

# **THE GENETICS OF SEX ALLOCATION EVOLUTION IN A HERBACEOUS PLANT: A SEX CHROMOSOME INTROGRESSION PROJECT**

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## **Abstract**

The evolution of dioecy from hermaphroditism is not rare in plants. However, recent evidence shows that this transition is reversible, as was shown in the herb *Mercurialis annua* by the mean of evolution experiment. This herbaceous species exhibits a XY sex determination system. But the ability of its females to produce few male flowers can lead, in the absence of XY males, to the selection of a larger male allocation in XX females, leading to hermaphroditism. To investigate the genetic basis of this process, we will conduct an introgression experiment. We will introduce the Y chromosome into all-XX hermaphroditic population to examine its effects on sex determination in a genetic background that has evolved without it for more than 10 years. I will present the method we will use and the theoretical results we expect using verbal and computational models. When available, our results will provide insight into the genetic mechanisms underlying sex allocation in *M. annua* and on the genetic basis of a system capable of rapid transitions between dioecy and hermaphroditism.