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The Effects of Estrogen on RNAi Expression of Arabidopsis Wild-Type and Mutant Strains

The RNAi process in plants is a complex system that involves both DCL and RDR genes to function properly. The experiment is designed to look at what affects excess estrogen, closely related to phytoestrogen (natural plant estrogen), has on *Arabidopsis thaliana* wild-type and two mutant strains: RDR 1,2,6, and DCL 2, 3, 4. Since the mutants lack genes that code for vital steps in the RNAi process, we expect DNA expression to differ. Therefore, if estrogen is fundamental in the development of *Arabidopsis* and *Arabidopsis* wild-type and mutant strains are fed varying amounts of excess estrogen, then phenotypic differences, due to varying DNA expression, will occur. The RNAi process in humans is similar to that of plants, although it lacks the RDR gene, and therefore, the data and conclusions gathered from the experiment on *Arabidopsis* can also be applied to an excess of estrogen in the human system, which has been correlated to cancer. In the future, the results of further study may be applied to a mechanism utilizing the RNAi process to cure developing cancer. We will plant 9 magenta boxes for the *Arabidopsis* plants: 3 wild-types, 3 DCL mutants, and 3 RDR mutants. There will be 20 or so plants per box and 3 different concentration levels, one high (.35 mg), one medium (.13 mg), and one low (.08), one per plant type. If the RNAi process in *Arabidopsis* is affected by estrogen stress, we expect to observe varying phenotypes affecting factors such as height and overall health.