Towards Improvement of Seed Reserve Quality: From Developing to Mature Oil Bodies from *Brassica napus* Seeds.

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Seed oil bodies (OBs) are intracellular particles storing lipids as food or biofuel reserves in oleaginous plants. *Arabidopsis thaliana* mature seed OB proteome contains limited number of proteins (1), while *Brassica napus* (polyploid) OB proteome is more complex (2,3), and contains essentially structural proteins, contrary to their microbial or animal counterparts. The literature contains scattered data about the appearance of these particular proteins. Moreover, the presence or absence of some OBs structural proteins affects significantly OB size and seed oil content in *A. thaliana* (4).

In order to use these proteins as target for seed oil quality and quantity improvement in *B napus*, it is therefore important to study extensively the protein composition of rapeseed OBs, and the appearance of structural proteins during seed development.

Using a combination of proteomic and genomic tools, we have identified without ambiguity 15 oleosins (orthologous to S1 to S5 *A. thaliana* oleosins), 4 steroleosins (Slo) and several caleosins (Clo) isoforms. We observed a sequential appearance of these proteins: S1 to S3 were followed by S4, Slo and Clo isoforms. This is the first report of an ordered maturation scheme for OBs.

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Literature

1. Jolivet, P., Roux, E., D'Andrea, S., Davanture, M., Negroni, L., Zivy, M., and Chardot, T. (2004) *Plant Physiol Biochem* 42, 501-509
2. Katavic, V., Agrawal, G. K., Hajduch, M., Harris, S. L., and Thelen, J. J. (2006) *Proteomics* 6, 4586-4598
3. Jolivet, P., Boulard, C., Bellamy, A., Larre, C., Barré, M., Rogniaux, H., D'Andrea, S., Chardot, T., and Nesi, N. (2009) *Proteomics,* Under press
4. Siloto, R. M., Findlay, K., Lopez-Villalobos, A., Yeung, E. C., Nykiforuk, C. L., and Moloney, M. M. (2006) *Plant Cell* 18, 1961-1974