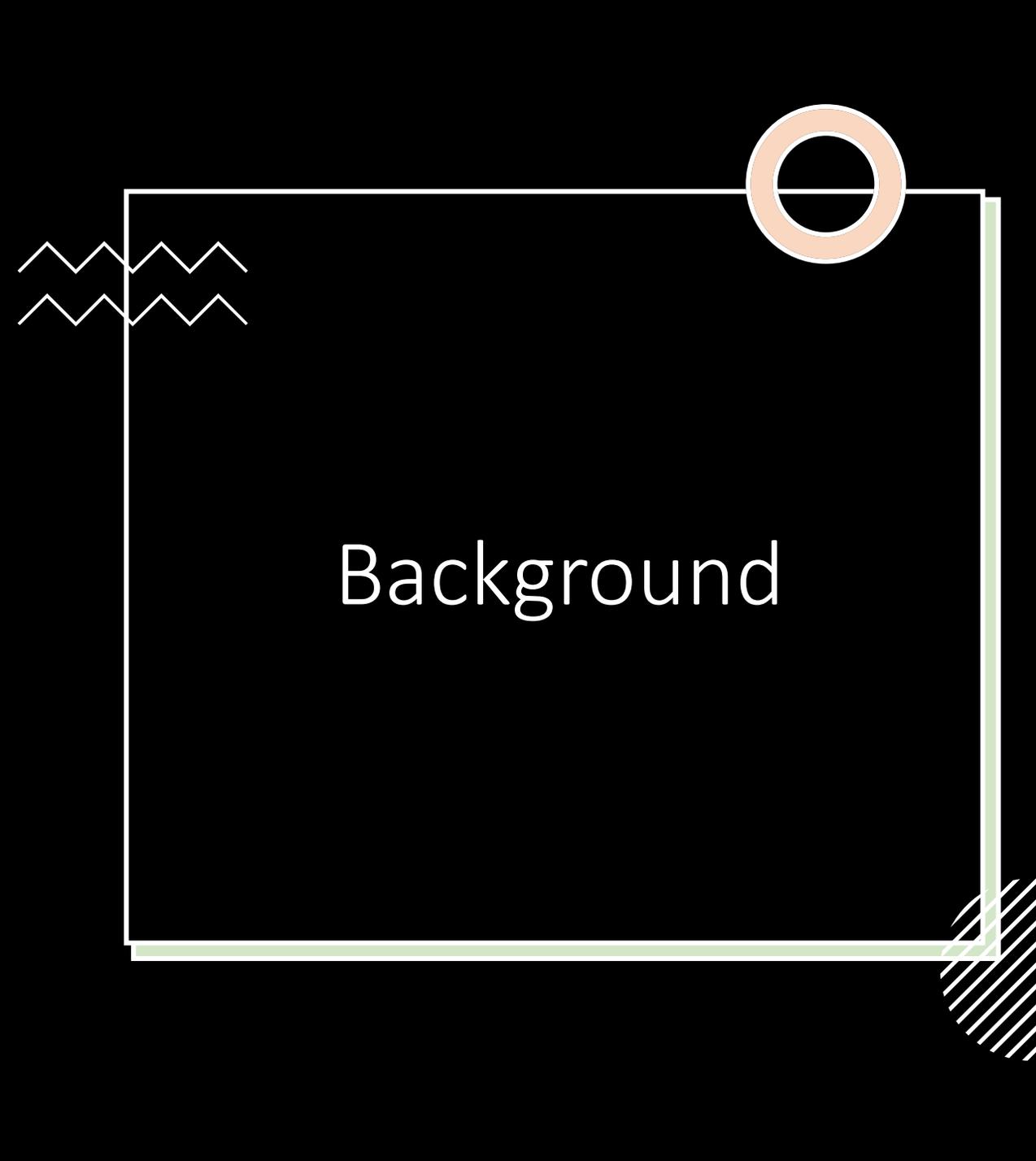


Accelerated Phenotyping of *Sfr1-4*

Maddy Creach and Landon Swartz



Background

- *Sfr1-4* is a mutant of the model organism *Arabidopsis Thaliana* that focuses its energy on its immune system rather than growth
- Characterizing the phenotype of *Sfr1-4* is very difficult as it is a phenotype that occurs later in the lifetime of the plant
- Overcoming this obstacle required an interdisciplinary approach of plant biology and engineering

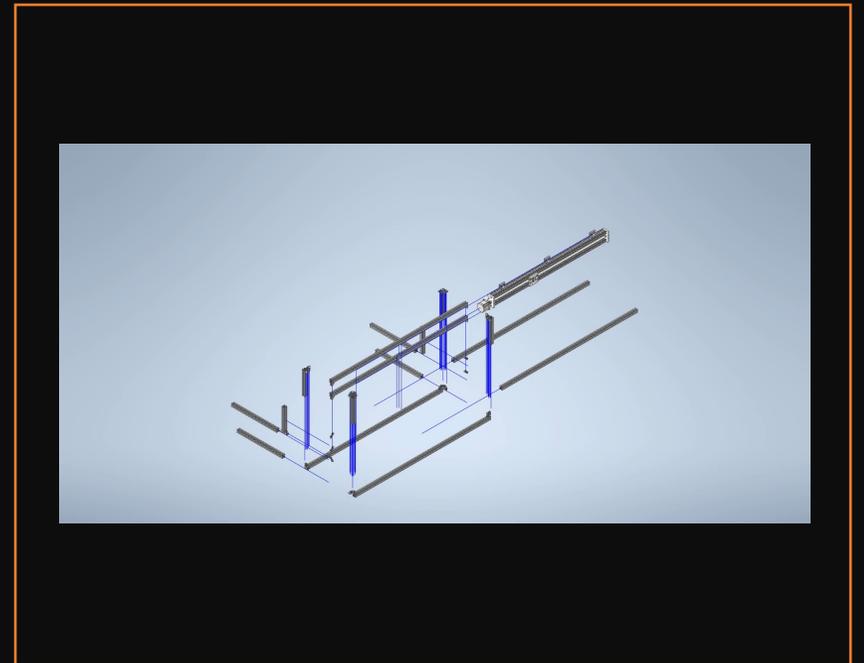
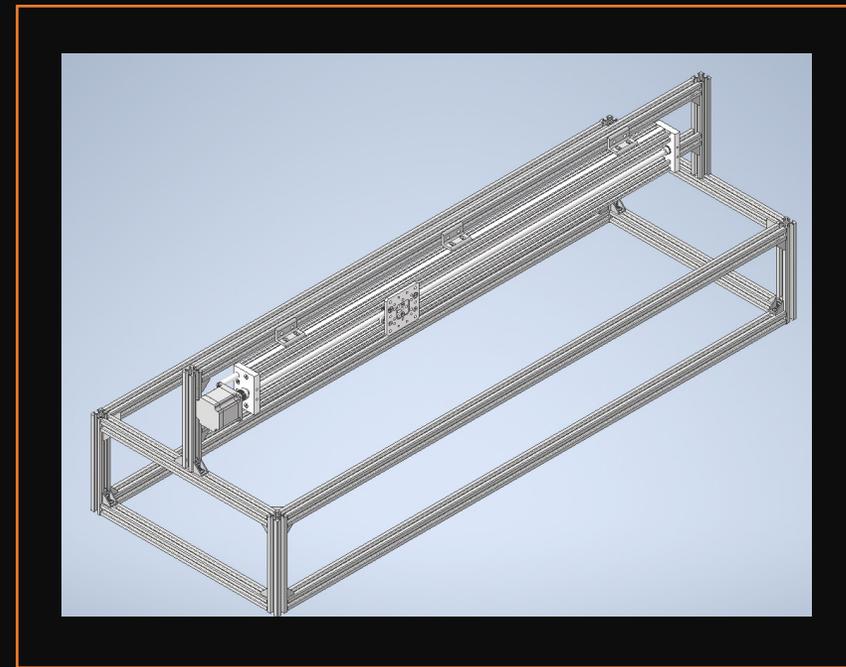
The Single Row Phenotyper

- The SRP is an automated leaf phenotyper designed to accelerate the characterization of phenotypes cheaply, accurately, and efficiently
- Using this device, the phenotypes of difficult to characterize phenotypes, such as *Sfr1-4*, can be phenotyped at a resolution not ever seen before

Methodology

The Design of SRP

- The SRP is constructed out of open-source aluminum beams with an open-source lead screw track system attached
- A high-resolution RGB camera is carried on a gantry to specified locations on the track to capture pictures of the plants over their lifetime



SFR1-4 Stuff?

Results

- Through use of the SRP to observe the *Sfr1-4* mutant, many new observations of the phenotype became

Day One

Day Three

Day Five

Day Seven

Col-0

sfr1-4



Day Nine

Day Eleven

Day Thirteen

Day Fifteen

Col-0

sfr1-4

