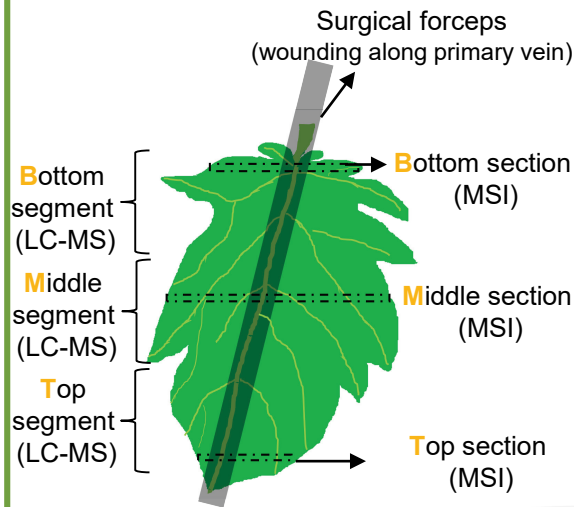


Preserved and variable spatial-chemical changes of lipids across leaves in response to wounding

D. Veličković^{1*}, R. Chu¹, C. Henkel², A. Koch², N. Tao³, J. N. Adkins¹, C. Anderton¹, J. E. Kyle¹, K. Bloodworth¹, L. Bramen¹, S. Cornett⁴, K. Burnum-Johnson¹



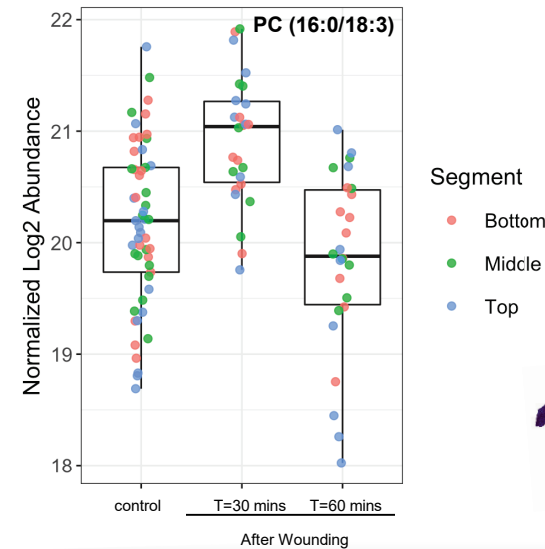
- Spatiotemporal mapping of lipid changes that occur at the site of injury determine localized vs systemic lipid responses and provide lipid markers that are mechanistically linked to plant recovery.
- We used **global lipidomic and multimodal MALDI-MSI approaches (15T Solarix MRMS and timsTOF fleX)** on bio-replicates to better understand these processes.



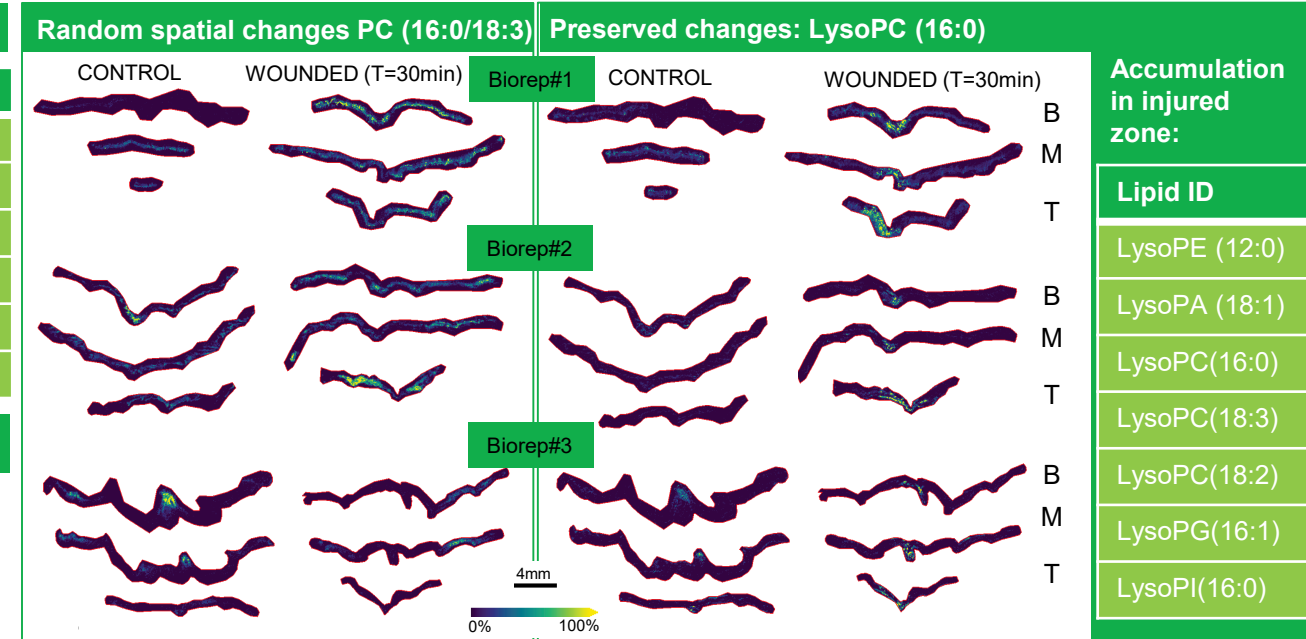
Global lipidomic: LC-MS/MS

Recovery 60 min after wounding		
Lipid class	dT=30min	dT=60min
DGs	Down	No change
PAs	Down	No change
PCs	Up	No change
PEs	Up	No change
SQDGs	Down	No change
TGs	Up/Down	UP/No change

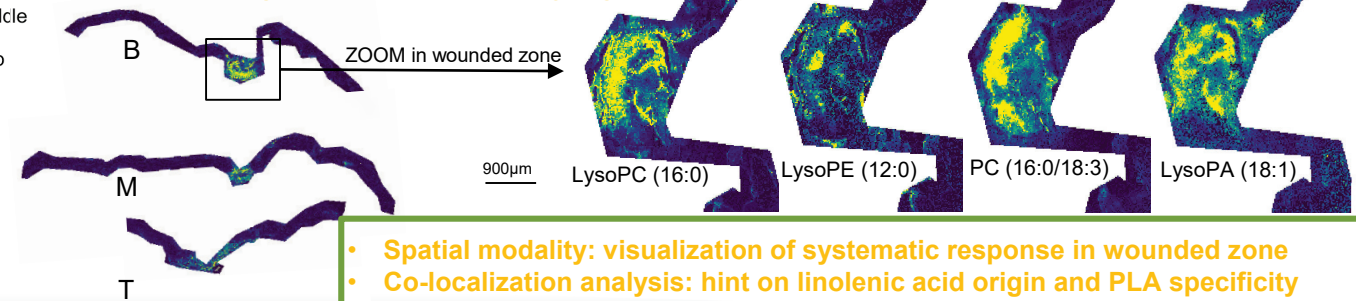
Inter-sample and inter-segment variations



MALDI-solarix MRMS-MSI: the importance of bio-replicate imaging



MALDI-timsTOF fleX MSI: Distribution (at 20 μm scale) of lipids linked to recovery at the site of injury



- **Spatial modality: visualization of systematic response in wounded zone**
- **Co-localization analysis: hint on linolenic acid origin and PLA specificity**

¹Pacific Northwest National Laboratory (PNNL), Richland, WA, USA, ²Bruker, Bremen, Germany, ³Bruker, San Jose, CA, USA, ⁴Bruker, Billerica, MA, USA

* Corresponding author: Dusan.Velickovic@pnnl.gov

