The plant steroid hormones Brassinosteroid (BR) are important for plant growth and environmental stress responses. BR functions to regulate the BES1/BZR1 family of transcription factors which control the expression of thousands of target genes for BR responses. We know BR regulates BES1 protein levels, but the mechanisms are unknown. Several genes suspected to control BES1 levels are studied by reverse genetics and genomics approaches. The research requires growing Arabidopsis plants, DNA preparation, identification of mutants by polymerase chain reaction (PCR) analysis, and electrophoresis leading to phenotypic and genotypic characterization of identified mutants.

### Introduction

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### Results

Genotyping Arabidopsis begins with collecting leaves from the individual plants and exposing them to liquid nitrogen and buffers to extract the cells’ DNA. Once isolated, the DNA is combined with a cocktail of buffers, DNTPs (nucleotides to be used in the new DNA), DNA polymerase, and primers specific to the various genes being tested to undergo polymerase chain reactions (PCR). The primers are necessary to start the correct DNA polymerase-nucleotide reactions. Gel electrophoresis is used to separate the amplified DNA strands. The gel is loaded with wild type beside mutant specific reactions as comparison in determining the plant’s genotype. The gels are then photographed to be analyzed (see Figure 8).

### Conclusions

This study identified several bip mutants. Future characterization of these mutants will provide insight into how BES1 protein levels regulate Brassinosteroid signaling.

### Bibliography

