.0E-06	CG12858	Intron
3L	12849627	0.12	-0.04	2.4E-06	<i>Ent3</i>	3' UTR
3R	10285026	0.05	-0.05	2.4E-06	<i>cv-c</i>	Intron
3R	5440058	0.10	-0.04	2.5E-06	CG8312	Intron
3L	10798335	0.41	-0.02	2.6E-06	—	—
X	1553823	0.36	-0.02	2.7E-06	<i>br</i>	3' UTR
3L	17541363	0.05	-0.05	2.9E-06	<i>Jon74E</i>	Synonymous
X	1553824	0.36	-0.02	3.0E-06	<i>br</i>	Ins (3'UTR - 10bp)
X	1553847	0.28	-0.03	3.3E-06	<i>br</i>	3' UTR
2R	10631908	0.06	-0.05	3.6E-06	CG12858	Intron
2L	14413193	0.06	-0.05	3.7E-06	—	—
2R	17096454	0.11	-0.04	3.8E-06	CG44245	Intron
2R	17096460	0.11	-0.04	3.8E-06	CG44245	Intron
2R	17270322	0.08	-0.04	4.0E-06	CG10795	DOWNSTREAM
3R	11212396	0.07	-0.05	4.0E-06	<i>Rbp</i>	Intron
2L	9486665	0.24	-0.03	5.1E-06	—	—
2R	16280567	0.35	-0.02	5.2E-06	—	—
3R	5437883	0.09	-0.04	5.3E-06	CG8312	Intron
3L	10798320	0.40	-0.02	5.5E-06	—	—
2L	3420660	0.32	-0.03	5.8E-06	<i>pgant2</i>	Intron
2L	14413263	0.05	-0.05	5.9E-06	—	—
3L	14594907	0.05	-0.05	6.1E-06	—	—
2L	14413190	0.05	-0.05	6.1E-06	—	—
3L	1461884	0.07	-0.04	6.2E-06	<i>Ptp61F</i>	Intron

2R	19814320	0.13	-0.03	6.9E-06	CG2812	3' UTR
3L	7632772	0.09	-0.04	7.0E-06	snoRNA:Me18S-A1806	Upstream (45bp)
3R	5434239	0.06	-0.05	7.1E-06	CG8312	Del (Intron - 8bp)
2L	8006148	0.15	-0.03	7.7E-06	Spn28Dc	Intron
3R	10117707	0.06	-0.04	8.0E-06	CG12207	Intron
X	10026296	0.17	-0.03	8.8E-06	CG34104	Intron
X	8922745	0.07	-0.04	9.5E-06	CR43836	Intron
3L	14544608	0.12	-0.03	1.1E-05	CG9238	Upstream (533bp)
3L	7872997	0.11	-0.04	1.3E-05	CG32365	Intron
2L	15106388	0.10	-0.04	1.4E-05	—	—
2R	123566	0.05	-0.05	1.6E-05	IntS3	Synonymous
X	20395619	0.48	-0.02	1.6E-05	Tak1	Del (5'UTR - 4bp)
3L	4527187	0.05	-0.05	1.7E-05	Tie	Intron
3L	7632715	0.10	-0.04	2.0E-05	CG33275	Downstream (42bp)
3R	5436185	0.12	-0.03	6.1E-05	CG8312	Intron

Table S3. Variance proportion explained by each principal component and their loadings.

	PC1	PC2	PC3	PC4
St. dev	1.69	0.97	0.39	0.28
Variance prop.	0.71	0.23	0.037	0.020
Number of ♀	-0.51	0.50	-0.19	0.68
Number of ♂	-0.51	0.48	0.21	-0.68
Mean ♀ Weight	0.50	0.49	0.69	0.19
Mean ♂ Weight	0.49	0.52	-0.67	-0.21