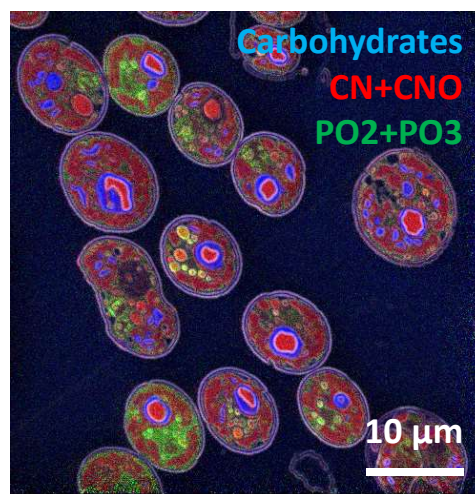
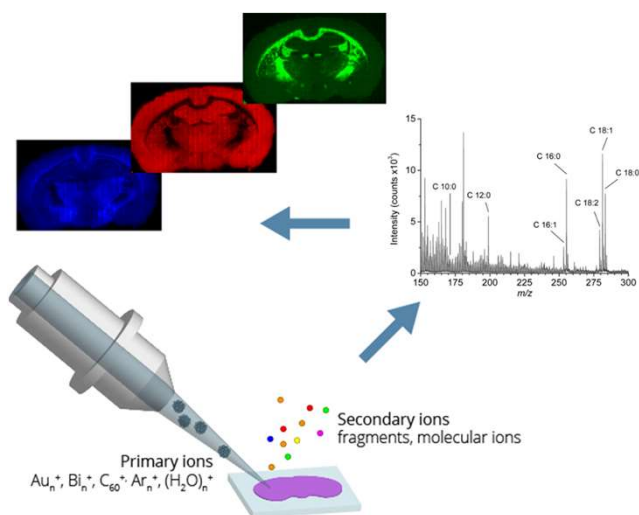


Expansion microscopy for visualisation of cellular compounds at the organelle level by mass spectrometry imaging

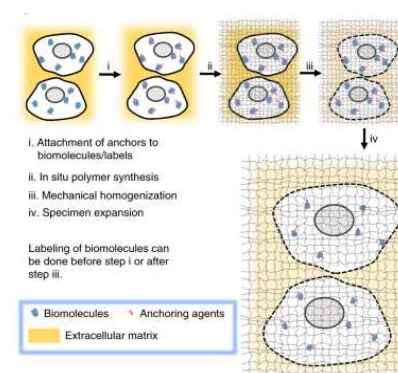
Contact claire.seydoux@cea.fr

M2 internship

ToF-SIMS (Time-of-Flight Secondary Ion Mass Spectrometry) allows the untargeted **localisation of biological compounds** (e.g. drugs, lipids, carbohydrates, metals, etc.) with a lateral resolution up to 100 nm. Applying **expansion microscopy** to single cells could enable the localisation of such molecules at the **organelle scale**.



Correlative ToF-SIMS/SEM imaging of microalgae.



Principle of expansion microscopy. Adapted from Wassie et al, 2018

Gilmore, Ian S., Sven Heiles, and Cornelius L. Pieterse. "Metabolic imaging at the single-cell scale: recent advances in mass spectrometry imaging." *Annual review of analytical chemistry* 12 (2019): 201-224.

Wassie, Asmamaw T., Yongxin Zhao, and Edward S. Boyden. "Expansion microscopy: principles and uses in biological research." *Nature methods* 16.1 (2019): 33-41.

<https://www.mem-lab.fr/en/Pages/LEMMA/e-microscopy.aspx>