

T H E
PLANT
C E L L

Volume 9 Number 2 February 1997

ON THE COVER



Tobacco BY-2 suspension-cultured cells are an excellent model system for deciphering the molecular signals that are necessary and sufficient to target proteins to specific plant cell organelles. On pages 185–197 of this issue, Lee et al. describe their use of this system to investigate the targeting of cottonseed isocitrate lyase (cIL) to glyoxysomes—specialized types of peroxisomes. In the experiments highlighted on the cover, two different cIL-encoding constructs were introduced into BY-2 cells by biolistic bombardment. The wild-type protein was targeted to and accumulated in glyoxysomes, as shown by the punctate immunofluorescence staining in the cells on the right. Conversely, a mutated protein lacking the three C-terminal amino acids (ARM-COOH) of wild-type cIL accumulated only in the cytoplasm (diffuse staining in the cells on the left), demonstrating that the extreme C terminus of cIL is required *in vivo* to target the enzyme to glyoxysomes. Interestingly, however, in BY-2 cells cობombarded with DNA constructs coding for both the mutated and wild-type cILs, both proteins accumulated in glyoxysomes. These observations indicate that the mutant proteins were “piggybacked” into glyoxysomes via an association with the wild-type cIL.

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THE PLANT CELL (ISSN 1040-4651) is published monthly (one volume per year) by the American Society of Plant Physiologists, 15501 Monona Drive, Rockville, MD 20855-2768, and is printed by Capital City Press, Box 546, Montpelier, VT 05601. The subscription price is \$1225 per year; single copies may be purchased for \$75 each. Special subscription rates are available to members of the American Society of Plant Physiologists. For matters regarding individual subscriptions, contact Sharon Kelly Mulheron, Member Services, ASPP, 15501 Monona Drive, Rockville, MD 20855-2768; telephone 301/251-0560, ext. 29; fax 301/279-2996; e-mail skelly@aspp.org. Notify ASPP in writing within 3 months (domestic) or 6 months (foreign) of issue date, and defective copies or copies lost in the mail will be replaced. For matters regarding institutional subscriptions, contact THE PLANT CELL, P.O. Box 3000, Denville, NJ 07834. Periodical postage paid at Rockville, MD, and at additional mailing offices. **Postmaster:** Send address changes to THE PLANT CELL, American Society of Plant Physiologists, 15501 Monona Drive, Rockville, MD 20855-2768. Tables of contents and abstracts are available on the World Wide Web. Access URL <http://aspp.org>.

This information is current as of January 23, 2021

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