Polyploidy is considered to be a major contributor to plant diversity. Nearly 30% of plant species are estimated to be recent polyploids, and almost all vascular plants have a polyploid ancestry. Polyploidy also influences other dimensions of diversity. Changes in genome organization following whole genome duplications (WGDs) may increase genetic variation in polyploid relative to diploid species. Ancient WGDs may have a significant impact on genetic diversity that lasts for millions of years. To test for evidence of higher genetic diversity in plants following ancient polyploidy, we analyzed data from a large collection of plant genomes and transcriptomes. Across 48 diploid species of vascular plants, we found a significant negative correlation between the age of their most recent ancient WGD and the expected heterozygosity of each species. The time since an ancient WGD explained approximately 25% of the difference in genetic diversity among species. To further explore this correlation, we evaluated patterns of genetic diversity in *Brassica rapa*, a paleohexaploid species. Consistent with our broader correlation, we found that genes derived from ancient WGDs contained significantly more genetic diversity than the non-WGD derived genes. Given the distribution of polyploidy throughout the history of flowering plants, our results suggest that the genetic legacy of ancient WGDs may significantly contribute to genetic diversity and adaptation even millions of years later.

If you would like to visit with Dr. Mark Barker, please contact Brad Olson at bjsco@ksu.edu.

*Coffee & cookies served preceding the seminar in Ackert Hall, Room 225*