Powdery mildew phenotyping

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One of the most economically important diseases in grape

Assessing traits in plants: How resistant (or susceptible) is this individual?

Important part of breeding for disease resistance
The bottleneck quickly forms:

200 seedlings x 4 shoots x 2 discs = 1600 leaf discs
300 powdery mildew threads per disc = 3-10 minutes to count

20-60 workdays to complete...and a human toll

Non-repeated measures
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Enter VitisGen2 - cheaper, faster, more accurate:

Robotic imaging platform + Computer vision analysis = 1 day
Repeated measures
Better data
What does this mean?

Better experiments:
- More experiments per year, bigger experiments
- More accurate data

Better genetics:
- Identifying more powdery mildew-related areas of genome
- Increased confidence and detection of smaller effects

Better breeding:
- More powdery mildew resistance genes = durable resistance
- Improved data helps to guide breeding strategy
The next iteration…

From PMbot to Blackbird:
What are you interested in imaging?

- Fungicide assays
- Hyperspectral imaging
- Juice color
- Diseases
- Thermal imaging
- Trichomes
- Raisins
- Grape berries
- Diseases
Acknowledgements