QTL Mapping Reveals Parent-of-Origin Effects Causing Hybrid Seed Failure in Mimulus

The emergence and maintenance of reproductive isolation is a fundamental component of speciation. In flowering plants, hybrid seed failure is a common reproductive barrier and appears to originate in the endosperm, a nutritive tissue responsible for supporting embryonic development and germination, rather than in the embryo itself. Endosperm is a triploid tissue resulting from fusion of the maternal, diploid central cell with a haploid sperm cell, and maintaining the proper balance of maternally and paternally expressed genes is crucial to its normal development. We combine interspecific crosses with genetic mapping experiments to isolate the causes of hybrid seed failure in the wildflower genus *Mimulus.* We find that hybrid endosperm failure is the primary reproductive barrier in this group and that the genes responsible act in a parent-of-origin specific manner that is generally unique to each species. Our results suggest that, by mediating the dynamics of maternal and paternal gene expression in endosperm, the epigenomic landscape of this unique tissue plays a central role in generating and maintaining plant diversity.