Cover Stories:

Major Scientific Publications Featuring NRI-funded Research

Knowledge For Tomorrow's Solutions

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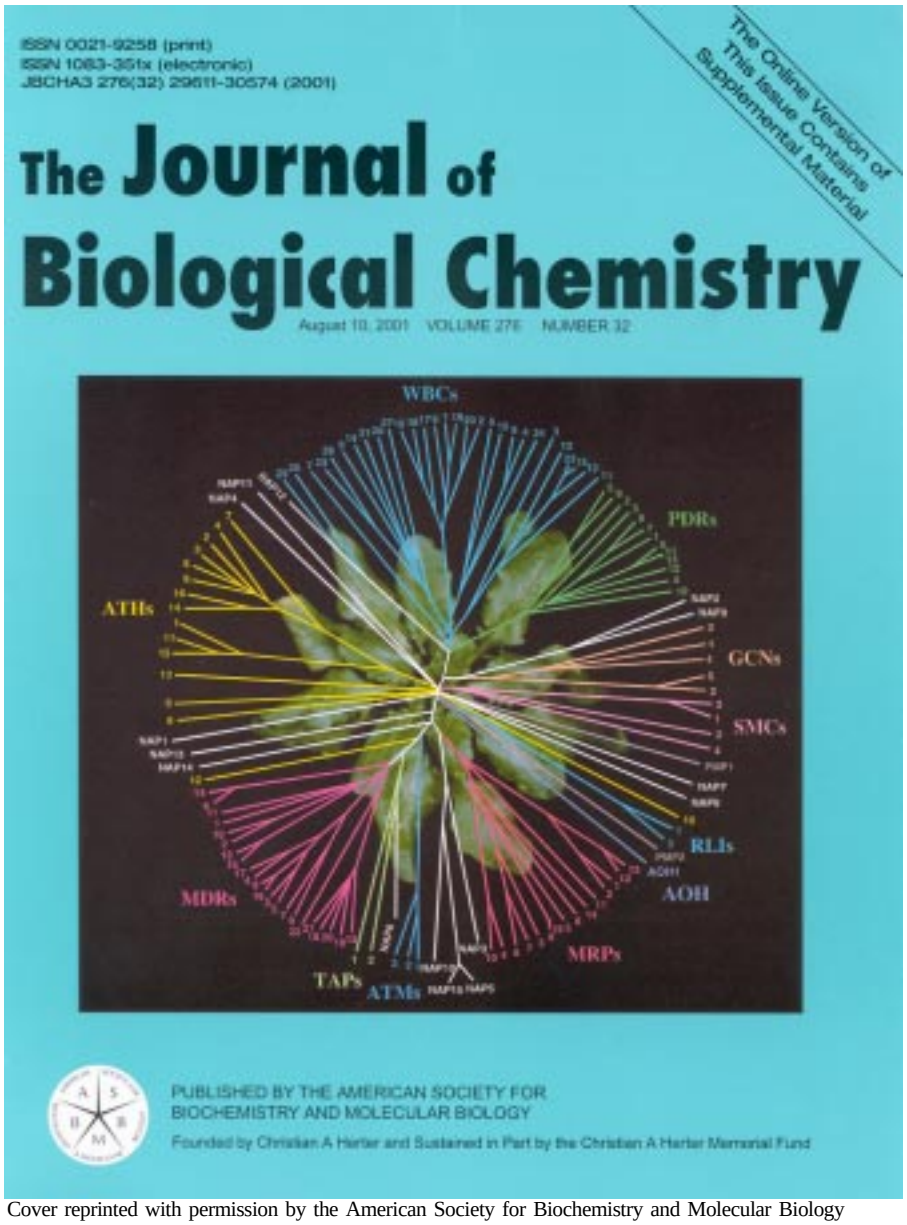

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Sánchez-Fernández, R., T.G.E. Davies, J.O.D. Coleman, and P.A Rea. 2001. The Arabidopsis thaliana *ABC Protein Superfamily: A Complete Inventory.* ***The Journal of Biological Chemistry****, 276(32): 30231-30244.*

The mechanisms that plants use to protect themselves from their own toxic metabolites and those of other plants are the ones that must be enhanced and/or subverted if plants are to accumulate compounds of high commercial and/or nutritional value. Some compounds of interest include: therapeutic alkaloids (e.g. taxol a chemical that fights cancer), flavonoids (e.g. antioxidants), herbicides and terpenoids (e.g. fragrances and flavor enhancers). After the plant produces these compounds they must be transported to other locations within the plant. With NRI funding Rea and Sánchez-Fernández and their colleagues have learned that transporters called ATP-binding cassette (ABC) transporters likely play an important role in the transport of these complex organic molecules. Moreover, they have recently reported the complete inventory of ABC protein genes from *Arabidopsis thaliana*, the first for any multicellular organism and determined that this plant contains a total of 129 such genes of which 103 likely encode transporters! If the principles learned from the few plant ABC transporters that have been characterized and from ABC transporters from other sources are applicable to the majority of plant ABC transporters, then many of the compounds of high commercial and/or nutritional value are transported by transporters of this type. The implication is that if we are to manipulate the capacity of plants for the elaboration and accumulation of compounds of this type, it is probable that the roles played by ABC transporters will have to be addressed.

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