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## Research

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### Research Project: Improved Utilization of Corn Fiber

**Location:** [National Center for Agricultural Utilization Research](#)

**Project Number:** 3620-41000-109-02

**Project Type:** Specific C/A

**Start Date:** Sep 01, 2002

**End Date:** Aug 31, 2007

#### Objective:

Identify intrinsic factors in corn fiber that limit its enzymatic saccharification to fermentable sugars as feedstocks for value-added biobased products.

#### Approach:

Barriers to the enzymatic hydrolysis of corn fiber, particularly including enzyme inhibitors, will be characterized. Research will provide a theoretical basis leading to the development of novel strategies for the production of fermentable sugars from corn fiber.

#### Project Team

**Leathers, Timothy - Tim**

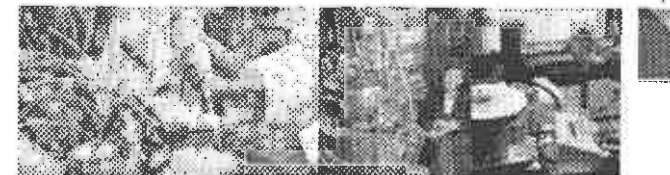
**Peter Biely - Research Biochemist** 309-681-6377

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### 2003 Annual Report

#### What were the most significant accomplishments this past year?

D. Progress report: This report serves to document research conducted under a specific cooperative agreement between ARS and the Slovak Academy of Sciences. Additional details of research can be found in the report for the parent project 3620-41000-093-00D, Novel Carbohydrate-based Materials via Bioconversion Processes. The objective of the sibling project is to identify intrinsic factors in corn fiber that limit its enzymatic conversion to fermentable sugars. This supports the goal of the related in-house project, which is to discover and develop ways of using biological catalysts to produce value-added products from agriculturally-related carbohydrates. Natural enzymes from corn were characterized for their ability to attack certain recalcitrant fiber components. This work will contribute to the development of new methods to produce useful sugars from low-value agricultural residues such as corn fiber.

#### Project Team

**[Leathers, Timothy - Tim](#)**

**[Peter Biely - Research Biochemist](#)** 309-681-6377

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- [Hydroxyvalerate](#)) by a Tropical Marine Bacterium, *Pseudoalteromonas* Sp. Nrrl B-30083- (16-Apr-01)
- [Carbohydrate Biotechnology Protocols: Methods in Biotechnology](#)- (01-Apr-00)
- [Value-Added Bioproducts from Agricultural Commodities and Residues](#)- (13-Mar-00)
- [Xylitol Production from Corn Fiber Hydrolysates by a Two-Stage Fermentationprocess](#)- (11-Oct-99)
- [Characterization of Exopolysaccharides Produced from \*Aureobasidium Pullulans\*](#)- (29-Jul-04)
- [Bacterial Contaminants of Fuel Ethanol Production](#)- (06-Jul-04)
- [Comparison of Identification Methods for \*Lactobacillus\*](#)- (09-Jun-04)
- [Bacterial Biosensors. Potential Applications in Biotechnology and Ecological Monitoring](#)- (26-May-04)
- [Application of Mals in the Characterization of a Novel Polysaccharide, Modified Alternan](#)- (23-Sep-03)
- [Comparison of Bacteria Populations among Fuel Ethanol Plants](#)- (14-Aug-03)
- [Corn Fiber Hydrolysis by \*Thermobifida Fusca\* Extracellular Enzymes](#)- (22-Nov-02)
- [Genetically Modified Strains of \*Fusarium Sporotrichioides\* for Production of Lycopene and Beta-Carotene.](#)- (29-Jul-04)
- [Novel System for the Sequential, Directional Cloning of Multiple DNA Sequences and Its Use in Metabolic Engineering](#)- (03-Dec-02)
- [Aryl-Glycosidase Activities in Germinating Maize](#)- (27-Sep-02)
- [Enhanced Beta-Carotene Biosynthesis in \*Fusarium Sporotrichioides\* Transformed with a Carotenogenic Gene Cassette in Tandem with Trl10](#)- (19-Oct-00)
- [Determination of Ternary Mixture Composition by a System of Non-Selective Microbial Biosensors](#)- (17-May-02)
- [Analysis of Ethanol-Glucose Mixtures by Two Microbial Sensors: Application of Chemometrics and Artificial Neural Networks for Data Processing](#)- (12-Apr-01)
- [Application of Chemometrics and Ann in the Analysis of Ethanol-Glucose Mixtures by Two Microbial Sensors](#)- (02-Feb-00)
- [Selective Detection of Ethanol and Glucose in a Two-Component Glucose/ethanol Mixture Using Nonselective Biosensors](#)- (18-Jan-00)