



A Saturating Population of Insertionally Mutagenized *Arabidopsis thaliana* Plants

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in a large collection of *Arabidopsis* seed lines that have been insertionally mutagenized and are available in very small pools.

Overview

Functional genomics involves identifying the function of all genes within a sequenced genome. Knockout mutants may be used to identify the *in situ* function of any gene, without making assumptions about the presumed catalytic activity or location of the encoded protein. Ideally, a large population of mutants with small starting pools and only one insertional mutation per plant would be available for identification of knockouts; however, currently available collections involve large starting pools of 100-150 lines and may have up to four insertions per line.

The Invention

UW-Madison researchers have established a large population of *Arabidopsis* seed lines that have been insertionally mutagenized using T-DNA and are available in very small pools. This collection provides an excellent means of obtaining knockout plants to determine the role of plant genes. The seed collection is comprised of 8000 tubes, each containing seeds from nine independently isolated plants. Each plant line has approximately 1 to 1.4 insertional mutations. The population is three- to four-fold saturated, which confers a greater than 85 percent probability of obtaining a knockout plant for an average gene size of 3-5 kb. This feature also confers a greater than 70 percent chance of getting two or more independent knockout alleles of the same gene.

Applications

- Functional genomics studies in *Arabidopsis*

Key Benefits

- Few insertional mutations per line simplifies identification of a single plant from the starting pool.
- High probability of obtaining knockout plant for gene of interest
- Obtaining an individual mutant from this population is rapid and straightforward because the population is already broken down into small pools of nine lines.
- Should save user at least six months in isolating a knockout plant when compared to other collections of insertionally mutagenized plants

Additional Information

For More Information About the Inventors

- [Michael Sussman](#)
- [Richard Amasino](#)

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