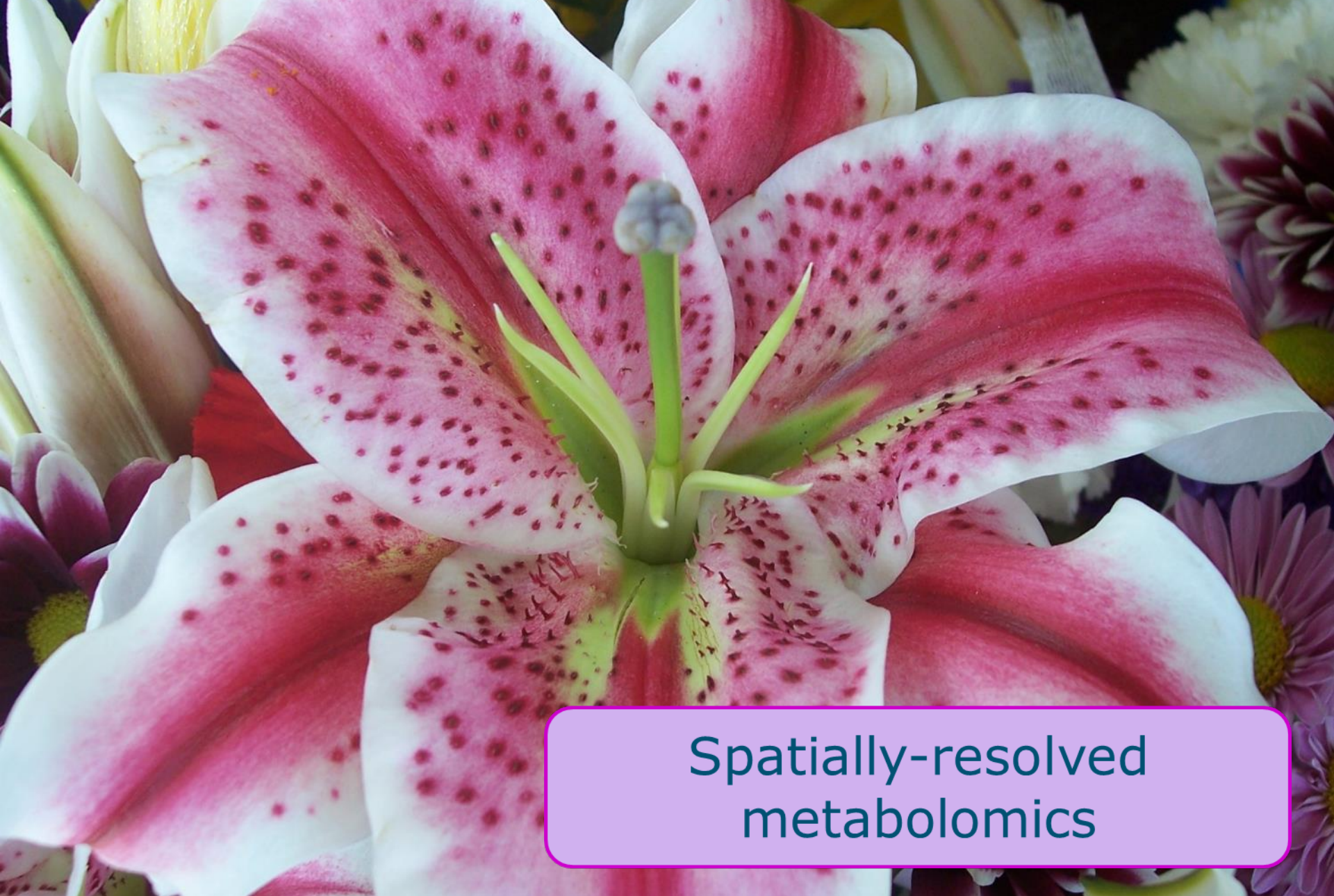


Metabolic mapping in plants: LAESI-MS imaging

Robert Hall

PRI Bioscience & WU Laboratory of Plant Physiology





Spatially-resolved metabolomics



WAGENINGEN
UNIVERSITY & RESEARCH

UV nectar guides of *Bidens* spp. flowers

Website info



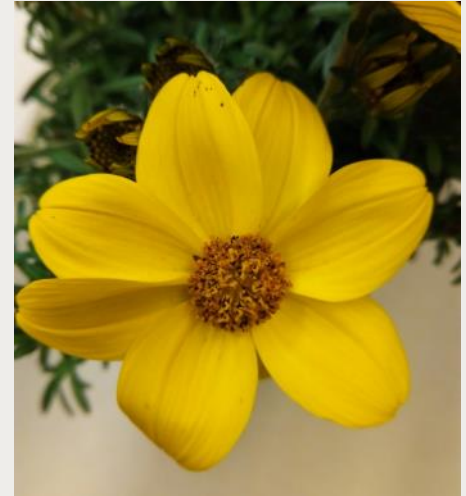
Visible light

Miosic *et al.* (2013)



Visible light

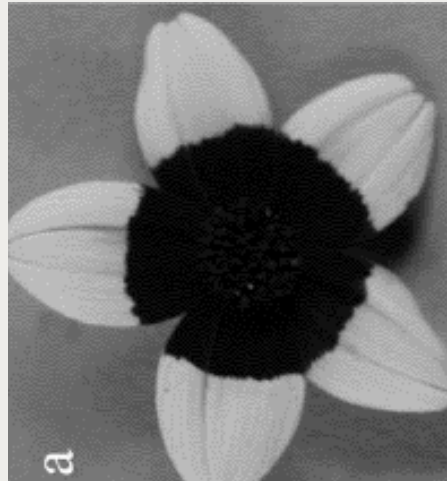
Flowers taken for analysis



Visible light



UV light

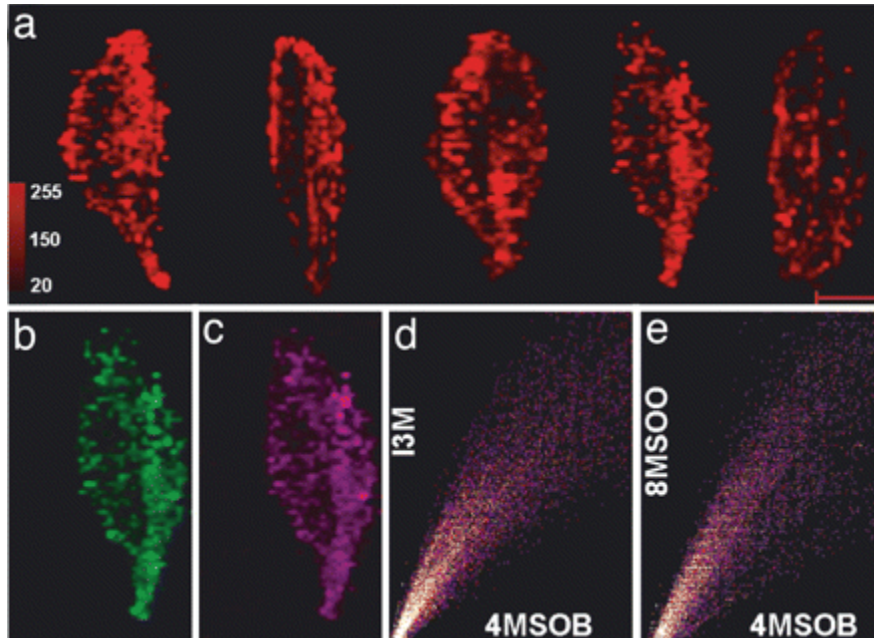


UV light



UV light

MS-based imaging plant metabolites

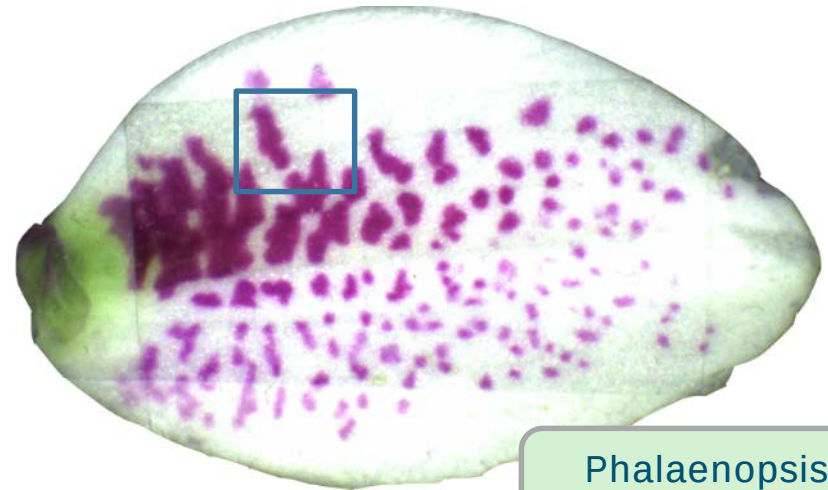
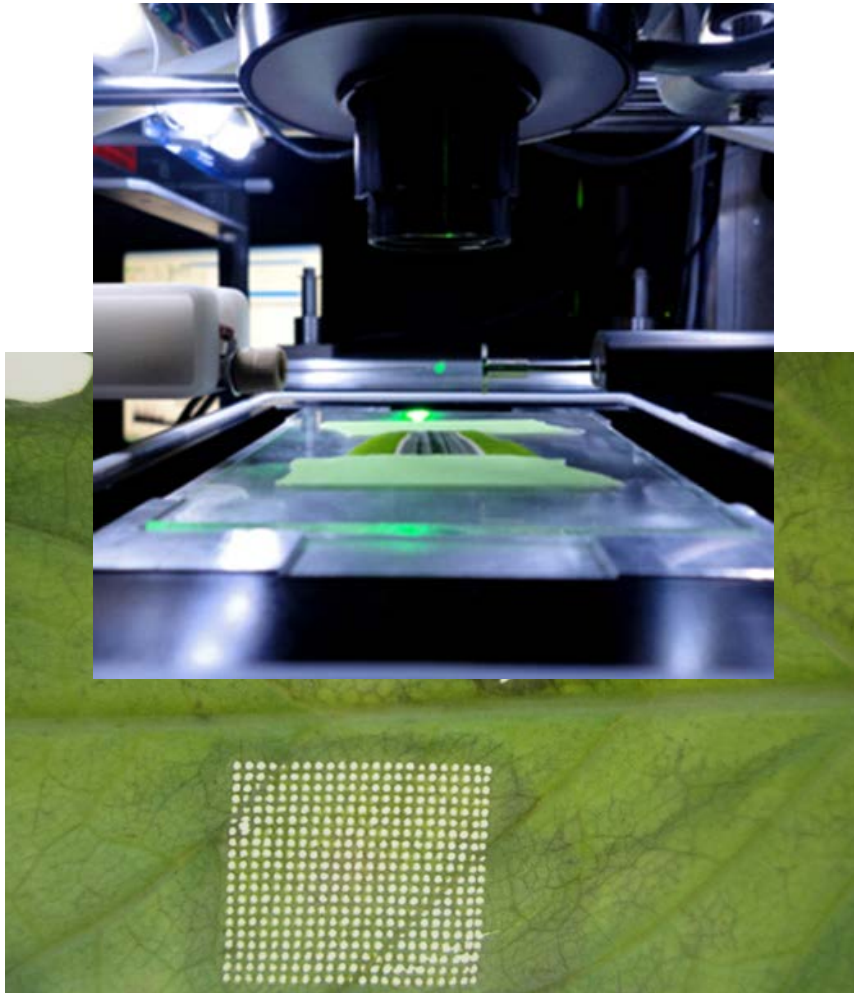


Glucosinolates in Arabidopsis leaves
Gershenzon 2008; MALDI TOF Imaging

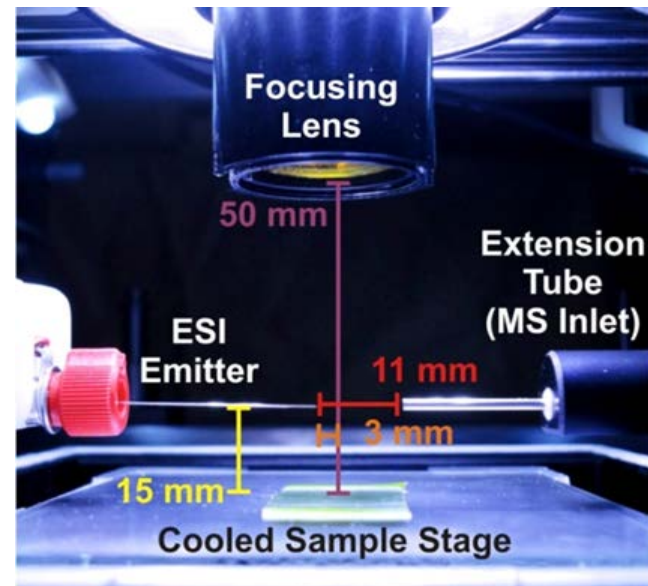


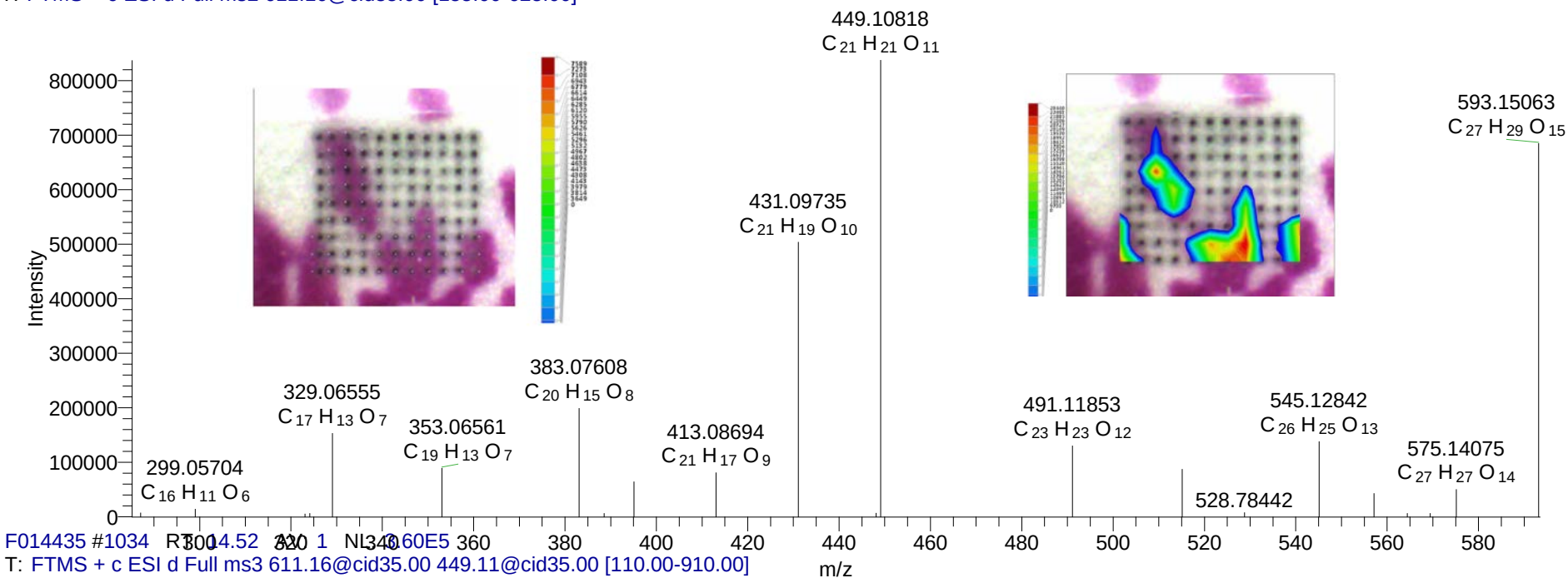
Helicoverpa damage

LAESI: Metabolite imaging / localisation



Phalaenopsis
petal



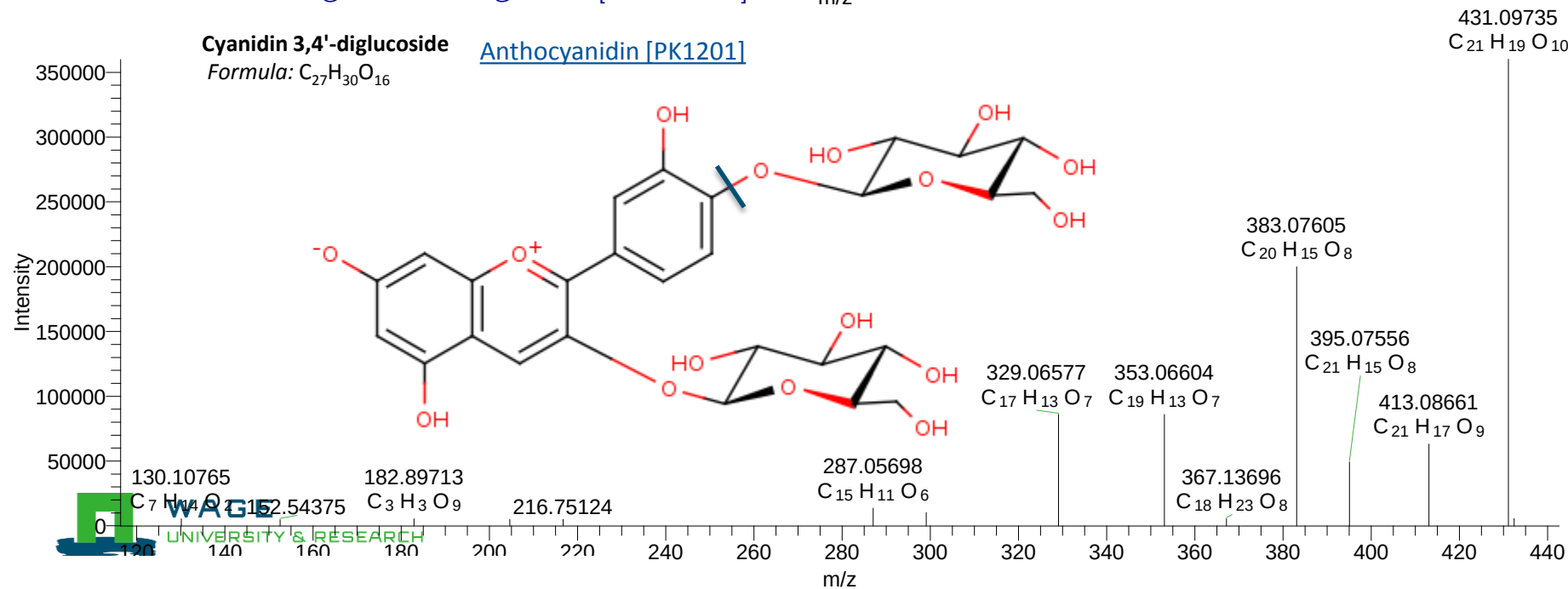


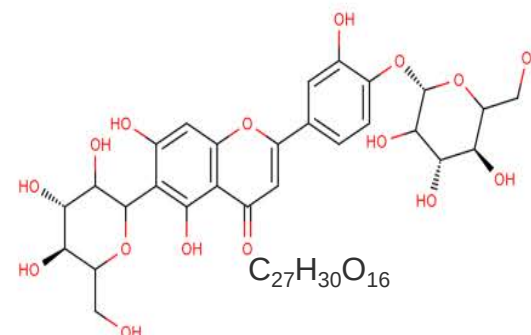
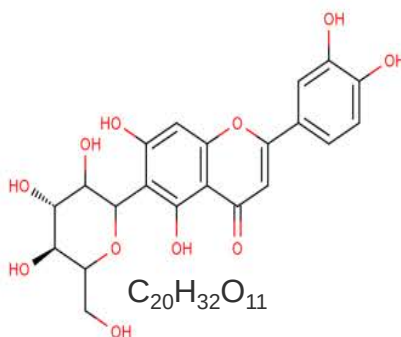
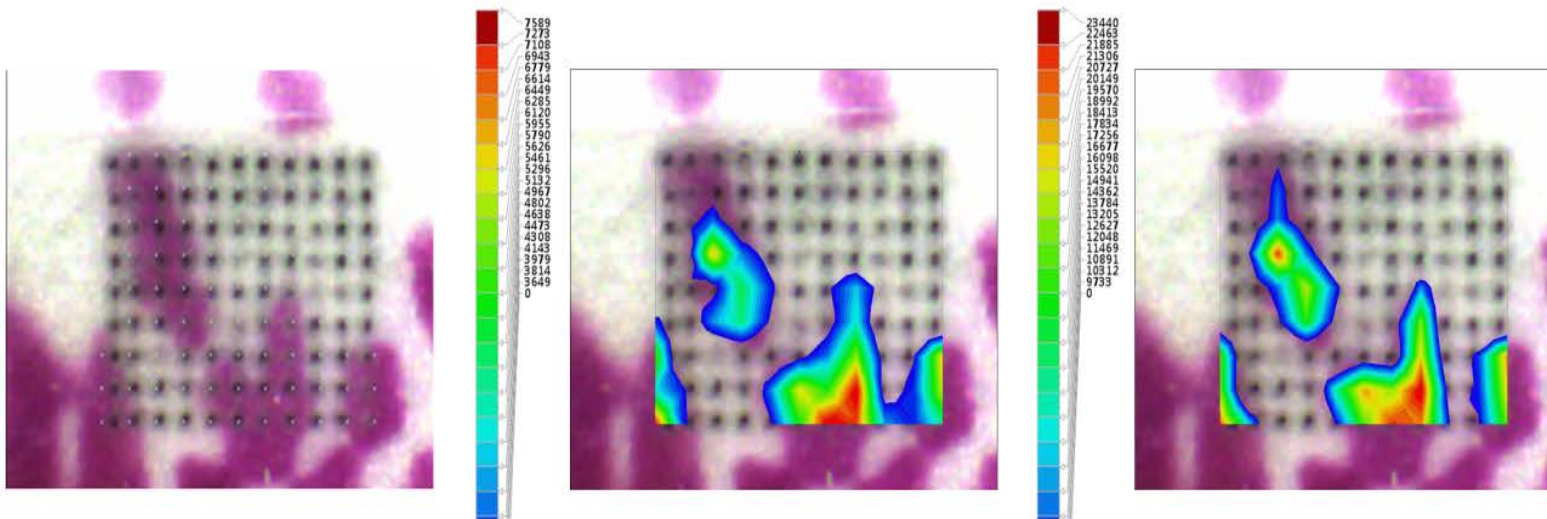
F014435 #1033 RT: 14.52 NL: 34060E5
T: FTMS + c ESI d Full ms3 611.16@cid35.00 449.11@cid35.00 [110.00-910.00]

Cyanidin 3,4'-diglucoside

Formula: $C_{27}H_{30}O_{16}$

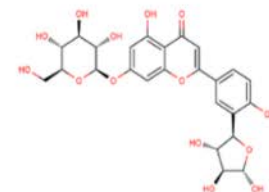
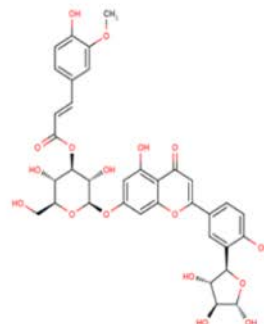
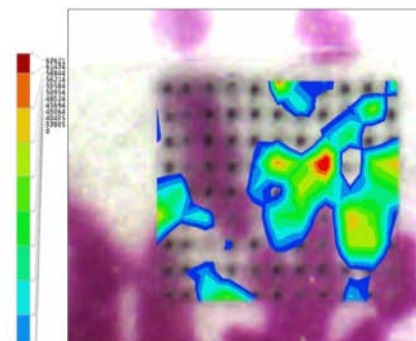
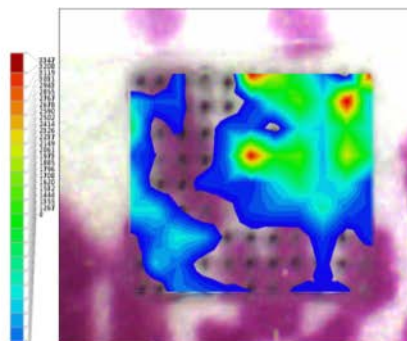
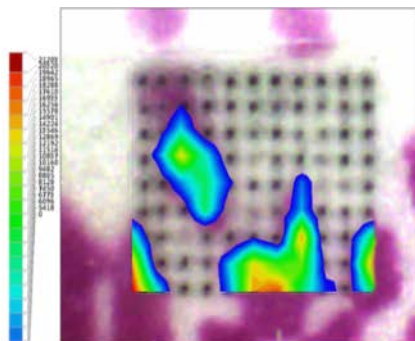
[Anthocyanidin \[PK1201\]](#)





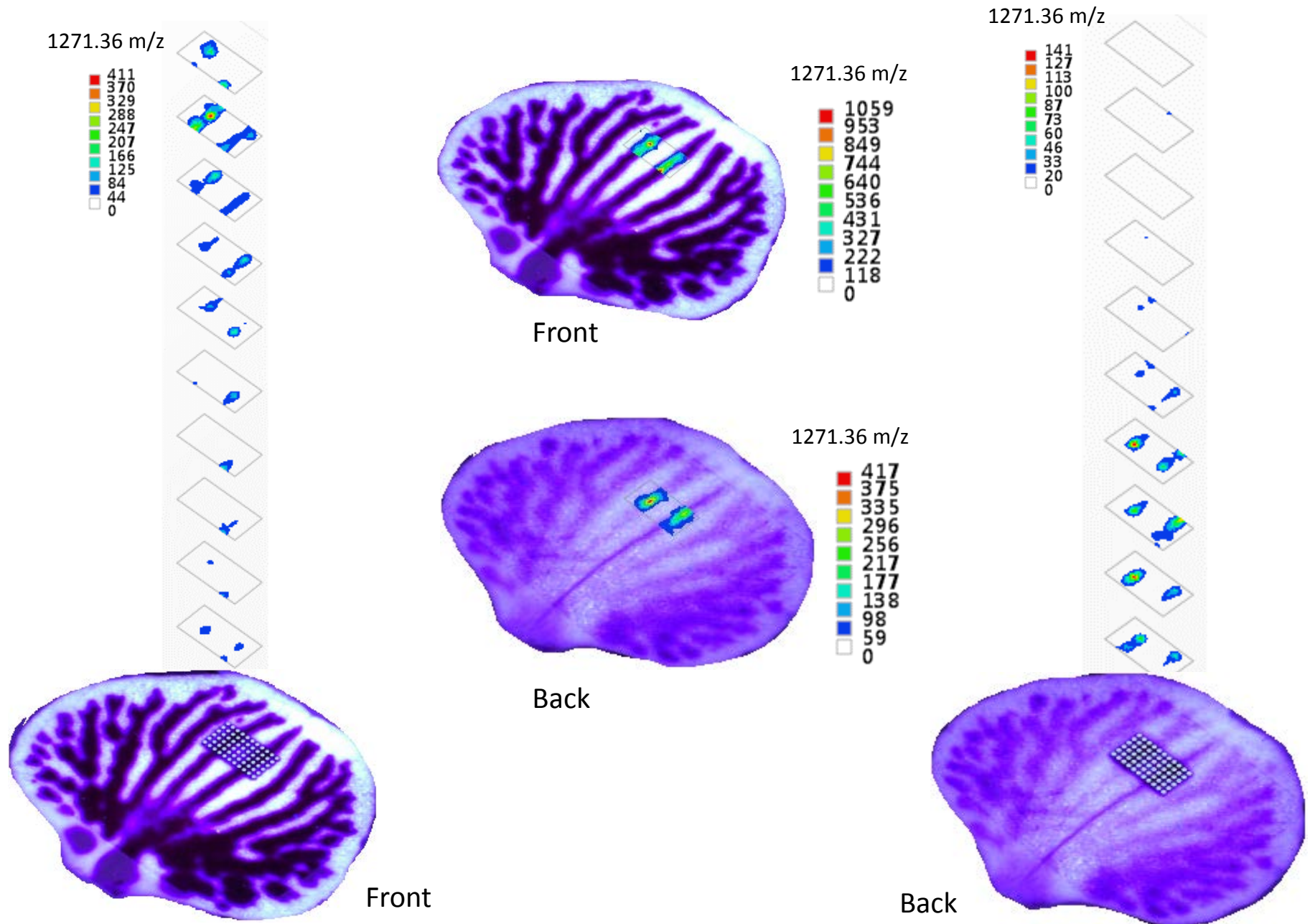
luteoline-related flavonoids

Purple area – avoiding compounds



Apigenin derivative

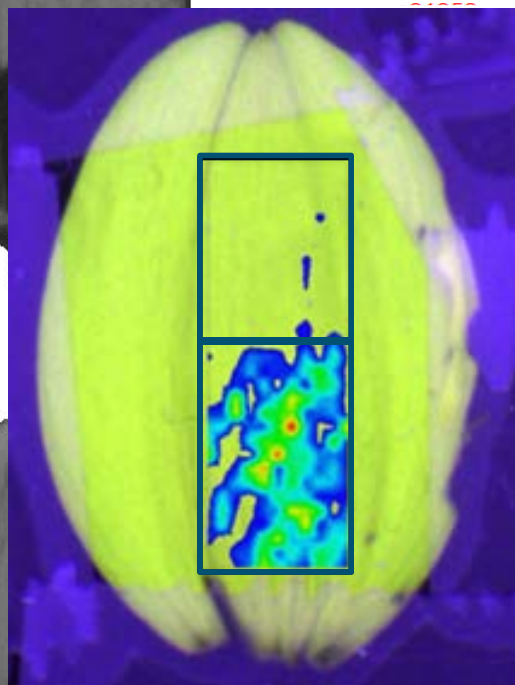
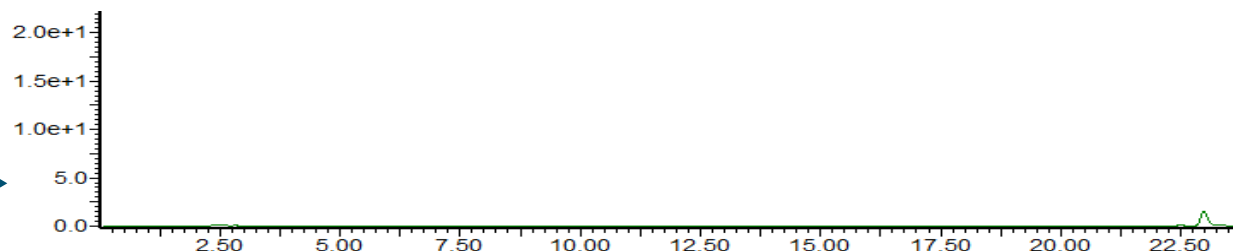
2D and 3D distribution of anthocyanins



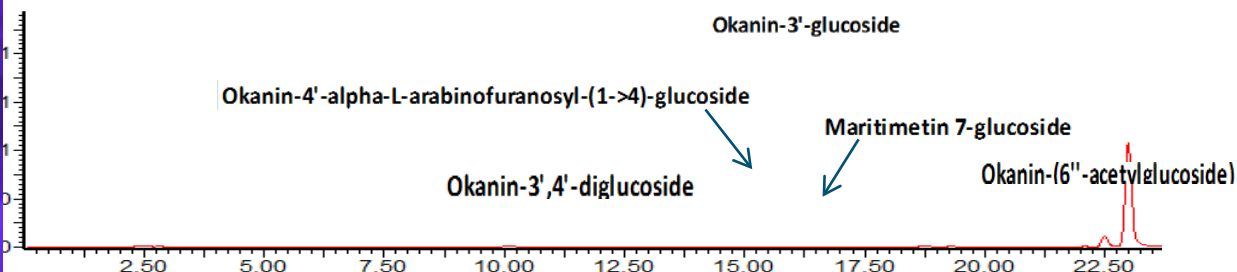
LCMS analysis → Spatial distribution of chalcones in *Bidens* petals

Absorbance at 350 nm

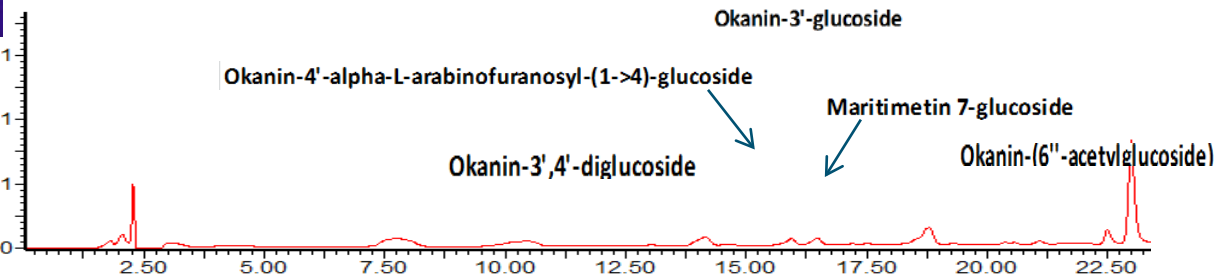
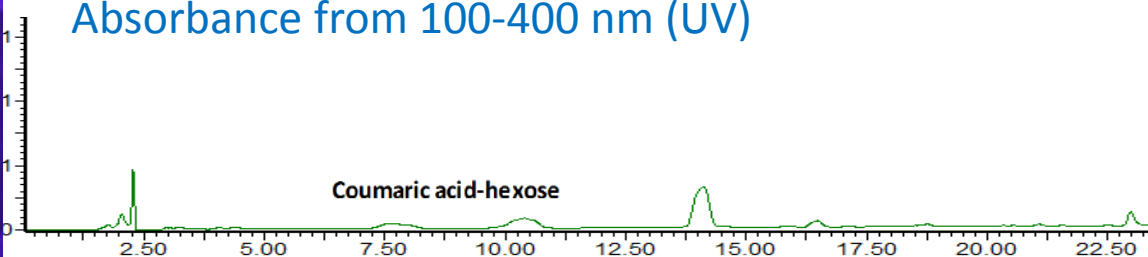
Petal apex



Petal base



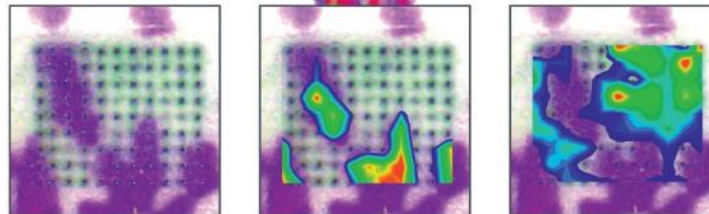
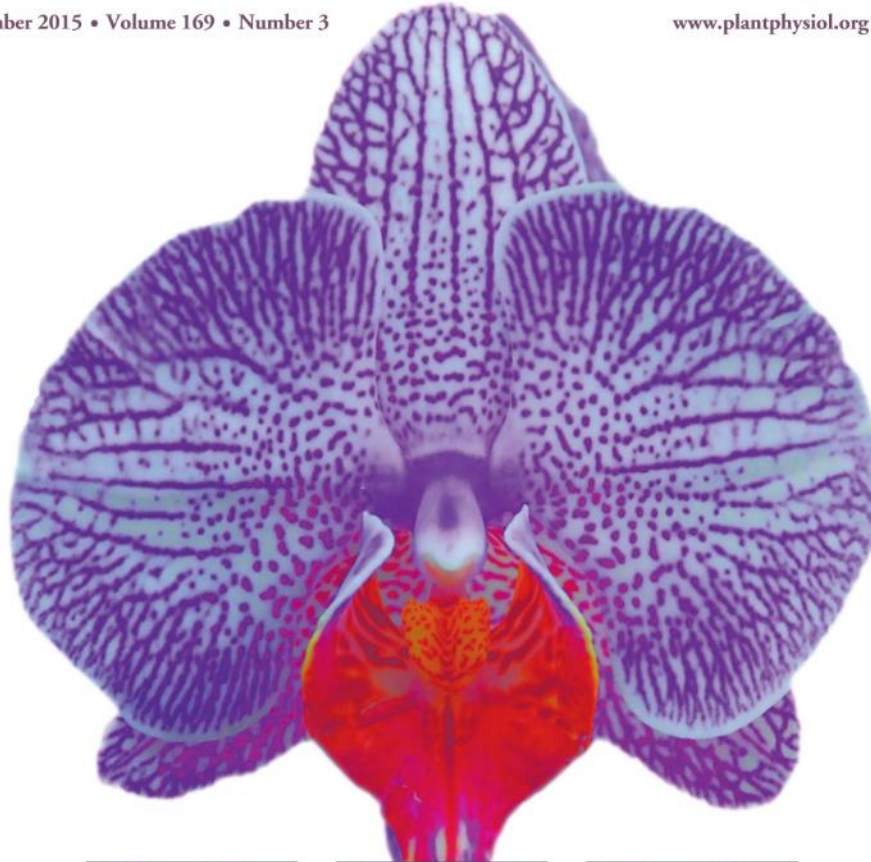
Absorbance from 100-400 nm (UV)



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