

Joy B. Doran Peterson

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Education

1994 Ph.D. University of Florida
1986 Pre-Professional Sciences Post-Baccalaureate Certificate, Univ. South Florida
1981 B.S.Ed University of Georgia

Academic and professional positions:

2002-current Assistant Professor of Microbiology, University of Georgia.
1999-2001 Associate Professor of Biology, Central Michigan University.
1995-1999 Assistant Professor of Biology, Central Michigan University.
1995 Postdoctoral Associate in the Laboratory of Dr. Lonnie O'Neal Ingram.
1991- 1994 Research Assistant, Dept. of Microbiology and Cell Science, U of Florida
1993-1994 Teaching Assistant, Dept of Microbiology and Cell Science
1990-1991 Research Associate, Quadrex Environmental Corporation and BioEnergy International L.C.

Awards and Honors :

- **2006** Sigma Xi Inductee and selected as an Honors Faculty Mentor
- **1999-2000.** CMU Research Professorship Award.
- **1999** Summer Teaching Fellowship Award for to develop the “Microbiology Enrichment Experience for Undergraduates.
- **1998-1999** CMU Excellence in Teaching Award.
- **1998** Spring Teaching Fellowship Award at CMU.
- **1998-1999** CMU Provost's Award for Outstanding Research and Creative Activity.
- **1997** Summer Teaching Fellowship Award.

Professional service:

Elected Offices in Professional Organizations:

2008 Division O (Fermentation and Biotechnology) Chair, American Society for Microbiology (ASM)
2008 Chair, Bioenergy Task Force-a group of ~80 members at the University of Georgia
2007 Division O Chair-Elect, ASM
2006 Division O Councilor, ASM
2005 Faculty of Engineering Advisory Board

Membership in Professional Societies:

- American Society for Microbiology
- Institute of Biological Engineering
- American Chemical Society
- Faculty of Engineering at UGA
- Southeastern Branch ASM
- Society for Industrial Microbiology
- International Society for Microbial Ecology

Selected Refereed Publications:

- 2008. Doran-Peterson, J.B.**, Brandon, S.K., Jangid, A., Ingram, L.O. Simultaneous saccharification and fermentation for production of ethanol. Chapter for Methods in Enzymology. Invited chapter. IN PRESS.
- 2008. Doran -Peterson**, J. B., Henriksen, E. D., Cook, D.M., Jangid, A. Microbial conversion of sugars from plant biomass to lactic acid or ethanol. The Plant Journal. IN PRESS.
- 2008.** Ximenes, E.A., Brandon, S.K., and **Peterson, Joy Doran**. Evaluation of a *Hypocrea jecorina* Enzyme Preparation for the Hydrolysis of a Variety of Bermudagrass (Tifton 85) with Improved Biodegradability for Ethanol and Co-Products Production. Applied Biochem. Biotechnol. IN PRESS.
- 2008. Peterson, J. Doran**, and L. O. Ingram. Respiration in an anaerobic environment with an internal electron acceptor to produce fuel ethanol. Annals of the New York Academy of Sciences. IN PRESS.
- 2008.** Brandon, S.K., Eiteman, M.A., Patel, K., Richbourg, M.M., Miller, D.J., and **Peterson, J. D.** Hydrolysis of Tifton 85 Bermudagrass in a Pressurized Batch Hot Water Reactor. J. Chemical Technol. Biotechnol. IN PRESS.
- 2008.** Anderson, W.F., Dien, B.S., Brandon, S.K., and **Peterson, J.D.** Assessment of Bermudagrass and Bunch Grasses as Feedstock for Conversion to Ethanol. Applied Biochemistry and Biotechnology. IN PRESS.
- 2007.** Cook, D.M., Henriksen, E.L., Upchurch, R.A., and **Peterson, J. D.** Isolation of polymer-degrading bacteria and characterization of the hindgut bacterial community from the detritus-feeding larvae of *Tipula abdominalis*. Appl. Environ. Microbiol. 73 (17), 5683-5686.
- 2007.** Henriksen, E., Phillips, D., **Peterson, J.** Polymyxin E production by *Paenibacillus amylolyticus* . Lett. Appl. Microbiol. Vol. 45, p. 491-496.
- 2006. Peterson, Joy Doran.** Ethanol production from agricultural residues. International Sugar Journal. Vol. 108, No. 1287. p. 178-180.
- 2005.** Anderson, W.F., **J. Peterson**, Akin, D. E., W.H. Morrison III. Enzyme pretreatment of grass lignocellulose for potential high-value co-products and improved fermentable substrate. Applied Biochemistry and Biotechnology. Vol 121, Issue 1-3. p. 303-310.

Laboratory Research Overview. The general theme of Dr. Peterson's research is the conversion of waste or low value materials into value-added products, including production of liquid fuels from fermentation of waste materials. The laboratory has three major specific aims currently being addressed through several ongoing projects. These projects focus on improving enzyme producing fungi, enhancing the capabilities of fermenting organisms, and discovering novel biocatalysts and degradative enzymes. These improvements and new discoveries are then integrated with chemical and/or physical pretreatments, enzyme digestions, and fermentations for specific applications.

Plant cell walls (lignocelluloses) are composed of cellulose, hemicellulose, pectin, and lignin in varying amounts depending upon the specific type of biomass. A major process hurdle is the cleavage of the bonds holding these components together in a scalable cost efficient manner. Next is ensuring that all of the sugars released are fermented to liquid fuel. Matching the pretreatment regime with the correct cocktail of enzymes and right fermenting organism is essential to designing an economically viable process.