

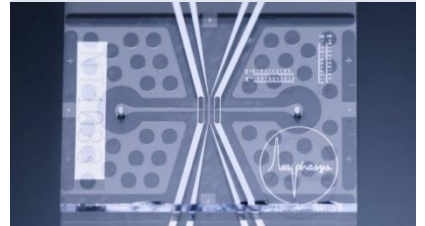


## WHEAT POLLEN VIABILITY AND DEVELOPMENTAL STAGES


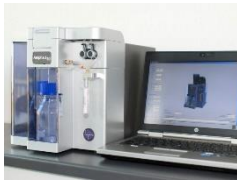
Pollen quality plays a crucial role in successful wheat breeding and production. In addition, the optimal timing for pollination is important, as pollen viability is influenced by multiple factors. For this purpose, Amphasys developed a process for the rapid determination of wheat pollen viability and the assessment of the pollen developmental stage using impedance flow cytometry. Use your measurement results to achieve optimum pollination and to improve your processes!

### AmphaZ32 Impedance Flow Cytometer

- Rapid
- Accurate
- Reproducible
- Label-free
- Portable for on-site analysis



### Straightforward 3-Step Workflow

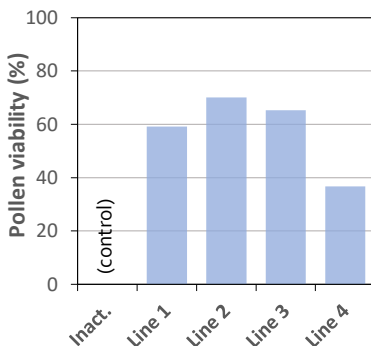
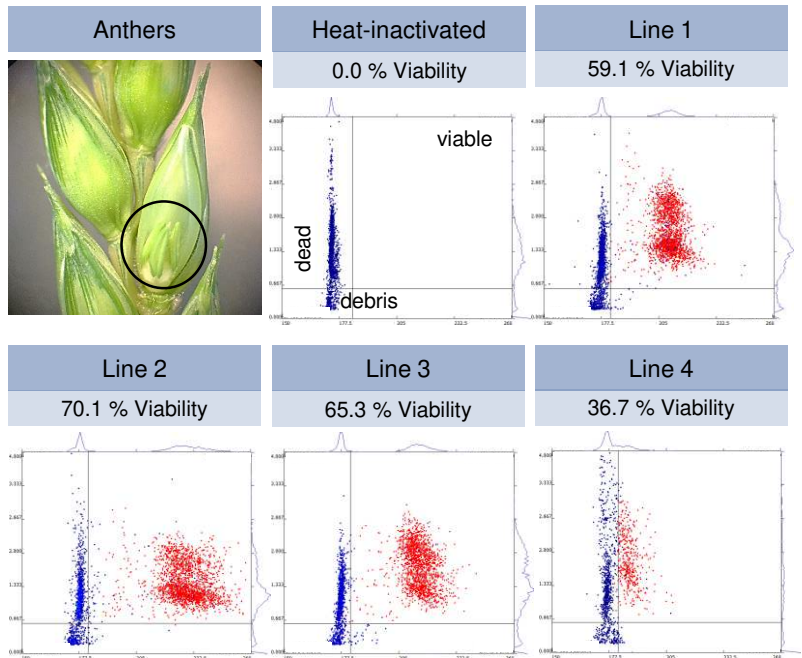
<b>1</b>	Pollen extraction	<b>2</b>	Filtration	<b>3</b>	Measurement
					

### Lab-on-a-chip technology

- Small samples required
- Single cell analysis (no average values)
- Statistically large sample sizes
- Sensitivity and throughput tunable by chip choice

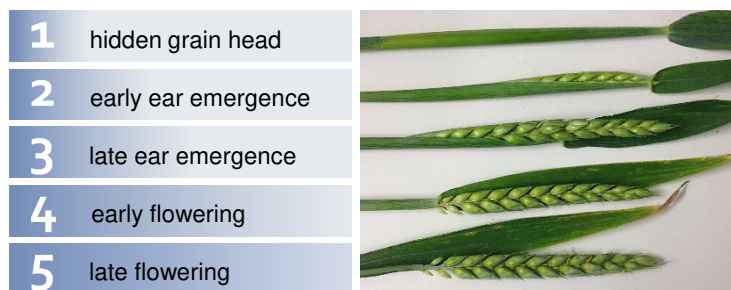
## WHEAT POLLEN VIABILITY

- Collect pollen from open anthers by shaking them in buffer or cut anthers with a scalpel
- Measurement of pollen from 3 anthers





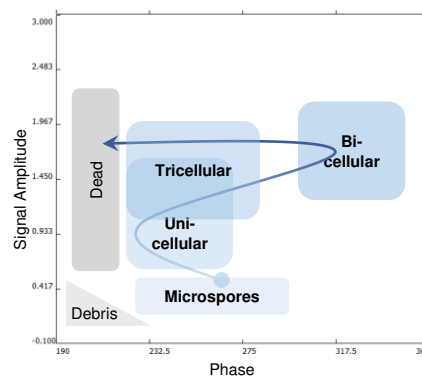
# WHEAT POLLEN DEVELOPMENTAL STAGES



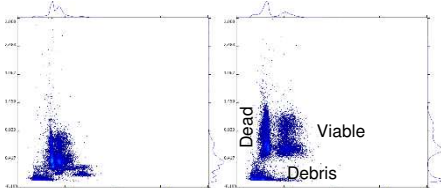
**Impedance Flow Cytometry**  
Measurements from different plants shown at 12 MHz

**Microscopy**  
Ethanol + acetic acid fixation + DAPI staining

## Wheat Maturation Path

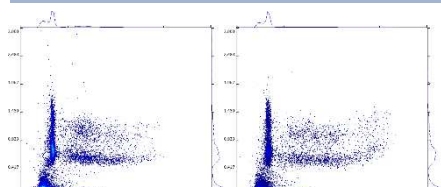


### 1 hidden grain head



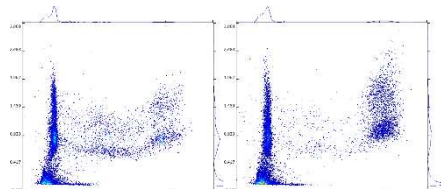
Transition between unpolarized and polarized microspores

### 2 early ear emergence



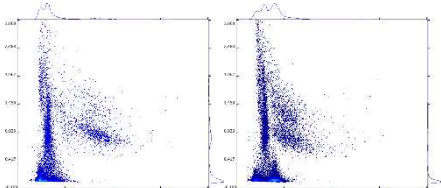
Unicellular pollen and maturation to bicellular pollen

### 3 late ear emergence



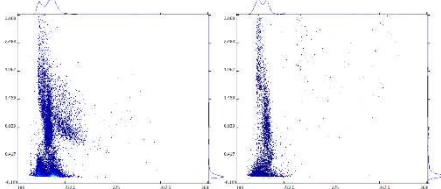
Maturation to bicellular pollen

### 4 early flowering



Mostly tricellular pollen

### 5 late flowering



Pollen (anther) release and decreased viability of remaining pollen

## Sample Preparation

- Collection of 3 anthers (for developmental stages more may be required)
- Resuspension and squashing/cutting in I AF6
- Filtering using 100 µm filter
- Dilution with more AF6

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