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**On the Cover:** The bioenergy feedstock grass *Miscanthus × giganteus* is exceptional among C<sub>4</sub> species for its high productivity in cold climates. It can maintain photosynthetically active leaves at temperatures 6°C below the minimum for maize (*Zea mays*), which allows it to have a longer growing season in cool climates. Understanding the basis for this difference between these two closely related plants is critical in adapting other C<sub>4</sub> crops like maize to colder weather. In this issue, Wang et al. (pp. 557–567) establish a link between cold tolerance and increased expression and activity of a C<sub>4</sub> enzyme: pyruvate P<sub>i</sub> dikinase (PPDK). Their data indicate that of the two enzymes known to limit C<sub>4</sub> photosynthesis, increase of PPDK, not Rubisco, content corresponds to the recovery and maintenance of photosynthetic capacity in *M. × giganteus*, by increasing the stability of the active form of PPDK at low temperature. The finding may indicate how other related C<sub>4</sub> crops, such as sorghum (*Sorghum bicolor*) and maize, might be adapted for improved production in cool climates. The cover image is created and provided by Patrick Schmitz, Rachel Knepp, and Dafu Wang of the University of Illinois.

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<sup>[CI]</sup> Some figures in this article are displayed in color online but in black and white in the print edition.

<sup>[W]</sup> Indicates Web-only data.

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