

ADS Genome Project Update 11/14/2021

We have a few exciting fronts on the ADS Genome Project. First, the \$23,000 Phase Two Genome Project match generously offered up by the Scheetz-Chuey Foundation has been matched with donations from, ADS Dahlia Societies, individual donors and friends of ADS. Thank you to all who donated to this important work.

Second, Zach Megard, the graduate student doing the work for this section of the project, has switched to a PhD program. The dahlia will now get five years of study not just two! Dr. Harkess is working on two grants to help fund the extra three years.

Third, see below in Dr. Harkess' report and the work that is currently being accomplished.

-Kristine Albrecht, ADS Genome Project Lead.

Dr. Harkess' Genome Project Update

The Dahlia genome project is moving forward quickly.

Recently, Zach Meharg has switched to a PhD due to his immense progress and drive on this project.

Kristine Albrecht has secured three growers near me in Huntsville, Birmingham, and nearby Ringgold GA, who have successfully grown rhizomes from several Dahlia species, at least one of which we hope to be a tetraploid instead of octoploid.

Zach extracted DNA from all 5 dahlia species for shotgun sequencing to assess species heterozygosity, ploidy, and genome size. He has sampled diverse floral and vegetative tissue for RNA sequencing. We will only attempt sequencing a tetraploid species for the genome project: octoploid will be impossible with current funding and personnel.

Currently we have Illumina genome sequencing data in hand for four species — rudis, coccinea, brevis, and sorensii, plus the Thomas Edison cultivar. Zach is currently running GenomeScope2 to estimate genome size, heterozygosity, and ploidy of these individuals. Additionally he will assemble chloroplast genomes for phylogenetic use. Zach has also reached out to globally located gardens and herbaria to collect tissue from all species of Dahlia in order to build a phylogenetic tree that will help elucidate the putative parents of the modern octoploid cultivar.

If anyone in the ADS has wild species dahlias' tubers that they are willing to send, we would be greatly appreciative!