

**The genetic architecture of coordinately evolving male wing pigmentation and courtship behavior in *Drosophila elegans* and *D. gunungcola***

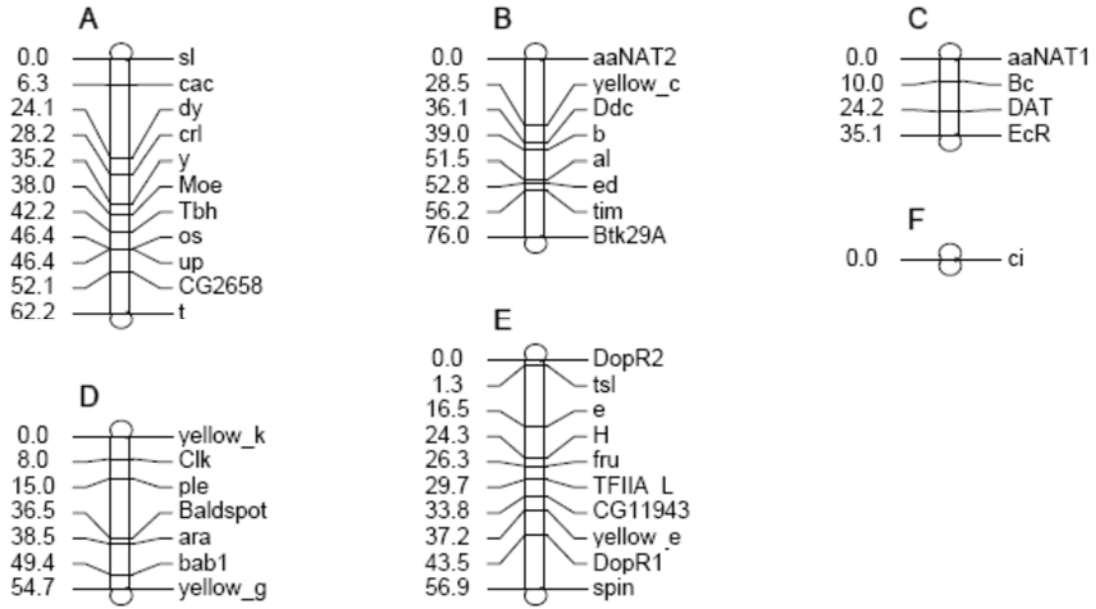
Shu-Dan Yeh and John R. True

Department of Ecology and Evolution, Stony Brook University, Stony Brook, NY 11794-5245, USA

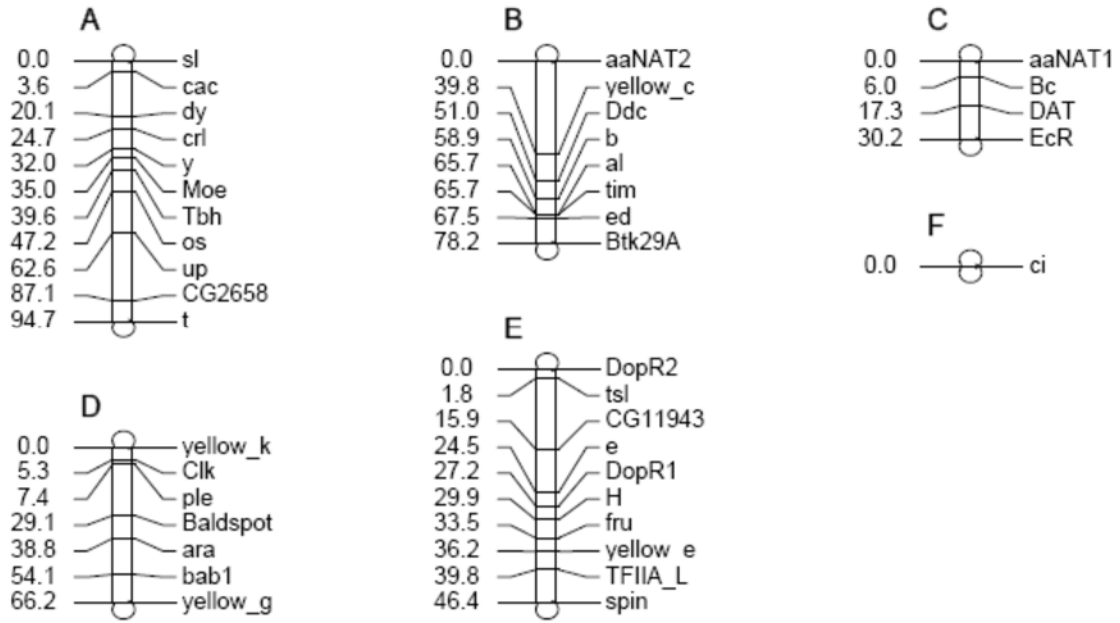
Corresponding Author: John R. True Department of Ecology and Evolution, Stony Brook University, Stony Brook, NY 11794-5245, USA

e-mail: jrtrue@life.bio.sunysb.edu, phone: 631-379-7266

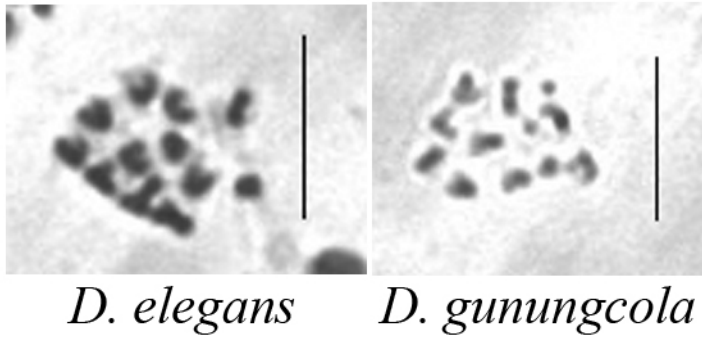
**DOI: 10.1534/g3.114.013037**



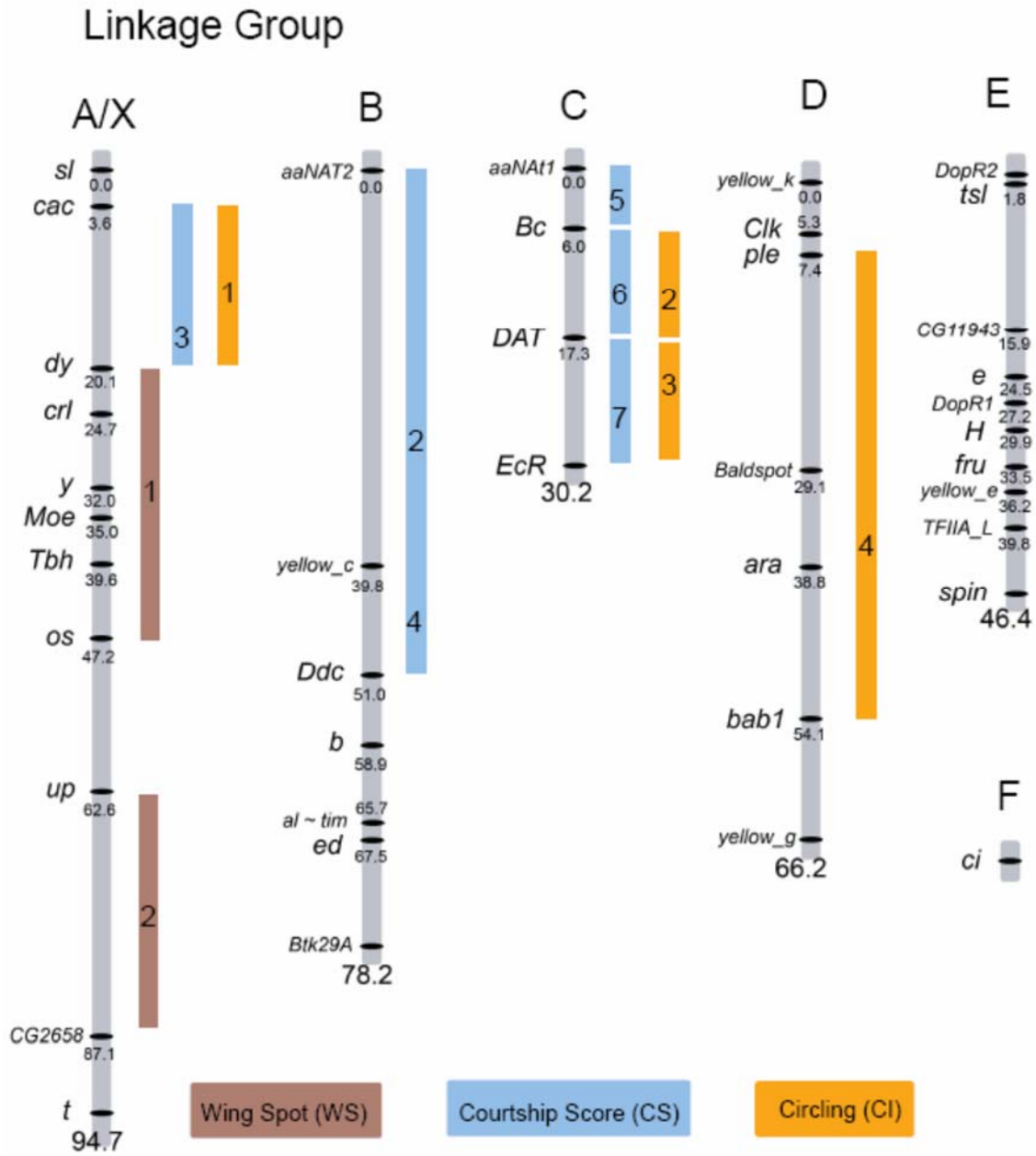
**Figure S1** The genetic linkage map obtained from the *e/e* backcross data set. Designations A through E correspond to Muller's elements.



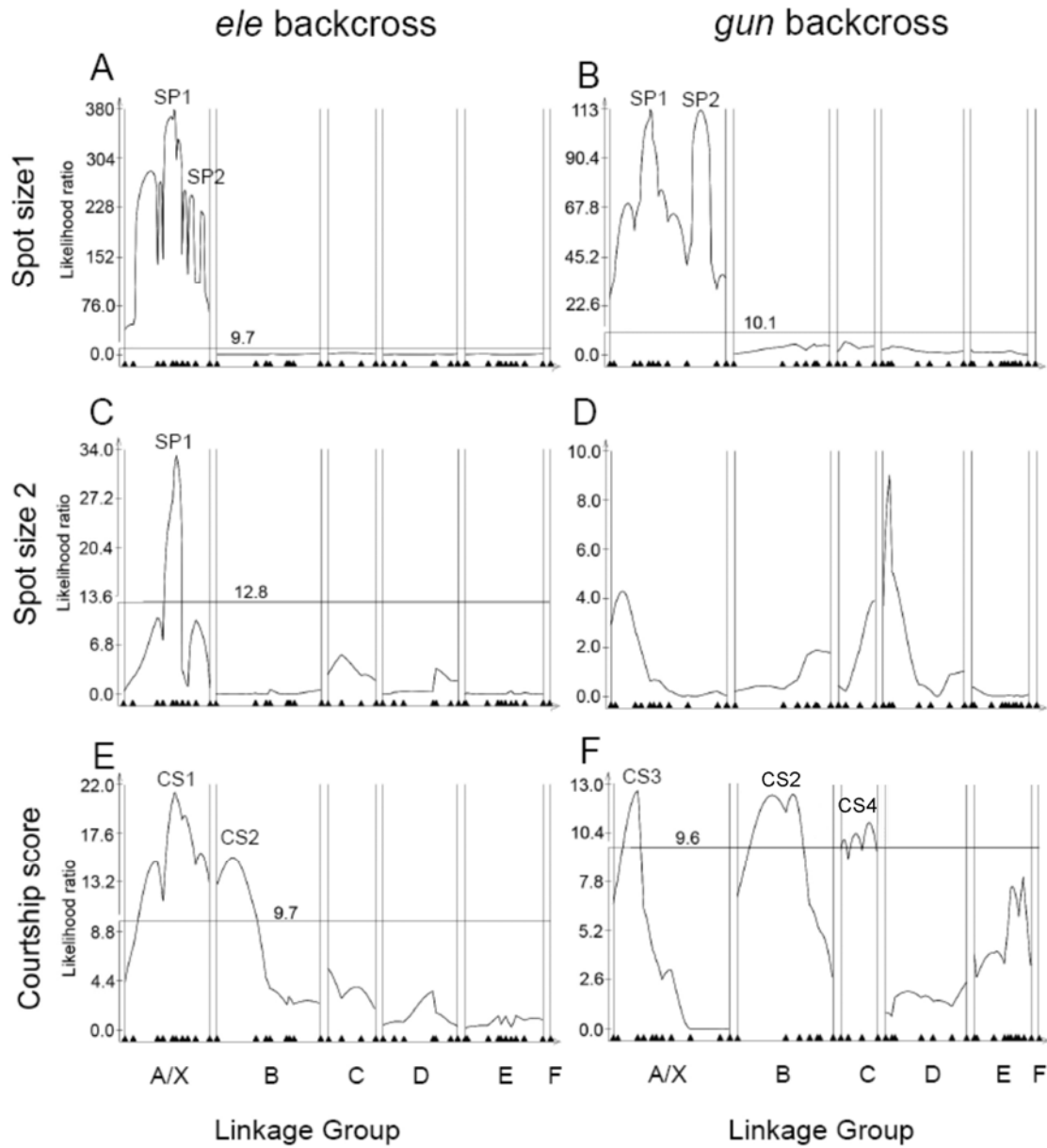
**Figure S2** The genetic linkage map obtained from the *gun* backcross set. Designations A through E correspond to Muller's elements.



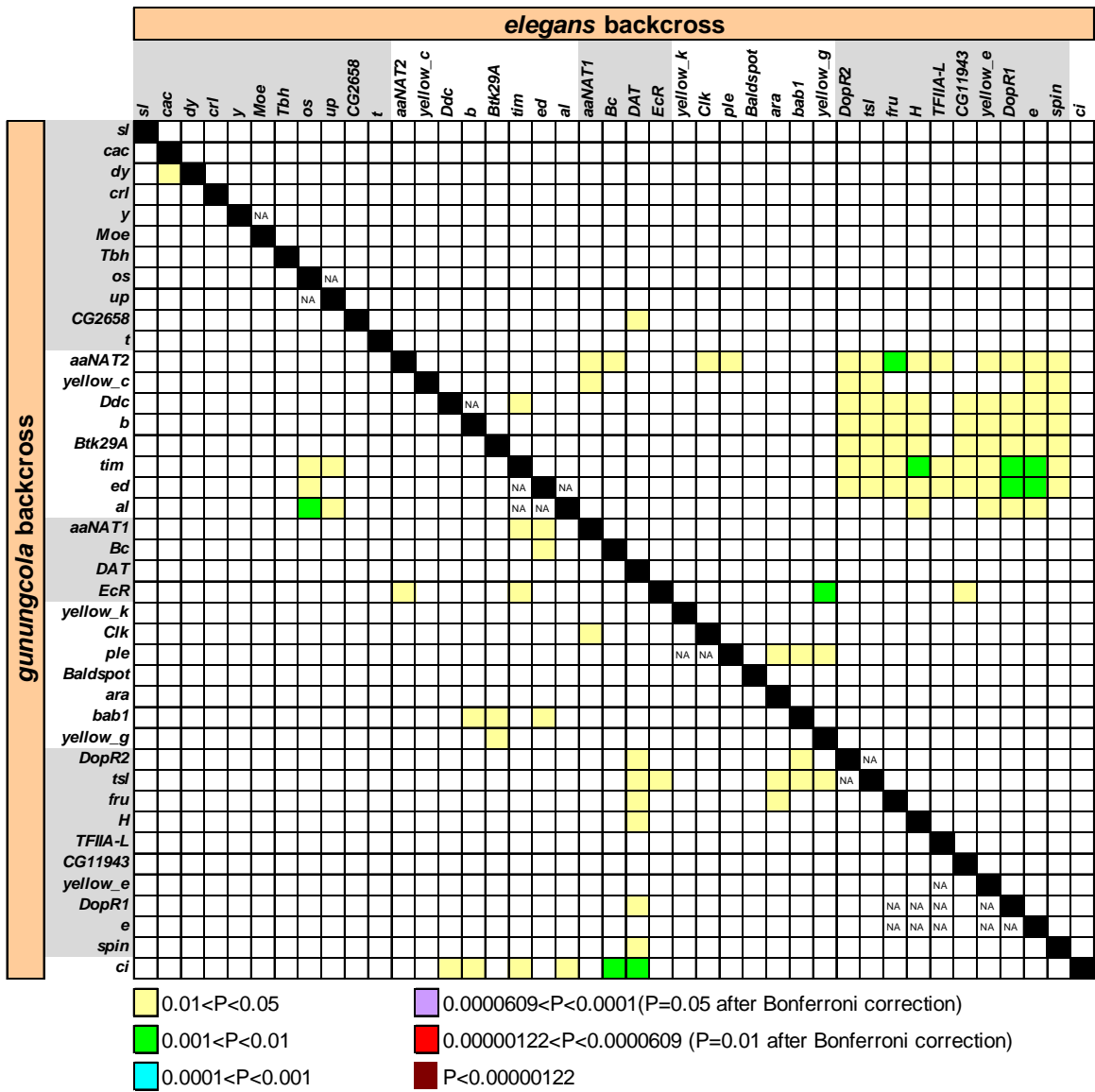
**Figure S3** Typical mitotic chromosome spreads of *D. elegans* and *D. gunungcola*. In the spreads above, clusters of 12 elements are clearly apparent. It is difficult to distinguish the sex chromosome pair from the four rod pairs. In the *D. gunungcola* spread, the dot chromosomes (Muller/Sturtevant/Novitsky element F) can be seen in the upper right of the cluster. Scale bars: 20 microns. For a more detailed analysis of the karyotype of *D. elegans* and related species, see Deng et al. 2007.



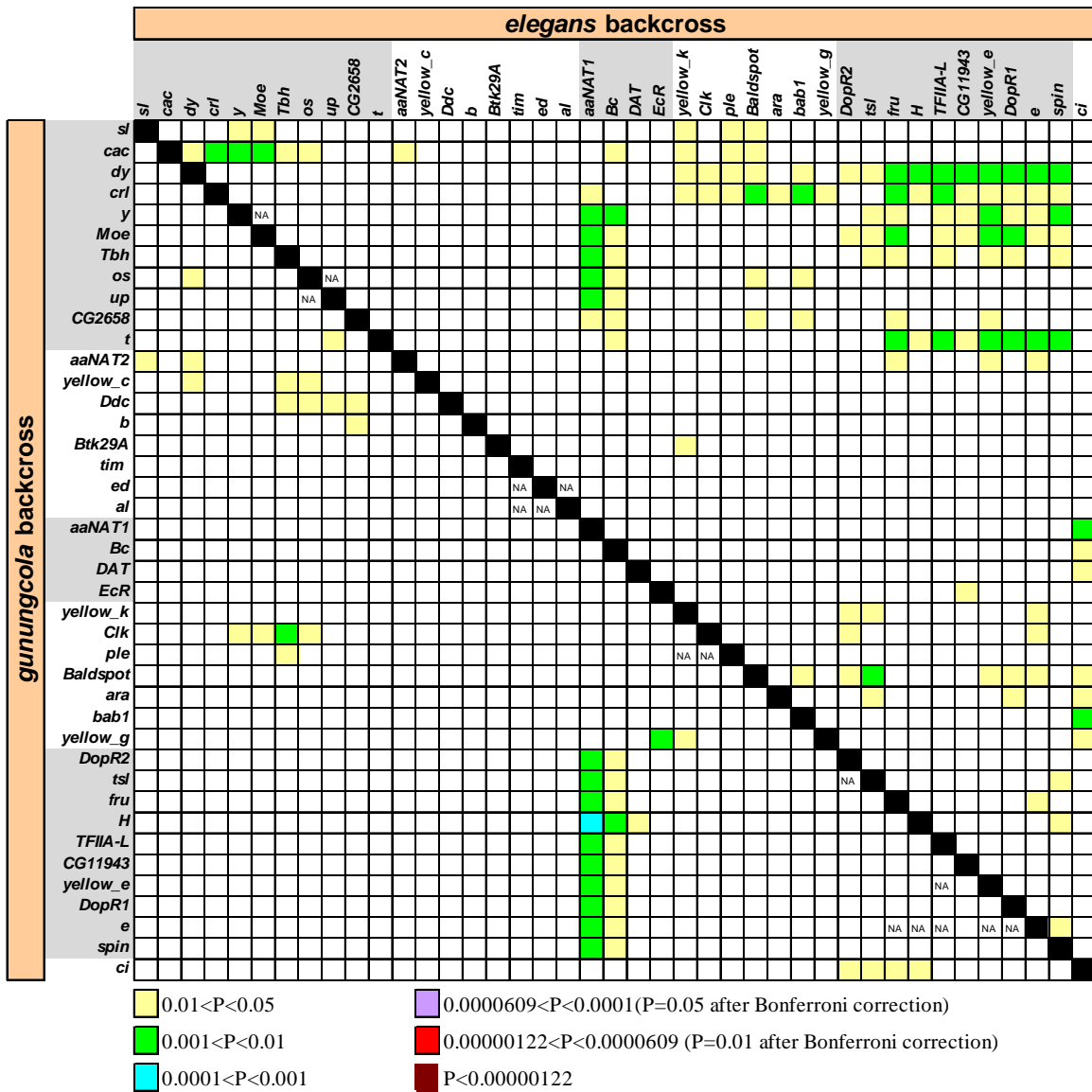
**Figure S4** Summary of QTL results from *gunungcola* backcross males. Designations A through E correspond to Muller's elements. Marker loci (on left of linkage groups) are named using the same names as the presumed orthologous *D. melanogaster* gene sequences used to develop the *D. elegans/D. gunungcola* markers. Intervals containing putative QTL are indicated on right of linkage groups (see also Table 2 and Figs. 3, 4). See Figure 2 for CIM maps of Spot Size 1, Spot Size 2, and Courtship Score datasets. See Figure 3 for IM maps of Wing Display, Circling, and Body Shaking datasets.



**Figure S5** Interval maps (IM) for *elegans* (left) and *gunungcola* (right) backcross populations. A., B. Spot Size 1, C., D. Spot Size 2, E., F. Courtship Score. Horizontal lines in each plot indicate LR significance thresholds (see Materials and Methods).



**Figure S6** Pairwise marker interaction significance levels (see Materials and Methods) for Spot Presence. *gunungcola* backcross results are in the lower left and *elegans* backcross results are in the upper right.



**Figure S7** Pairwise marker interaction significance levels (see Materials and Methods) for Courtship Score. *gunungcola* backcross results are in the lower left half and *elegans* backcross results are in the upper right.



**File S1**

**Raw Data**

Available for download as an Excel file at <http://www.g3journal.org/lookup/suppl/doi:10.1534/g3.114.013037/-/DC1>

**Table S1 List of the accession numbers of DNA sequences in this study.**

Locus#	Species	GenBank Accession number
X		
<i>yellow</i>	<i>D. elegans</i>	FJ889358
	<i>D. gunungcola</i>	FJ889359
<i>CG2658</i>	<i>D. elegans</i>	FJ889360
	<i>D. gunungcola</i>	FJ889361
<i>Tyramine beta hydroxylase</i>	<i>D. elegans</i>	FJ889362
	<i>D. gunungcola</i>	FJ889363
<i>Moesin</i>	<i>D. elegans</i>	FJ889364
	<i>D. gunungcola</i>	FJ889365
<i>tan</i>	<i>D. elegans</i>	FJ889366
	<i>D. gunungcola</i>	FJ889367
<i>dusky(L)*</i>	<i>D. elegans</i>	FJ889368
	<i>D. gunungcola</i>	FJ889369
<i>dusky(R)*</i>	<i>D. elegans</i>	FJ889370
	<i>D. gunungcola</i>	FJ889371
<i>cacophony</i>	<i>D. elegans</i>	FJ889372
	<i>D. gunungcola</i>	FJ889373
<i>upheld</i>	<i>D. elegans</i>	FJ889374
	<i>D. gunungcola</i>	FJ889375
<i>small wing</i>	<i>D. elegans</i>	FJ889376
	<i>D. gunungcola</i>	FJ889377
<i>courtless</i>	<i>D. elegans</i>	FJ889378
	<i>D. gunungcola</i>	FJ889379
<i>outstretched</i>	<i>D. elegans</i>	FJ889380
	<i>D. gunungcola</i>	FJ889381
<i>CG11943</i>	<i>D. elegans</i>	FJ889382
	<i>D. gunungcola</i>	FJ889383
2L		
<i>aristaless</i>	<i>D. elegans</i>	FJ889384
	<i>D. gunungcola</i>	FJ889385
<i>timeless</i>	<i>D. elegans</i>	FJ889386
	<i>D. gunungcola</i>	FJ889387
<i>echinoid</i>	<i>D. elegans</i>	FJ889388
	<i>D. gunungcola</i>	FJ889389

**Table S1 (Continued)**

Locus	Species	Accession number
<i>arylalkylamine N-acetyltransferase 2</i>	<i>D. elegans</i>	FJ889390
	<i>D. gunungcola</i>	FJ889391
<i>Btk family kinase at 29A</i>	<i>D. elegans</i>	FJ889392
	<i>D. gunungcola</i>	FJ889393
<i>black</i>	<i>D. elegans</i>	FJ889394
	<i>D. gunungcola</i>	FJ889395
<i>yellow c</i>	<i>D. elegans</i>	FJ889396
	<i>D. gunungcola</i>	FJ889397
<i>Dopa decarboxylase</i>	<i>D. elegans</i>	FJ889398
	<i>D. gunungcola</i>	FJ889399
2R		
<i>Ecdysone Receptor</i>	<i>D. elegans</i>	FJ889400
	<i>D. gunungcola</i>	FJ889401
<i>spinster</i>	<i>D. elegans</i>	FJ889402
	<i>D. gunungcola</i>	FJ889403
<i>Dopamine Transporter</i>	<i>D. elegans</i>	FJ889404
	<i>D. gunungcola</i>	FJ889405
<i>Black cells</i>	<i>D. elegans</i>	FJ889406
	<i>D. gunungcola</i>	FJ889407
<i>Dopamine N acetyltransferase</i>	<i>D. elegans</i>	FJ889408
	<i>D. gunungcola</i>	FJ889409
3L		
<i>bric a brac 1</i>	<i>D. elegans</i>	FJ889410
	<i>D. gunungcola</i>	FJ889411
<i>yellow g</i>	<i>D. elegans</i>	FJ889412
	<i>D. gunungcola</i>	FJ889413
<i>pale</i>	<i>D. elegans</i>	FJ889414
	<i>D. gunungcola</i>	FJ889415
<i>Clock</i>	<i>D. elegans</i>	FJ889416
	<i>D. gunungcola</i>	FJ889417
<i>aracaun</i>	<i>D. elegans</i>	FJ889418
	<i>D. gunungcola</i>	FJ889419
<i>yellow k</i>	<i>D. elegans</i>	FJ889420
	<i>D. gunungcola</i>	FJ889421

**Table S1 (Continued)**

Locus	Species	Accession number
<i>Baldspot</i>	<i>D. elegans</i>	FJ889422
	<i>D. gunungcola</i>	FJ889423
3R		
<i>yellow e</i>	<i>D. elegans</i>	FJ889424
	<i>D. gunungcola</i>	FJ889425
<i>Dopamine Receptor (1)</i>	<i>D. elegans</i>	FJ889426
	<i>D. gunungcola</i>	FJ889427
<i>fruitless</i>	<i>D. elegans</i>	FJ889428
	<i>D. gunungcola</i>	FJ889429
<i>Hairless</i>	<i>D. elegans</i>	FJ889430
	<i>D. gunungcola</i>	FJ889431
<i>ebony</i>	<i>D. elegans</i>	FJ889432
	<i>D. gunungcola</i>	FJ889433
<i>torso-like</i>	<i>D. elegans</i>	FJ889434
	<i>D. gunungcola</i>	FJ889435
<i>TfIIA-L</i>	<i>D. elegans</i>	FJ889436
	<i>D. gunungcola</i>	FJ889437
<i>Dopamine Receptor2</i>	<i>D. elegans</i>	FJ889438
	<i>D. gunungcola</i>	FJ889439
4		
<i>cubitus interruptus</i>	<i>D. elegans</i>	FJ889440
	<i>D. gunungcola</i>	FJ889441

# The chromosome arm where loci reside in *D. melanogaster*.

\*DNA sequence information between left and right primers of *dusky* is incomplete. Thus, the sequences obtained for designing the primer set of *dusky* are submitted separately.