Methane production by anaerobic digestion is considered one of the best methods to generate methane bioenergy, especially from livestock manures and food-processing wastes, however up to 50% of the lignocellulosic solids pass through AD undigested.

OBJECTIVES OF THE STUDY

Develop a temperature-phased anaerobic digester (TPAD) process with enhanced digestion of solids by increasing hydrolysis of lignocellulose in these wastes.

Implementation of an integrated research platform consisting of *rrs* gene sequencing and metagenomics to identify key microbes mediating the TPAD process.

Phylogenetic identification of microbes from 3 communities (thermophilic, mesophilic and control) (*rrs* genes - which microbes are present and which are missing)

Identification and characterization of genes encoding hydrolysis of cellulose and other plant polymeric materials.

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PI: Dr. Zhongtang Yu
The Ohio State University, Animal Sciences

Co-PI: Dr. Floyd Schanbacher
Ohio Agricultural Research and Development Center, Animal Sciences

Co-PI: Dr. Mark Morrison
The Ohio State University, Animal Sciences

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