

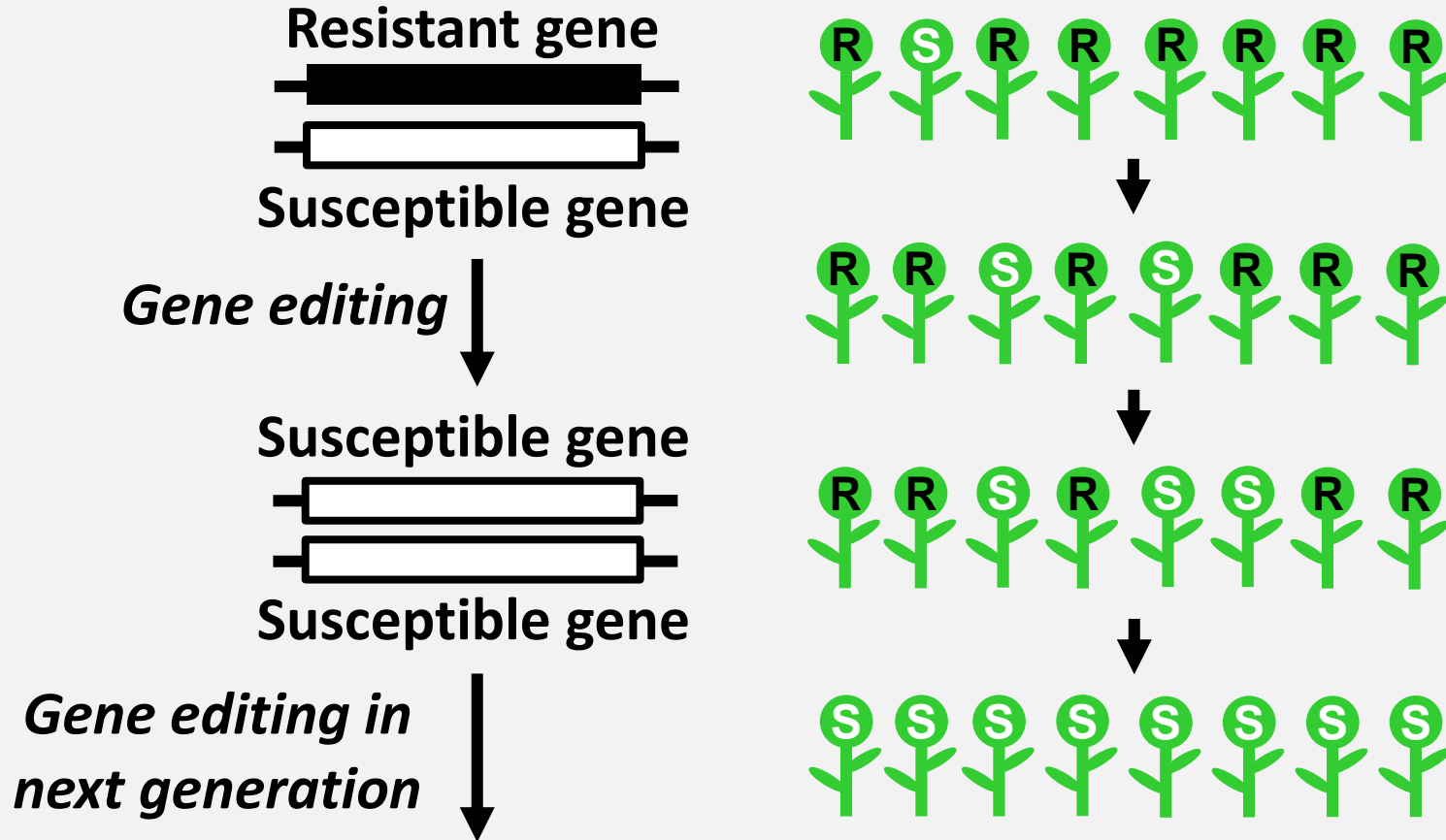
Update on Weed Genetics Research

Michael Christoffers, Ph.D.

Department of Plant Sciences

North Dakota State University

Gene Drives for Pest Management



If Genes were Coins



Chance of heads is 50%

↓ Edit



Chance of heads is 100%

Some Target Pests for Gene Drives



James D. Gathany

Some Target Pests for Gene Drives



James D. Gathany



NIH

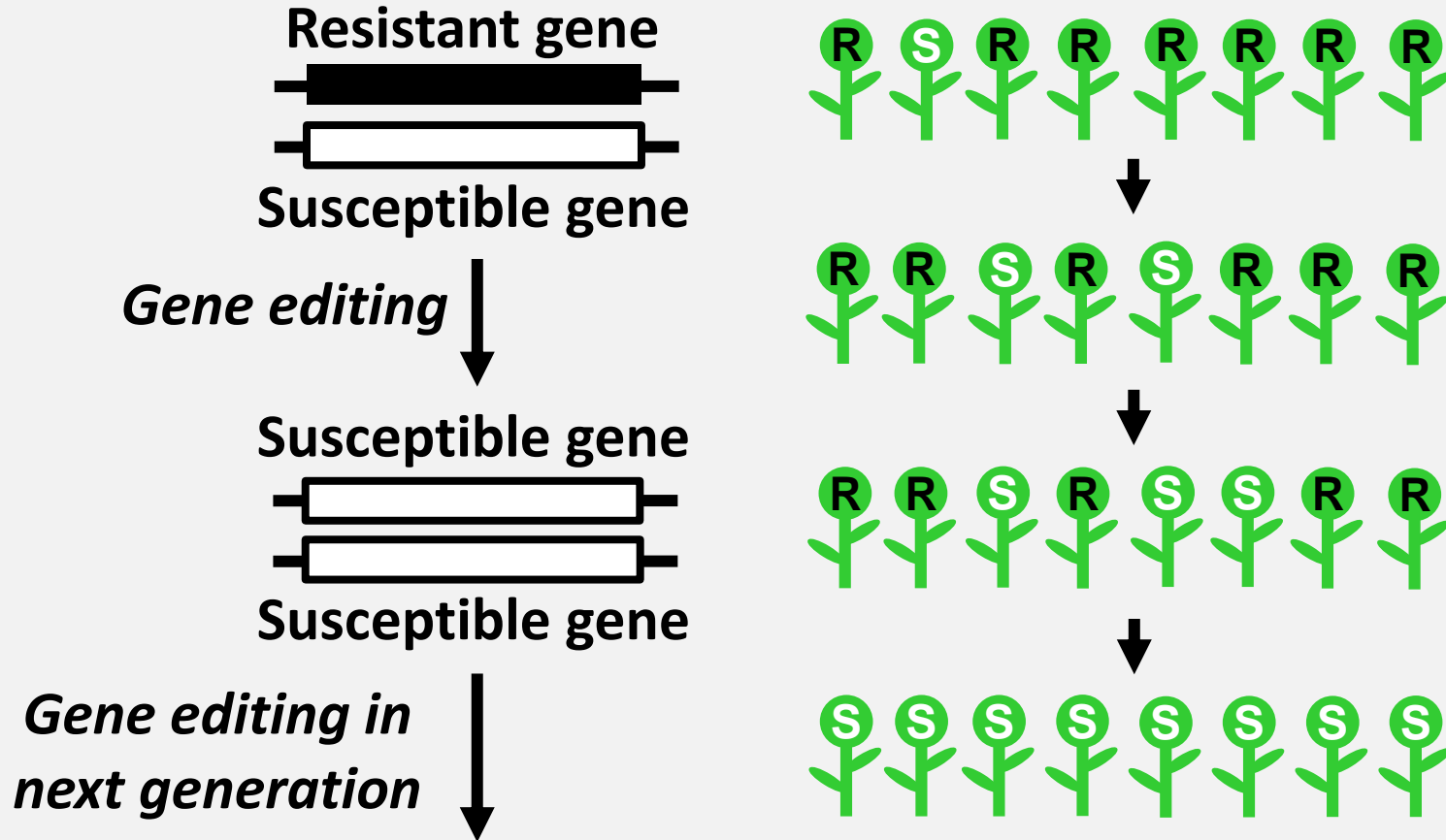
Some Target Pests for Gene Drives



Some Target Pests for Gene Drives



Gene Drives for Pest Management

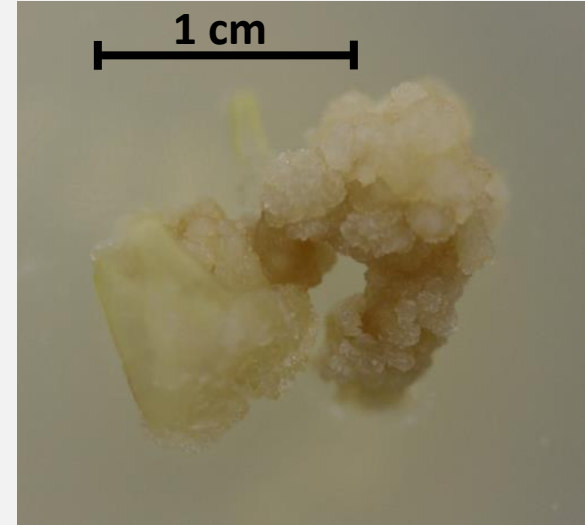


Waterhemp Tissue Culture



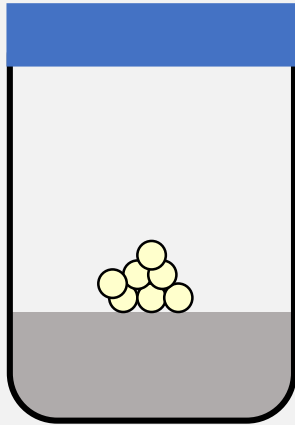
Germinated seeds

Remove a portion
of the stem
(hypocotyl)

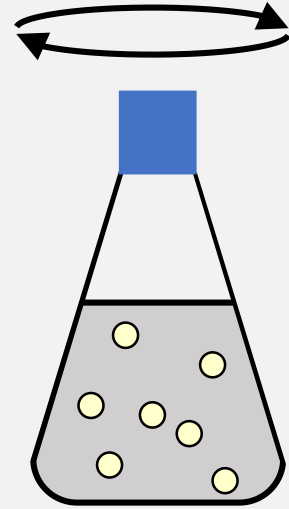


Callus tissue

Waterhemp Tissue Culture



**Callus
culture on
solid media**

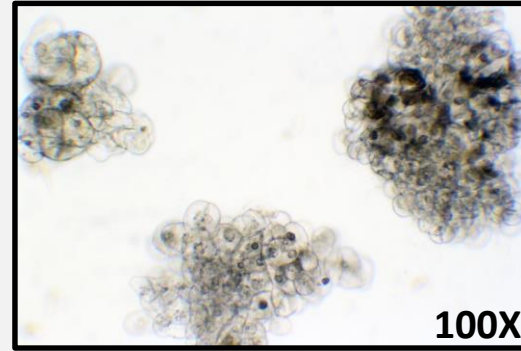


**Suspension
culture in
liquid media**

Waterhemp Tissue Culture

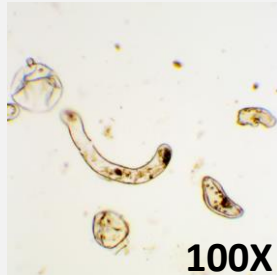
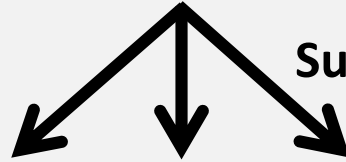


**Suspension
culture**

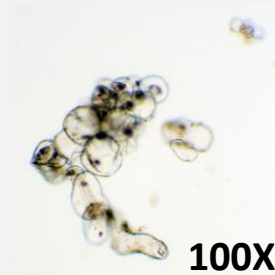


100X

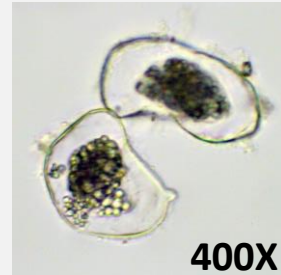
Subculture



100X

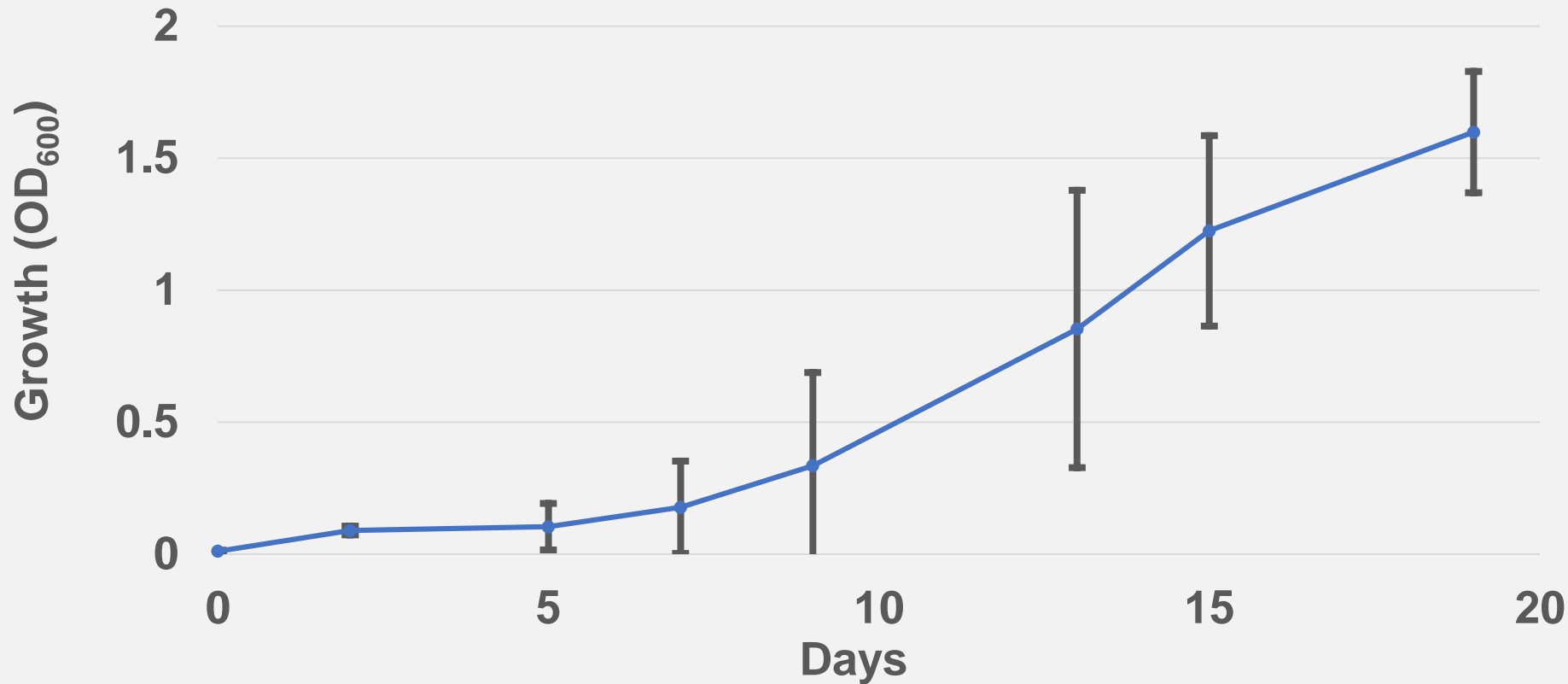


100X

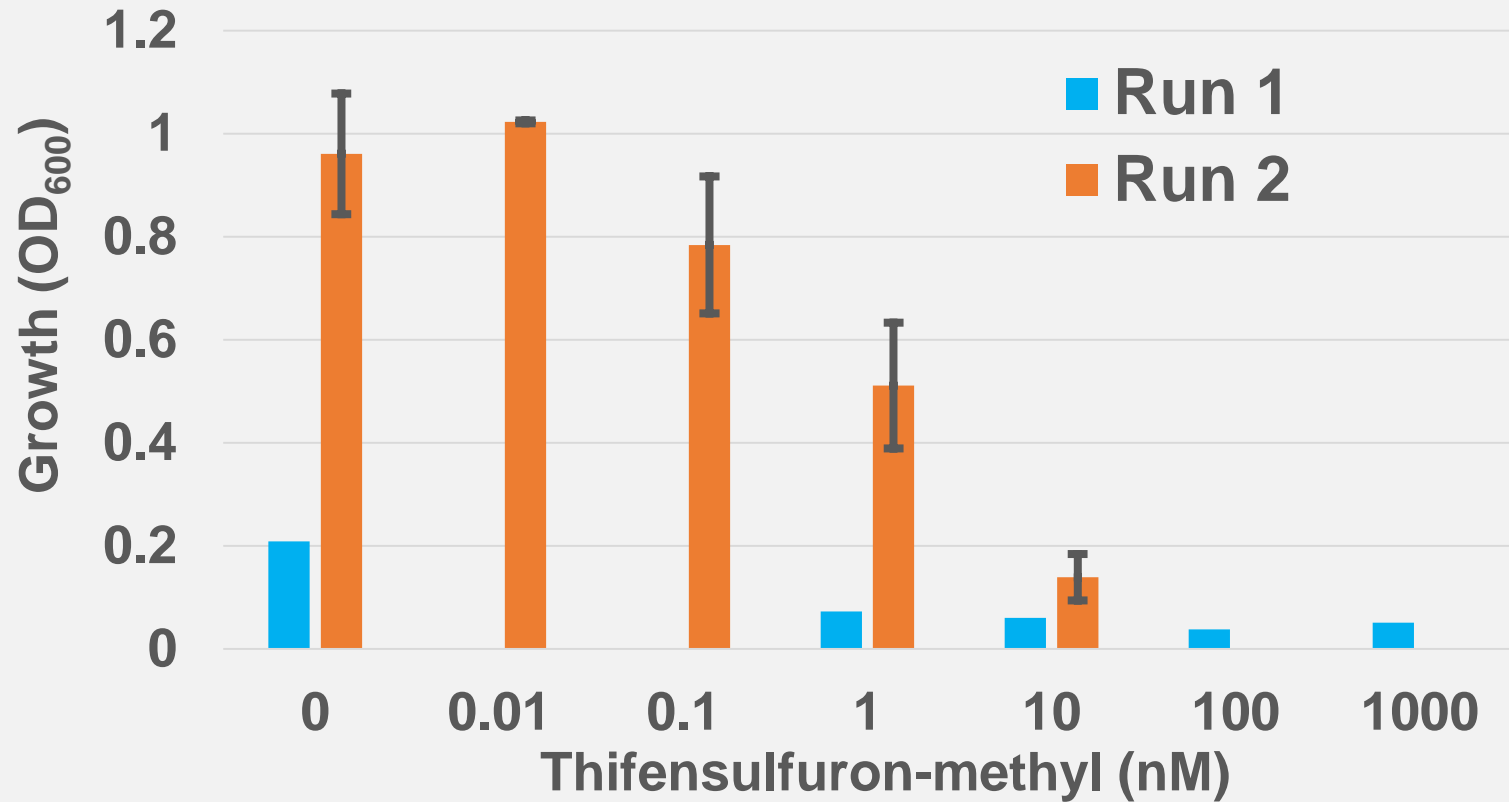


400X

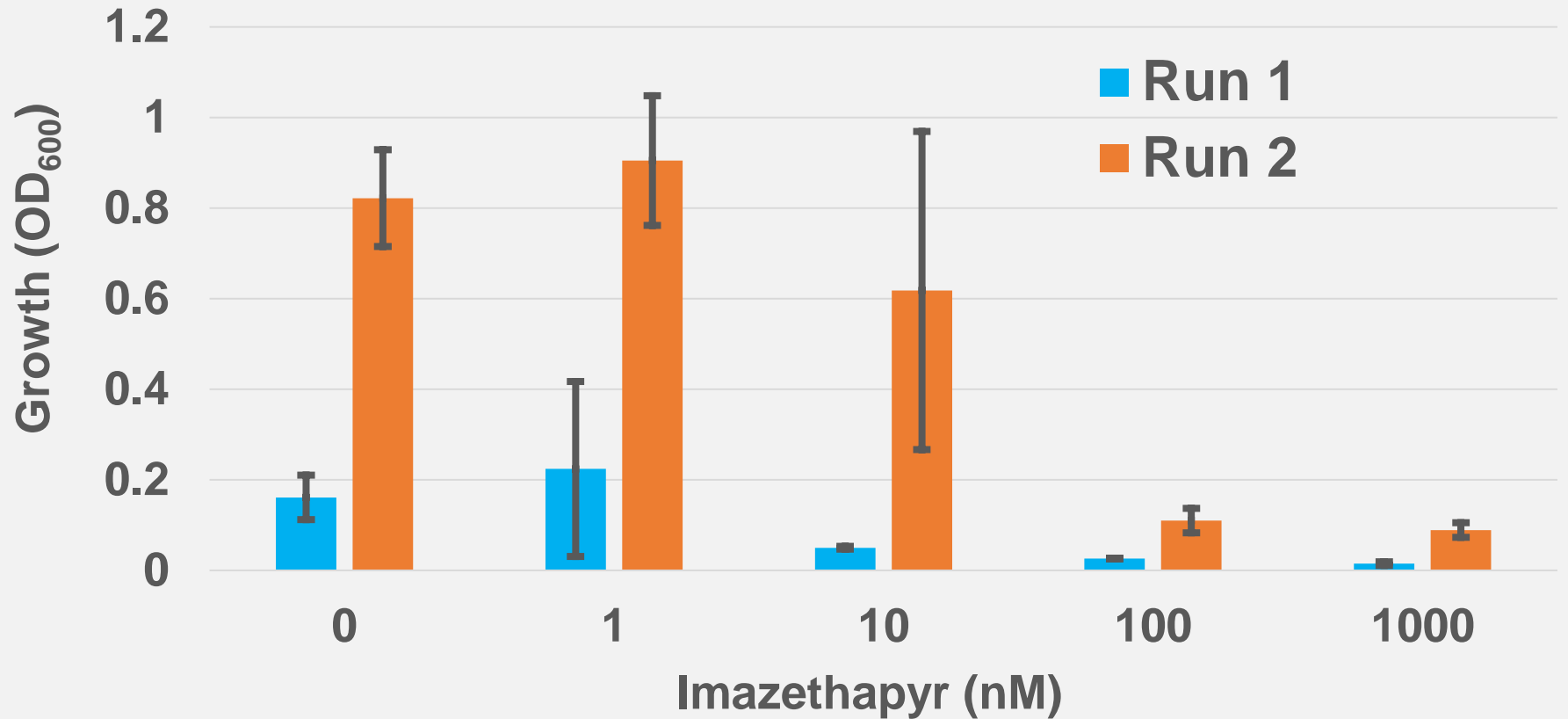
Growth of Waterhemp in Suspension Cell Culture



Inhibition of Waterhemp Cell Culture by Thifensulfuron-Methyl



Inhibition of Waterhemp Cell Culture by Imazethapyr



Current Status of Gene Drives?



Acknowledgments

- **Robert Sabba**
- **ND Agricultural Experiment Station**
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- **ND Soybean Council**
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