WEISSINGER, HEDEVIG HOLLYFIELD. Linkage Relationships Between Isozyme Loci in Maize. (Under the direction of Major Mereland Goodman).

Linkage relationships between fourteen isozyme loci, representing nine different enzyme systems, were studied in maize. It was found that 6-phosphogluconate dehydrogenase-1, Pgd1, is tightly linked to endopeptidase, Ep, on the long arm of chromosome 6 with less than 5% recombination between the two loci. Neither of these loci was found to be linked to maltate dehydrogenase-2, Mdh2, the most active mitochondrial maltate dehydrogenase locus, which is also located on the long arm of chromosome 6.

Phosphohexose isomerase, Phi, was found to be linked to alcohol dehydrogenase-1, Adh1, which has been reported by Schwartz to be on the long arm of chromosome 1. There are approximately 10 recombinational units between the loci. Further studies have shown that Adh1 is about midway between Phi and Pgm1, phosphoglucomutase-1 on the long arm of chromosome 1.

Another MDH locus, Mdh3, was found to be linked to glutamate oxaloacetate transaminase on chromosome 3. These two loci are loosely linked with about 24 recombinational units between the two loci.

The other loci studied appear not to be linked, which is in accordance with recent chromosomal localizations of the loci.