

Let's compare two flies, one without spots, which is the humdrum *Drosophila melanogaster*, one with spots on the male, *Drosophila biarmipes*. There's a gene, we're just going to call it the paintbrush gene that's coding sequence is shown here in yellow, the same sort of schematic arrangement we showed you for the stickleback. Well there are switches for this paintbrush gene that governs how it's used in the body. Well both animals' genomes contain these switches, and these switches govern the use of this paintbrush gene to fill in the color on the abdomen of the fruit fly. But in the spotted fruit fly there's an additional switch, a switch that draws a spot on the wing in the wing so the paintbrush is also used, in addition to its other jobs, in drawing a spot on the wing of these fruit flies. Same principle that applies to butterflies.