



Net fluxes in the central metabolism network of developing canola embryos.

## Papers of the Week

### Monitoring Mitochondrial Metabolism ♦

For years biochemists have attempted to estimate fluxes through metabolic pathways by indirect means such as determining substrate levels, enzyme kinetics, and enzyme regulatory mechanisms. Recently, new technologies using stable isotopes and advanced analytical systems together with mass spectrometry or NMR have made it possible to measure metabolic fluxes directly. This Paper of the Week involves measuring fluxes in central metabolism as they relate to lipid and protein synthesis in developing canola (*Brassica napus*) embryos.

Specifically, Jörg Schwender and colleagues have used five different labeled precursors and followed the labels into their end products. They then used computer algorithms to derive flux patterns to explain the independent labeling results. The results significantly change our understanding of respiration in developing oilseed embryos, allowing the authors to demonstrate that the metabolic activity of canola mitochondria is unusual in several respects. The discoveries that flux through a conventional tricarboxylic acid cycle is limited and that mitochondrial metabolism is flexible to the specific physiological requirements of the tissue are particularly important points that would otherwise not be known without the application of this innovative technology.

♦ See referenced article, *J. Biol. Chem.* 2006, **281**, 34040–34047

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