

Dynamic and structural studies of lipid droplets using synchrotron light

Frederic Jamme, Jean-David J.-D. Vindigni, Alexandre A. Giuliani, Franck Wien, Roselyne Tâche, Franjo Jagic, Mathieu Réfrégiers, Pascale P. Jolivet, Thierry Chardot, Yann Gohon, et al.

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hairpin

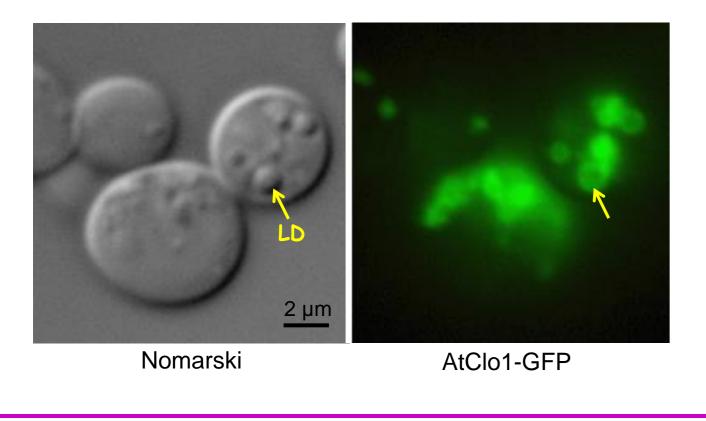
in stomatin [13]

core protein [11]

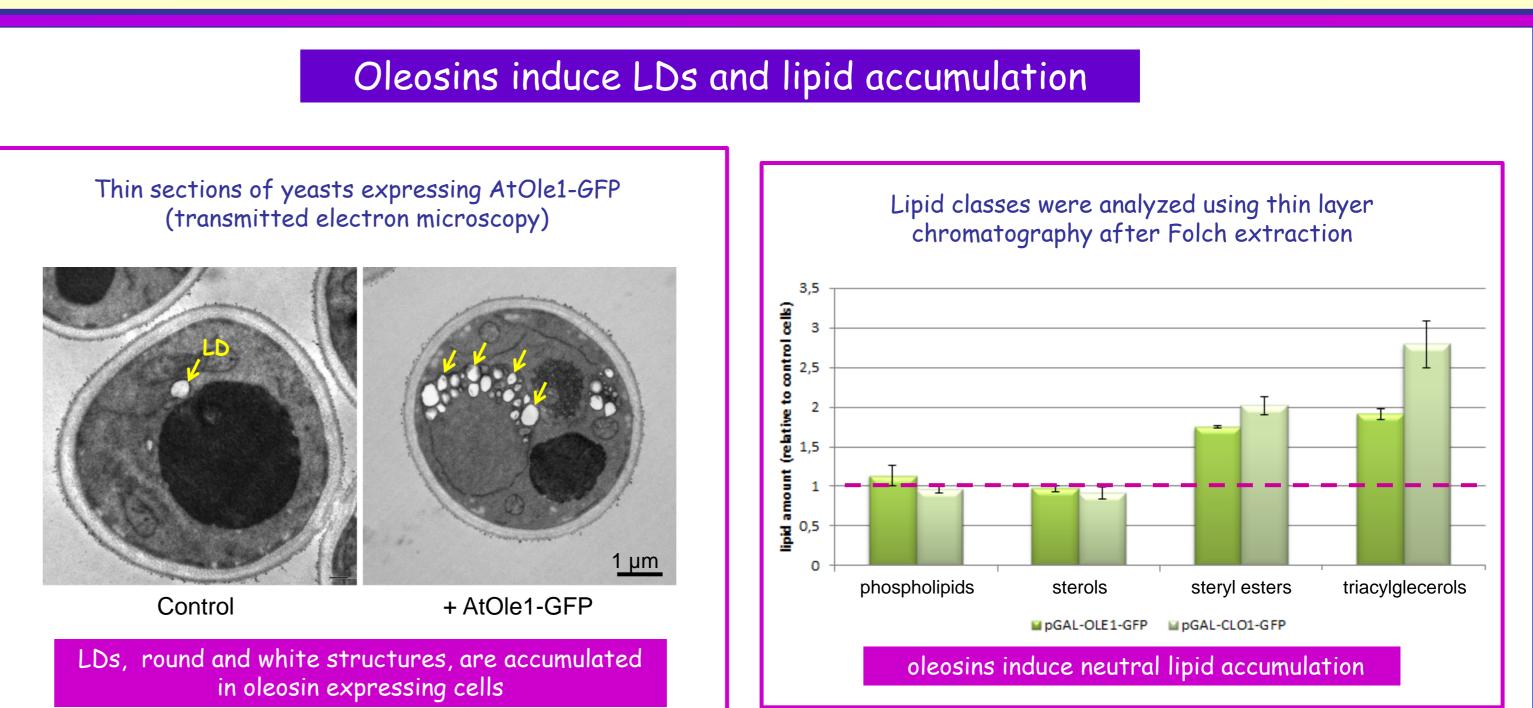
HETEROLOGOUS EXPRESSION OF PLANT OLEOSINS IN YEAST

Oleosins are targeted to LDs in yeast

Photonic microscopy pictures (bright field and epifluorescence) of yeast expressing AtClo1-GFP [6].

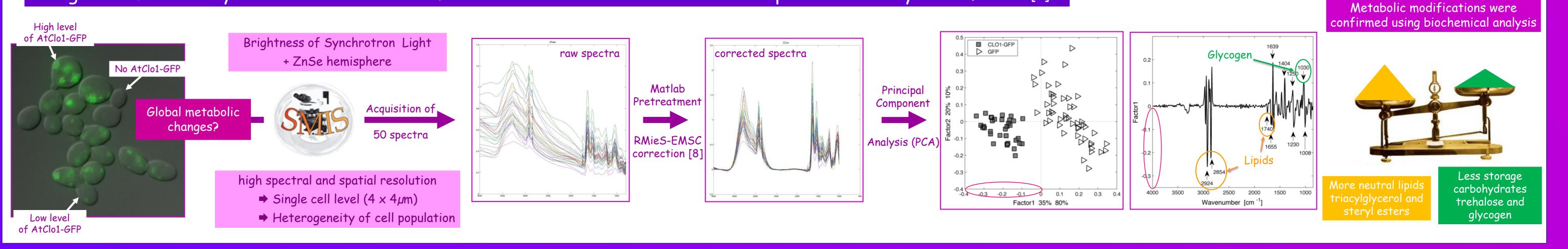


SDS-PAGE protein profiles of LDs purified on sucrose gradient						
М	1	2	3			
200 kDa				1 control		
116.3 kDa				2 + Ole1		
97.4 kDa 🗕	-			3 + Ole1-GFP		
66.3 kDa 🚃	=					
55.4 kDa 💴						
			_	← Ole1-GFP		
36.5 kDa						
31 kDa						
21.5 kDa						
14.4 kDa				← Ole1		



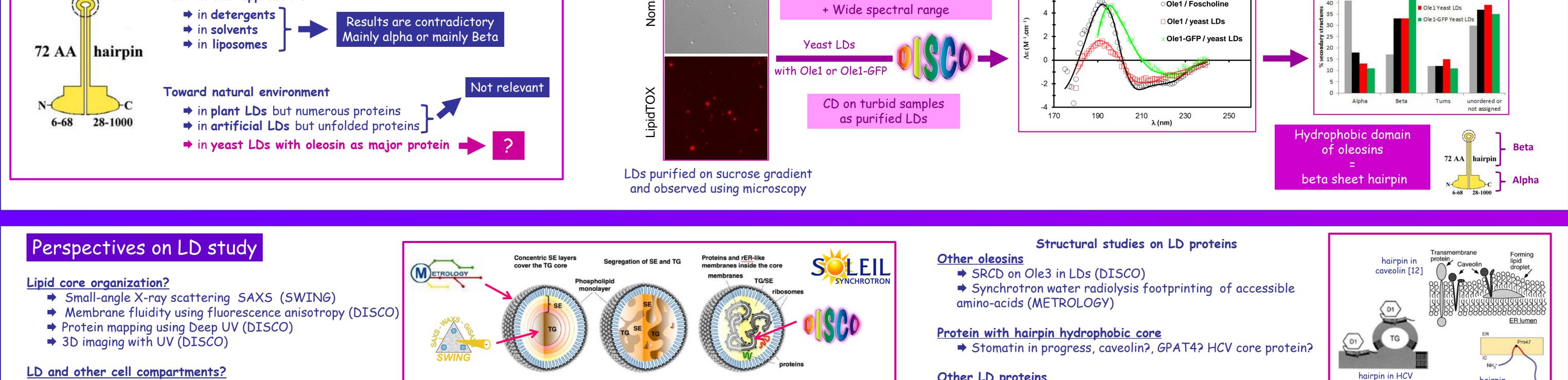
DYNAMIC STUDY USING SYNCHROTRON FTIR

Single cell FTIR analysis on Soleil SMIS beamline revealed a link between neutral lipid and carbohydrate fluxes [7].



STRUCTURAL STUDY USING SRCD

SRCD at DISCO beamline revealed that Ole1 is mainly bet	a folded when inserted in LDs [9]		
		First SRCD spectra on	
<u>Summary of oleosin structural studies</u>		purified organelle	
Conventional approaches	Brightness of Syno Wide spect		50 Image: Ole1SDS 45 Image: Ole1SDS 40 Image: Ole1Yeast LDs



facility

⇒ 3D imaging with UV (DISCO)

Structures in the LD core [10]

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1828, 1881. [10] Ohsaki et al. (2014) Chem Biol. 21,86. [11] Bouland et al. (2006) J. Biol. Chem., 281, 22236. [12] Ostermeyer et al. (2001) J. Cell Biol. 152,1071 [13] Kadurin et al. (2009) Biochem. J. 418, 587.

Other LD proteins ➡ Perilipins, Apolipoproteins

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