

DEBRA MOHNEN
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Education and Training:

University of Georgia, Athens	Biochemistry	Postdoc, 1986-1990
Friedrich Miescher Institute, Basel, Switzerland	Biochemistry	Postdoc, 1985
University of Illinois, Urbana - with research at the Friedrich Miescher Institute	Plant Biology	Ph.D., 1985
University of Illinois, Urbana	Botany	M.S., 1981
Lawrence University, Appleton, Wisconsin	Biology	B.A (Magna cum laude), 1979

Professional Experience:

2007-Present Plant Wall Biosynthesis Activity Lead, BioEnergy Science Center (BESC)
2007-Present Professor, Biochemistry and Molecular Biology, CCRC, UGA, Athens, GA
1998-2007 Associate Professor, Department of Biochemistry and Molecular Biology and
Complex Carbohydrate Research Center, University of Georgia
1990-1998 Assistant Professor, Department of Biochemistry and Molecular Biology and Complex
Carbohydrate Research Center, University of Georgia
1987-1990 Senior Postdoctoral Research Associate, Complex Carbohydrate Research Center,
University of Georgia
1986-1987 Plant Physiologist, United States Department of Agriculture, ARS, Russell
Research Center, Athens, Georgia
1986 Postdoctoral Research Associate, Complex Carbohydrate Research Center,
University of Georgia
1985 Postdoctoral Research Associate, Friedrich Miescher Institute, Basel, Switzerland
1979-1980 7th and 8th grade Biology Teacher, St. Mary's Grade School, Kaukauna, Wisconsin

Publications Closely Related to Proposed Project:

Mohnen, D., Bar-Peled, M. and Somerville, C. (2008) Biosynthesis of Plant Cell Walls. In *Biomass Recalcitrance*, ed. Himmel, M., Blackwell Publishing (in press).

Etzler, M.E. and Mohnen, D. (2008) Green Plants. In *Essentials of Glycobiology*, Second Edition, eds. Varki, A., Cummings, R., Esko, J., Freeze, H., Stanley, P., Bertozzi, C., Hart, G. and Etzler, M. Cold Spring Harbor Laboratory Press, Chapter 22 (in press)

Mohnen, D. Pectin Structure and Synthesis. *Curr. Opin. Plant Biology*, (provisionally accepted)

Persson, S., Caffall, K.H., Freshour, G. Hilley, M.T., Bauer, S., Poindexter, P., Hahn, M., Mohnen, D., Somerville, C. (2007) The Arabidopsis irregular xylem 8 mutant is deficient in glucuronoxylan and homogalacturonan which are essential for secondary cell wall integrity *Plant Cell* 19:237-255.

Jackson, C.L., Dreaden, T.M., Theobald, L.K., Tran, N.M.; Beal, T.L., Eid, M., Gao, M.Y., Shirley, R.B., Stoffel, M.T., Kumar, M.V. Mohnen, D. (2007) Pectin induces apoptosis in human prostate cancer cells: correlation of apoptotic function with pectin structure. *Glycobiology* 17:805-819.

Sterling, J.D., Atmodjo, M.A., Inwood, S.E., Kolli, V.S.K., Quigley, H.F., Hahn, M.G., and Mohnen, D. (2006) Functional identification of an *Arabidopsis* pectin biosynthetic homogalacturonan galacturonosyltransferase. *Proc. Natl. Acad. Sci. USA*. 103:5236-5241.

- Sterling J., Lemons J.A., Forkner, I.F., and Mohnen D. (2005) Development of a filter assay for measuring homogalacturonan: α -(1,4)-galacturonosyltransferase activity. *Anal. Biochem.* 343:231-236.
- Guillaumie, F., Sterling, J.D., Jensen, K.J., Thomas, O.R.T., and Mohnen, D. (2003) Solid-supported enzymatic synthesis of pectic oligogalacturonides and their analysis by MALDI-TOF mass spectrometry. *Carbohydr. Res.* 338:1951-1960.
- Sterling, J., Quigley, H.F., Orellana, A. and Mohnen, D. (2001) The catalytic site of the pectin biosynthetic enzyme α -1,4-galacturonosyltransferase (GalAT) is located in the lumen of the Golgi. *Plant Physiol.* 127:360-371.
- Ridley, B.L., O'Neill, M.A., and Mohnen, D. (2001) Pectins: structure, biosynthesis, and oligogalacturonide-related signaling. *Phytochemistry* 57:929-967. (Invited Review).

Selected Seminars/Presentations

- Phytochemical Society of North America Annual Meeting, July 21-25, 2007. Donald Danforth Plant Science Center, St. Louis Missouri. "Pectin: structure, biosynthesis and functions of a complex wall polysaccharide".
- XI Cell Wall Meeting in Copenhagen, Denmark, 12-17 August 2007. "Presentation of DOE Bioenergy Research Centers:BESC: BioEnergy Science Center"
- 25x25' Initiative Steering Committee Meeting, Oct. 4, 2007, University of Georgia Bioconversion Research and Education Center. "BioEnergy Science Center (BESC)"

Organized and co-organized multiple international symposia

- Organizer (with Arland T. Hotchkiss), Symposium entitled "Pectin:Health and Agrichemical Applications", American Chemical Society National Meeting, San Diego, March 13-17, 2005
- Co-organizer, Plant Cell Wall Biosynthesis Meeting, August 4-7, 2005, Asilomar Conference Center, CA
- Co-Chair, 2006 Plant Cell Walls Gordon Research Conference, July 30 –August 4, 2006, University of New England, Biddeford, Maine
- Elected Chair of the 2009 Plant Cell Walls Gordon Research Conference, August 2 - 7, 2009, Bryant University, Smithfield, Rhode Island.

Selected Press Coverage of Research

- University of Georgia Research Magazine*, September 2006. "Discovery of new molecular tools for biosynthesis"
- University of Georgia Press Release*, August 2007. "UGA study finds common component of fruits, vegetables kills prostate cancer cells" Writer: Sam Fahmy, Contact: Debra Mohnen, Athens, GA
- United Press International, Newstrack –Health*. "Study: Pectin kills prostate cancer cells."
- University of Georgia Columns*, September 17, 2007. Fiber Fighters: New study finds common component of fruits, vegetables kills prostate cancer cells.

Selected Professional Service

Served on eight USDA, NSF and DOE-USDA grant panels and site visits from 1997 to 2008; from 1994-97 on American Society of Plant Physiologists Committee on Status of Women in Plant Physiology, and from 2005-2007 as invited faculty sponsor for the UGA Association for Women in Science (AWIS).

Research Interests

Biosynthesis, function and structure of plant cell wall polysaccharides including: (1) biosynthesis of pectin and hemicellulose and the role of the GAUT1-related gene family in wall synthesis; (2) pectin function in plants and in human health including pectin anti-cancer activity; and (3) understanding wall biosynthetic processes that impact the recalcitrance of walls to conversion to biofuels including developing a detailed understanding of wall biosynthetic pathways and improving plant cell wall structure so as to improve the efficiency of conversion of wall biomass to biofuels. As Co-PI on the NSF-funded "Plant Cell Wall Biosynthesis Research Network" Mohnen also established and directs "CarboSource Services", a service that provides rare substrates for plant wall polysaccharide synthesis to the research community.