

## IDENTIFYING HYBRID INCOMPATIBILITY GENES IN *D. PSEUDOOBSCURA*

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Speciation, the process of one species splitting into two separate species, often involves the evolution of hybrid sterility or hybrid inviability. These reproductive isolating barriers are caused by negative interactions between genes called hybrid incompatibilities. Identifying hybrid incompatibility genes, and understanding their mechanisms, promises to provide fundamental insights into the molecular basis of speciation. A classic example of the earliest stages of speciation are the Bogota and USA subspecies of *D. pseudoobscura*. These young species diverged recently, about 200,000 years ago. Bogota females crossed to USA males produce sterile hybrid F1 males and fertile hybrid F1 females; the reciprocal cross produces all fertile hybrid progeny. Previously, we identified a gene, *Overdrive (Ovd)*, that is necessary to cause hybrid sterility. *Ovd*, however, does not act alone; additional interacting partners are required. My goal is to identify a large effect *Ovd* interacting partner on the left arm of the X chromosome. To map this gene, we introgressed USA genetic material into a Bogota background near the *yellow* region. All of these *yellow*-introgression lines produce completely fertile hybrid males. Utilizing recombination to shrink this introgression region and using PCR based markers to map the introgression breakpoints, we are narrowing this region to a smaller set of candidate genes. I am generating many more recombinants to gain greater mapping resolution for the hybrid sterility gene. Identifying and characterizing this gene promises to provide insight into the molecular basis of hybrid incompatibilities.

