Supplementary Information for

Argon cluster ion source evaluation on lipid standards and rat brain tissue samples

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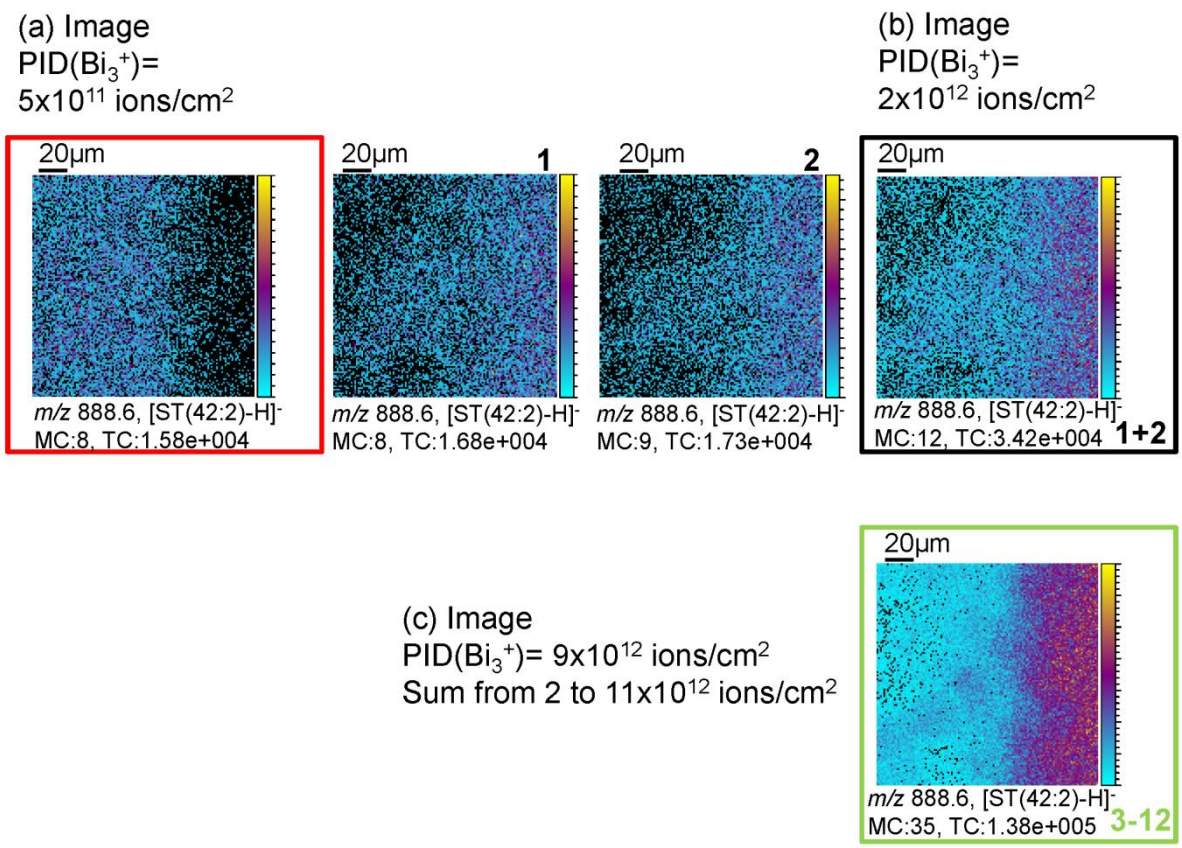

Figure S-1: (a) Image of the *m/z* 888.6 (ST 42:2 [M-H]$^-$) ion in a control experiment (surface analysis with a Bi_3^+ ion dose density of 5×10^{11} ion/cm^2). (b) Images of the same ion in the two first parts of the sputtering analysis, and ion images of the sum of these two parts. (c) Image of the *m/z* 888.6 ion for the bottom layers of the sample, from 2.5 µm until 14 µm.

Table S-1: Parameters of the ion sources

Ion species	Bi_3^+	Ar_{1500}^+
Current (pA) at 200 µs	0.22	1.9
Kinetic Energy (keV)	25	10
Energy per atom (eV)	8300	6.6

Table S-2: Secondary ion yields of some species measured without or in the presence of cholesterol.

Ion species (*m/z*)	Yield without Cholesterol ($x10^{-4}$)	Yield with cholesterol ($x10^{-4}$)	Ratio (wo/w)
ST (42:2) $[M-H]^-$ (*m/z* 888.6)	8.20 ± 0.04	5.04 ± 0.03	1.63 ± 0.02
Cer (C18:0) $[M+H]^+$ (*m/z* 566)	5.00 ± 0.03	4.28 ± 0.03	1.17 ± 0.02
Cer (C18:0) $[M+Na]^+$ (*m/z* 588)	24.60 ± 0.07	18.30 ± 0.06	1.34 ± 0.01
Cer (C18:0) $[M-H]^-$ (*m/z* 564)	48.70 ± 0.10	15.40 ± 0.05	3.16 ± 0.02
SM (34:1) $[M-CH_3]^-$ (*m/z* 687)	4.76 ± 0.03	5.08 ± 0.03	0.94 ± 0.02
TG (48:0) $[M+Na]^+$ (*m/z* 829)	0.70 ± 0.01	0.21 ± 0.01	3.33 ± 0.22
TG (48:0) $[M-H]^-$ (*m/z* 805)	2.04 ± 0.01	0.88 ± 0.01	2.31 ± 0.05
PE (34:1) $[M+Na]^+$ (*m/z* 740)	3.11 ± 0.02	0.34 ± 0.01	9.14 ± 0.34
PE (34:1) $[M-H]^-$ (*m/z* 716)	6.01 ± 0.03	0.58 ± 0.01	10.3 ± 0.24
Vit E $M^{+\bullet}$ (*m/z* 430)	100.00 ± 0.15	32.10 ± 0.08	3.11 ± 0.01
Vit E $[M-H]^-$ (*m/z* 429)	52.20 ± 0.10	33.80 ± 0.08	1.54 ± 0.01

ST, sulfatide, Cer, ceramide, SM, sphingomyelin, TG, triglyceride, PE, phosphatidylethanolamine, Vit E, vitamin E.