Electronic Supplementary Material (ESI) for Analyst.

Mass spectrometry imaging of free-floating brain sections detects pathological lipid distribution in a mouse model of Alzheimer's-like pathology

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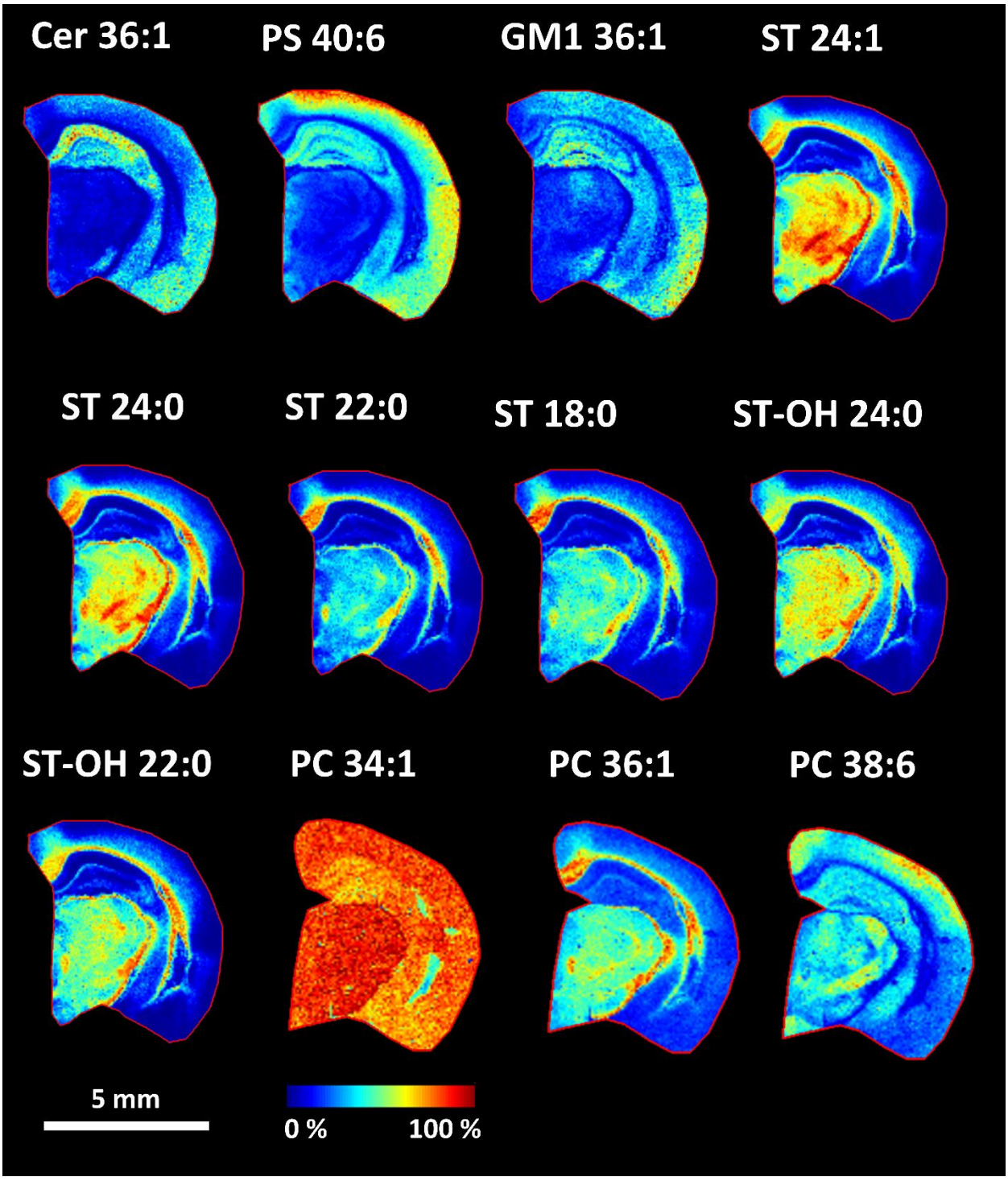
Sup Tab 1. Mean intensities of PC 32:0 adducts from free-floating and fresh frozen tissue sections. ROC analysis with AUC. Significant differences are printed in bold.

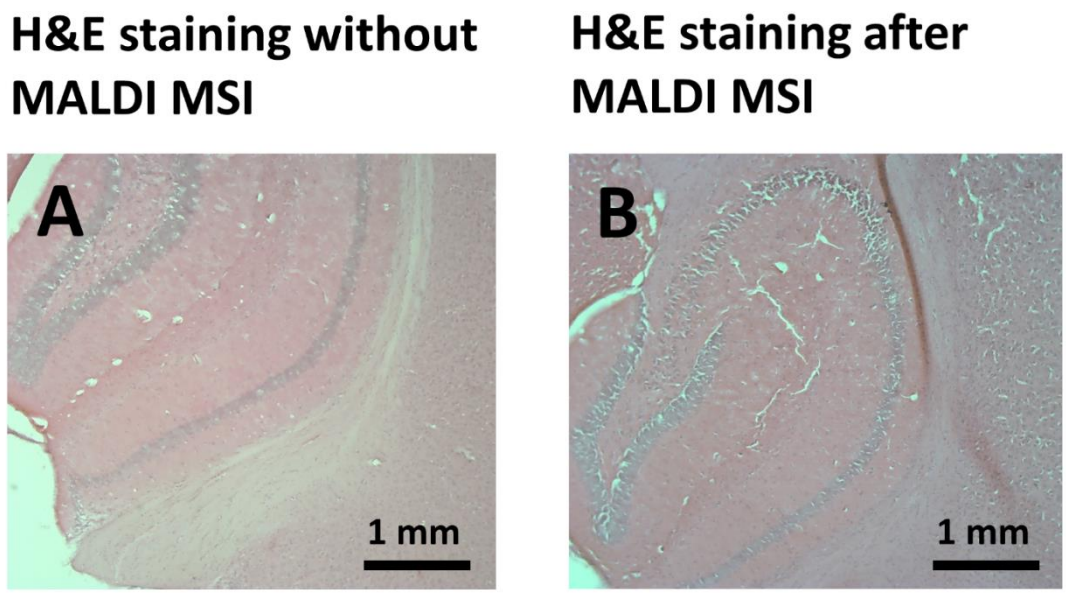
Adduct	$[M + H]^+$	$[M + Na]^+$	$[M + K]^+$
Lipid	**PC 32:0**		
m/z	734.6	756.5	772.5
free-floating sections (mean intensity)	5.51	0.41	0.12
fresh frozen (mean intensity)	4.69	0.28	1.59
ROC (AUC - area under curve)	0.33	**0.11**	**1**

Sup Tab 2. Mean intensities of five selected lipids (one from each class) in negative ion mode from free-floating and fresh frozen tissue sections. ROC analysis with AUC. Significant differences are printed in bold.

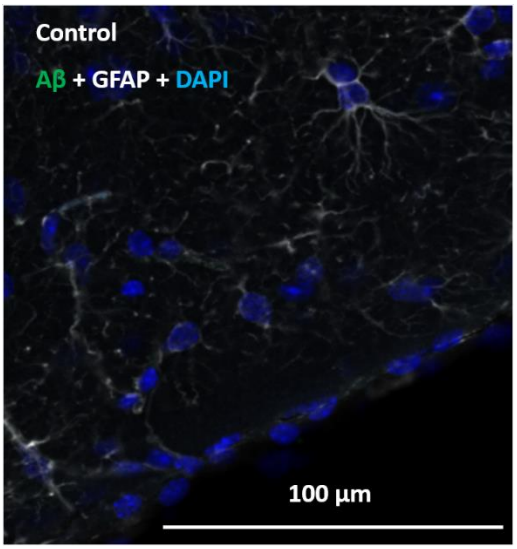
Adduct	$[M - H]^-$	$[M - H]^-$	$[M - H]^-$	$[M - H]^-$	$[M - H]^-$
Lipids	**ST 24:1**	**PI 38:4**	**PS 40:6**	**PE 40:6**	**GM1**
m/z	888.7	885.7	834.6	790.7	1544.8
free-floating sections (mean intensity)	7.48	2.76	0.95	0.79	0.39
fresh frozen (mean intensity)	5.81	1.98	0.67	3.44	0.33
ROC (AUC - area under curve)	0.35	0.34	0.29	**0.91**	0.45



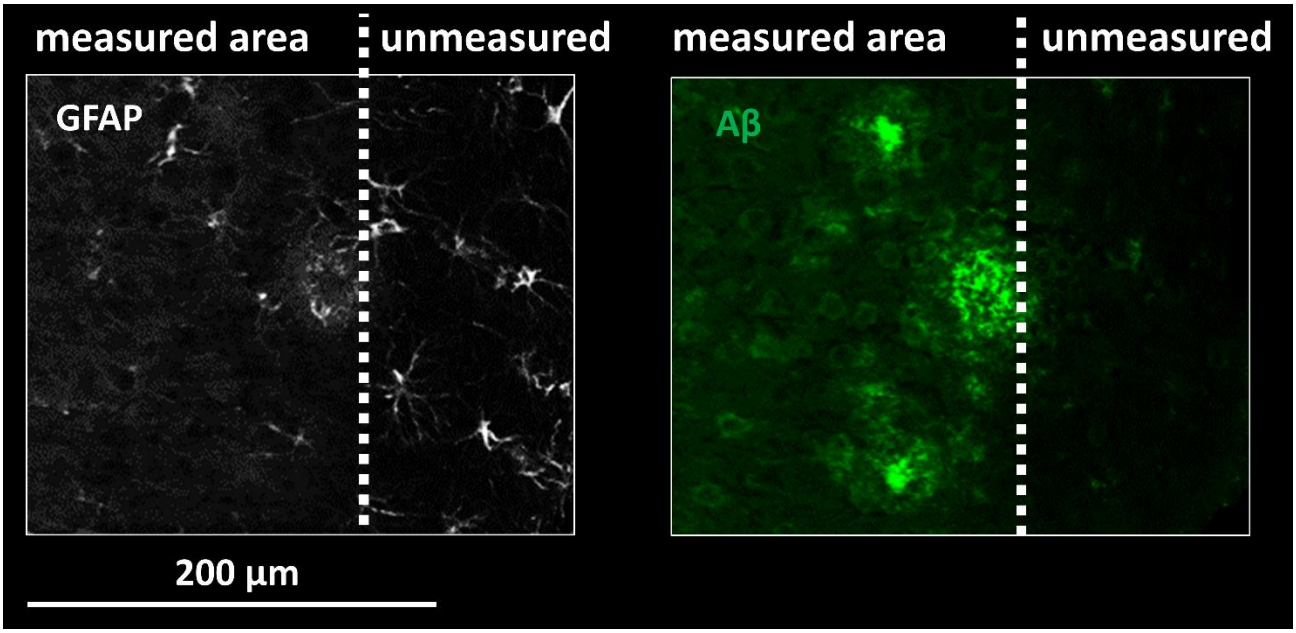
Sup Fig. 1. MALDI MSI of paraformaldehyde fixed free-floating mouse brain sections. Ion images of lipids were obtained in positive and negative ion mode at spatial resolution 50 µm.



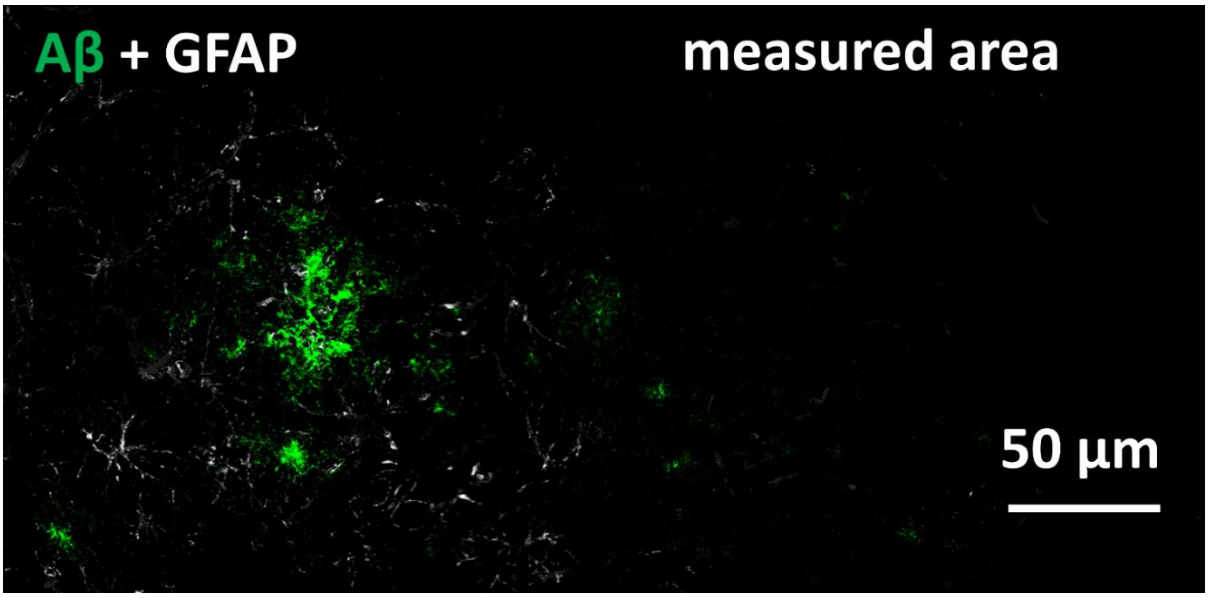
Sup Fig. 2. H&E staining without MALDI MSI (A) and H&E staining after MALDI MSI (B) of mice hippocampus, cortex region in the brain.



Sup Fig. 3. Fluorescent staining of amyloid plaques (green), astrocyte marker GFAP (white) and nucleolus using DAPI (blue) in the brain of the WT control mouse.



Sup Fig. 4. Double fluorescent staining of astrocyte marker GFAP (white) and amyloid plaques (green) in the brain of the APP/PS1 mouse after MALDI MSI analysis with measured and unmeasured regions.



Sup Fig. 5. Fluorescent staining of amyloid plaques (green) and astrocyte marker GFAP (white) in the brain of the APP/PS1 mouse after MALDI MSI analysis.