Male-specific GFP marker strain of *Drosophila melanogaster*.

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Sorting males from females is a standard practice in *Drosophila* genetics. Distinguishing sex in embryonic and larval stages is not easy due to difficulty in identifying dominant sex-specific characters, such as gonad size without dissection. I attempted to overcome this problem by creating a Y chromosome carrying green fluorescent protein gene driven by the actin 5C promoter (ActGFP construct, Reichhart and Ferrandon, 1998). Y chromosome is heterochromatin-rich, and recovery of transposon insertion has been difficult, either due to low insertion frequency, or silencing of inserted marker genes (Berg and Spradling, 1991). To increase the chance of insertion, a Y chromosome carrying a piece of euchromatin derived from X chromosome (Dp(1;Y)y^+) and already has an insertion of P{*ry*+11} element (Berg and Spradling, 1991) was chosen as a target. It was shown that mobilized P element is targeted preferentially to the region where another P element is already present (Akimoto *et al*., 2005). A P element vector of ActGFP on CyO balancer was mobilized in the genotype of y^1 w^{63c27} / Dp(1;Y)y^+ P{ry+11}; CyO, P{w+mC=ActGFP}JMR1 / +; TMS, P{ry[+t7.2]=Delta2-3}99B / +. Those males were crossed singly to y^1 w^{63c27} females and Cy+ progenies that express GFP and w+ marker only in males were screened. One such a line, Dp(1;Y)y^+ P{ry+11} P{w+mC=ActGFP}JMR1 (abbreviated Y-GFP$^+$) was established from ~150 crosses. About half the number of individuals of this strain expressed GFP visible under fluorescent dissecting microscope at stage 12 of embryogenesis and later (Figure 1), and all eclosed as males. This marker may be used to identify hemizygous embryos and larvae of X-linked mutations and to sort a large number of female larvae or pupae so that virgin collection after eclosion may be omitted. The fly stock was deposited to *Drosophila* Genetic Resource Center in Kyoto (http://www.dgrc.kit.ac.jp/).

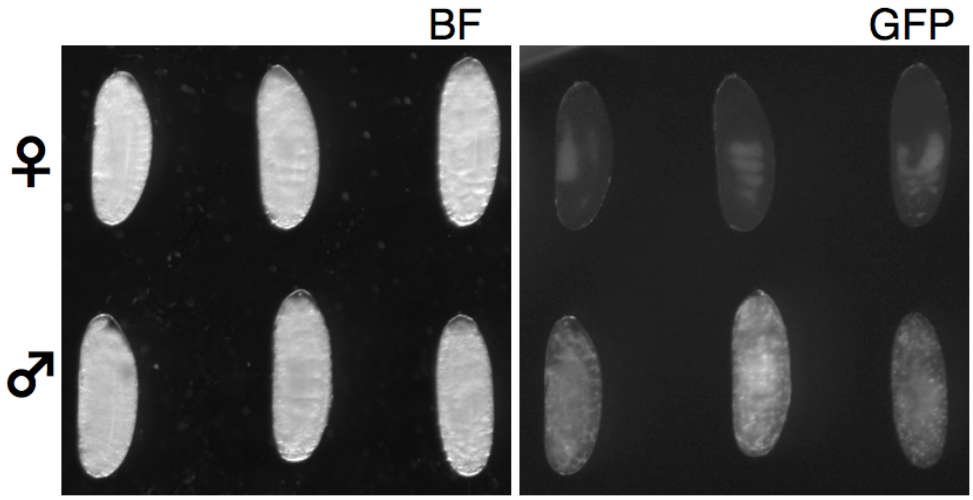

Figure 1. Images of Y-GFP$^+$ embryos observed under dissecting stereomicroscope. Views of bright field illumination and GFP channel are shown. Embryos in top row are GFP negative (female) and bottom row GFP positive (male), each in stage 15 (left), stage 16 (middle), and stage 17 (right).

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Reference: Akimoto, A., H. Wada, and S. Hayashi 2005, Dev. Dyn. 233: 993-997; Berg, C.A., and A.C. Spradling 1991, Genetics: 127: 515-524; Reichhart, J.M., and D. Ferrandon 1998, Dros. Inf. Serv. 81: 201-202.

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Green, R.L., 1998, Heredity 121: 430-442.

Waters, R.L., J.T. Smith, and R.R. Brown 1990, J. Genet. 47: 123-134.

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