

UPRA meeting Abstract

## **Roles of Very-Long-chain fatty acid in the development of *Arabidopsis thaliana***

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Very long chain fatty acids (VLCFAs) are necessary for the synthesis of triacylglycerols, epicuticular waxes and sphingolipides which are well known to be essential for seed storage and plant structure. Interestingly, studies showed that VLCFAs are also essential for plant development being involved in several cellular processes such as membrane trafficking, cell division and cell differentiation (1-3). The VLCFAs are elongated in the endoplasmic reticulum by the elongase complex composed of four enzymes. The acyl-CoA dehydratase involved in the third step was recently identified as PASTICCINO2 (PAS2) (4). The *pas2* mutants show strong defects such as lost of cellular adherence, defects in division plate formation and vesicular dynamic (1, 4).

However, the precise role of VLCFAs in these different cellular processes is still poorly understood in plants. In order to identify new factors associated with the biosynthesis or function of VLCFAs, a yeast multicopy suppressors screen with an *A. thaliana* cDNA library was carried out in a yeast mutant strain defective for fatty acid elongation. Loss of function of *PHS1*, the yeast *PAS2* ortholog, prevents growth and induce cytokinesis defects. We selected *Arabidopsis* genes able to restore growth in selective conditions by acting either directly on the VLCFAs synthesis or by by-passing the VLCFA requirement for cell division and growth. Results from the screen will be presented and in particular the identification of potentially a new dehydratase involved in VLCFAs elongation.

### References

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3. Roudier F, *et al.* (2010) *Plant Cell* 22(2):364-375
4. Bach L, *et al.* (2008) *Proc. Natl. Acad. USA* 105(38):14727-14731.