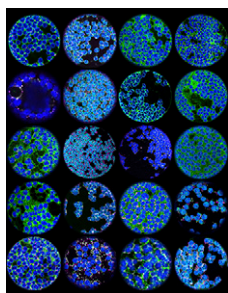


T H E P L A N T C E L L

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ON THE COVER



Methylglyoxal and glyoxal are toxic reactive carbonyl species generated as by-products of glycolysis. The preemption pathway for detoxification of these products is the glyoxalase (GLX) system, involving reactions catalyzed by GLXI and GLXII. In Arabidopsis, the GLX system is encoded by three homologs each of GLXI and GLXII, from which several isoforms are derived through alternative splicing. Schmitz et al. (pages 3234–3254) identified the physiologically relevant splice forms using sequencing data and demonstrated that the resulting isoforms have different subcellular localizations. They show that the Arabidopsis GLX system involves the cytosol, chloroplasts, and mitochondria, which harbor individual components that might be utilized at specific developmental stages and respond differentially to cellular sugar status. They propose a cellular model in which methylglyoxal and glyoxal can be detoxified directly at the cellular production site through specific glyoxalase isoforms. The cover image shows patterns of subcellular localization of different Arabidopsis GLXI and GLXII isoforms fused to yellow fluorescent protein and expressed in tobacco leaf protoplasts.

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