Plant Biochemistry BCH/PLS/PPA 609

Lipid Discussion (10 points) due by February 4 @ 5 PM.

Thoroughly read [Lu](http://www.pnas.org/content/106/44/18837.full) et al. (2009) and [Bates](http://www.plantphysiol.org/content/160/3/1530.full) et al. (2012) and provide answers to the following questions drawing from what we are learning in class as needed.

Lu, C., Z. Xin, Z. Ren, M. Miquel, and J. Browse. 2009. An enzyme regulating triacylglycerol composition is encoded by the ROD1 gene of *Arabidopsis*. Proceedings of the National Academy of Sciences 106:18837-18842.

Bates P.D., Fatihi A., Snapp A.R., Carlsson A.S., Browse J., Lu C. (2012) Acyl Editing and Headgroup Exchange Are the Major Mechanisms That Direct Polyunsaturated Fatty Acid Flux into Triacylglycerols. Plant Physiology 160:1530-1539.

1. Based in its phenotype it was originally hypothesized that the *rodl* (*reduced oleate desaturation 1*) mutation is a hypomorphic allele of *fad2*. What biochemical reaction does *Rodl* encode and what experiments showed that *rodl* and *fad2* are not alleles?
2. What are the full biochemical names of CPT and LPCAT and what reactions do they catalyze?
3. The *rodl* phenotype could have been due to a block in CPT or LPCAT but their experiments suggested that neither of these routes were responsible for the *rodl* phenotype. What experiments indicated that these routes did not explain the *rodl* phenotype and what biochemical reaction was instead implicated?
4. How were the functions of *Rodl, LPCAT1* and *LPCAT2* established?
5. What implications might this improved understanding of TAG biosynthesis have for renewable resource developments?