The hunt for modifiers of the *Tcb-1* locus

*Teosinte crossing barrier 1* (*Tcb1*) is a genetic cross-incompatibility system responsible for blocking non-self-type pollen in silks. Traditionally found in teosintes, *Tcb1-s* (*strong allele*) has been introduced into modern maize varieties conferring resistance to *tcb1* pollen. A previous quantitative trait loci (QTL) study of a similar cross incompatibility system, *Gametophye factor 1* (*Ga1-s*) has demonstrated that multiple modifying loci contribute to the effectiveness of silks at resisting foreign pollen types. Little is known about the genetic modifiers of *Tcb1* and, most importantly, what the underlying biological mechanism is for this cross incompatibility. An opportunity to investigate this was suggested by Jerry Kermicle, who observed that nearly all the F1's of various inbreds, including B73, crossed by W22 *Tcb1-s* demonstrate strong incompatibility with *tcb1* pollen. The one exception was Mo17, whose F1s had much weaker resistance. In our poster we will outline our study using the intermated B73 and Mo17 (IBM) population crossed with homozygous W22 *Tcb1-s* plants to test the efficiency of the various F1s at rejecting *tcb1* pollen. We produced the F1s this last summer and this next season we will test the efficacy of each of the F1 lines. To do that we will first test the *Tcb1* silks with colored *R1-scm2 tcb1* pollen and the next day pollinate the same silks with colorless *Tcb1-s* pollen. Mature ears will be scored for the proportion of colored kernels and the generated data will allow for QTL mapping of *Tcb1* modifying factors. Further knowledge of cross-incompatibility can be beneficial to breeders and farmers when only certain pollen types are desired on specialty maize crops.