

# How do you know whether you are male or female?

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New research published online this week in the open-access journal *PLoS Biology* investigates this basic and much-studied question in the fruit fly, and comes to a surprising new conclusion.

In mammals, male or female development depends on the presence of the Y chromosome, which is only found in males because it includes masculinizing genes. But other animal groups have evolved different systems. James Erickson and Jerome Quintero at Texas A&M University studied the mechanism of sex determination in the fruit fly, *Drosophila melanogaster*.

Previous studies in the fly suggested that it was the ratio of X chromosomes (the “female” chromosome, of which there are two copies in a female fly, and just one in a male) to the non-sex chromosomes (the autosomes) that determined the sex of a fly embryo.

However, this new paper indicates that rather than being dependent on the ratio, it is the number of X chromosomes that is important. Sex is determined during a very specific and short stage in embryo development, and only two X chromosomes can produce enough of a signal to feminize the embryo during this window of opportunity.

Citation: Erickson JW, Quintero JJ (2007) Indirect effects of ploidy suggest X chromosome dose, not the X:A ratio, signals sex in *Drosophila*. *PLoS Biol* 5(12): e332. doi:10.1371/journal.pbio.0050332 ([www.plosbiology.org](http://www.plosbiology.org))

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