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U.S. Department of Transportation

SunGrant INITIATIVE

Northeast Region

IMPROVING WOODY BIOMASS SEPARATION BY ENZYMATIC MEANS

Dr. Nancy Kravit, University of Maine

Breaking down the complex microscopic plant cell structures into sugars is an important and complex step in making ethanol from lignocellulosic plant materials. The project examines enzymatic methods to break bonds between the lignin and hemicellulose components of wood. No enzymes had been known that specifically target the ether bonds between lignin and hemicellulose. With the aid of a unique artificial hemicellulose-lignin molecule that lights up when a potentially useful enzyme acts on it, the laboratory has discovered a new enzyme that targets these bonds, along with the novel microorganism that makes it. The laboratory has characterized the expression of the enzyme and has isolated and sequenced a recombinant version of the enzyme's active site. The recombinant version of the enzyme is being isolated and will be used for tests on natural wood substrates.

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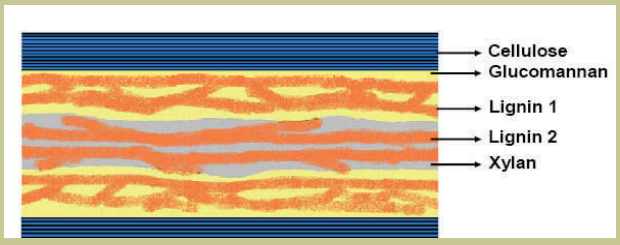

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