Sidney P. Colowick and Nathan O. Kaplan

Methods in ENZYMOLOGY

Volume 161

Biomass

Part B

Lignin, Pectin, and Chitin

Edited by

Willis A. Wood

Scott T. Kellogg

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Preface

Volumes 160 and 161 of *Methods in Enzymology* collate for the first time an array of procedures related to the enzymatic conversion of plant structural biomass polymers into their constituent monomeric units. This collection of methods for the hydrolysis of cellulose and hemicellulose (Volume 160) and of lignin, as well as related methods for pectin and chitin (Volume 161), is timely because of the increasing tempo of investigation in this area. This is in response to an immediate interest in the conversion of biomass monosaccharides into fuel ethanol and the longer term concern for maintaining supplies of liquid fuels and chemicals with eventual petroleum depletion.

Enzymatic treatment of plant biomass involves special methods due to the insolubility of the lignocellulosic complex and other similar polymers. These methods include substrate preparation, measurement of chemical changes, and culturing of organisms that produce the enzymes. Many of the methods are published in applied and special purpose journals not routinely seen by investigators and hence are not highly visible.

The ability to clone genes, transform cells, and express and secrete heterologous proteins in industrially important microorganisms presents opportunities to produce biomass enzymes in large quantity and at low prices. When this capacity is developed, enzymes will not be selected because of better production in a wild-type organism. Instead, the enzymes will be chosen for their superior catalytic capability and compatibility with the conditions of an industrial process. Since genes from various and often obscure organisms may produce enzymes better suited to such purposes, we have attempted to include methods for the preparation of enzymes in each class, for instance endocellulases, from a wide variety of sources so that investigators seeking to develop useful processes may make use of the options available.

We wish to acknowledge the expert secretarial assistance of Ms. Karen Payne in preparation of these volumes.

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SCOTT T. KELLOGG

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