

Curriculum vitae
Lawrence B. Smart

Department of Horticultural Sciences
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Academic Background:

1992 **Doctor of Philosophy**, Genetics, Michigan State University, East Lansing, MI

1987 **Bachelor of Science with Distinction**, Biology, Cornell University, Ithaca, NY

Professional Background:

July 2009 - *present* **Associate Professor**
Dept. of Horticultural Sciences, NYS Agricultural Experiment Station
Cornell University, Geneva, NY

Dec. 2008 - June 2009 **Adjunct Associate Professor**
Dept. of Horticultural Sciences, NYS Agricultural Experiment Station
Cornell University, Geneva, NY

Aug. 2001 - June 2009 **Associate Professor**
Department of Environmental and Forest Biology
SUNY College of Environmental Science and Forestry, Syracuse, NY

June 2003 - Jan. 2004 **Visiting Fellow** (Sabbatical appointment)
Department of Plant Pathology, NYS Agricultural Experiment Station
Cornell University, Geneva, NY
Host: Harvey Hoch, Ph.D.

Aug. 1996 - Aug. 2001 **Assistant Professor**
Department of Environmental and Forest Biology
SUNY College of Environmental Science and Forestry, Syracuse, NY

July 1996 - Aug. 1996 **Postdoctoral Research Scientist**
Department of Agronomy and Range Science
University of California, Davis
Research Advisor: Thea Wilkins, Ph.D.

Oct. 1992 - June 1996 **N.S.F. Postdoctoral Fellow in Plant Biology and
Postdoctoral Research Scientist**
Department of Vegetable Crops
University of California, Davis
Research Advisor: Alan Bennett, Ph.D.

Sept. 1987 - Oct. 1992 **Graduate Research Assistant**
Genetics Program / D.O.E.-Plant Research Laboratory
Michigan State University, East Lansing, MI
Research Advisor: Lee McIntosh, Ph.D.

Jan. 1987 - Aug. 1987 **Research Technician**
Department of Plant Pathology
Cornell University, Ithaca, NY
Project Director: Steven Beer, Ph.D.

Professional Affiliations:

American Society for Horticultural Science
American Society of Plant Biologists
Botanical Society of America
Japanese Society of Plant Physiologists
New York Farm Bureau
New York Flora Association

Awards and Recognitions:

Nov. 2005	Promising Inventor Award, Research Foundation of SUNY
Oct. 1992 - Sept. 1995	N.S.F. Postdoctoral Fellowship in Plant Biology
March 1988	N.S.F. Graduate Fellowship-Honorable Mention
Sept. 1987 - Sept. 1991	Michigan Biotechnology Fellowship
Oct. 1983	Cornell University Roberts Scholar

Plant Patents:

with co-inventors, L.P. Abrahamson, R.F. Kopp, and T.A. Volk:

Fast-growing willow shrub named 'Otisco'. U.S. PP 17,997 issued Sept. 11, 2007.
Fast-growing willow shrub named 'Tully Champion'. U.S. PP 17,946 issued Aug. 28, 2007.
Fast-growing willow shrub named 'Owasco'. U.S. PP 17,845 issued July 3, 2007.
Fast-growing willow shrub named 'Canastota'. U.S. PP 17,724 issued May 15, 2007.
Fast-growing willow shrub named 'Fish Creek'. U.S. PP 17,710 issued May 8, 2007.
Fast-growing willow shrub named 'Oneida'. U.S. PP 17,682 issued May 1, 2007.
Fast-growing willow shrub named 'Millbrook'. U.S. PP 17,646 issued April 24, 2007.

Publications:

In preparation:

Pulley, E.E., Long, S., Minocha, R., and Smart, L.B. Arsenic uptake increases with phosphorus addition in an arsenic-tolerant shrub willow (*Salix* spp.) clone in hydroponic solution and spiked potting mix. (in preparation)

Newhouse, A.E., Gibbs, J.P., Smart, L.B., and Leopold, D.J. A molecular genetic and fitness evaluation of commercial and locally collected *Lupinus perennis* L. (blue lupine) seeds for use in *Lycaeides melissa samuelis* Nabokov (Karner blue butterfly) restoration. ***Restor. Ecol.*** (in revision-resubmission invited).

Lin, J., Gibbs, J.P., and Smart, L.B. Genetic characterization of the endangered sand dune willow, *Salix cordata* Michx.: Implications for conservation. *Conserv. Genet.* (in revision-resubmission invited).

Refereed:

Lin, J., Gibbs, J.P., and Smart, L.B. (2009) Population genetic structure of native versus naturalized sympatric shrub willows. *Amer. J. Bot.* **96**: 771–785.

Serapiglia, M.J., Cameron, K.D., Stipanovic, A.J., Smart, L.B. (2009) Analysis of biomass composition using high-resolution thermogravimetric analysis and percent bark content for the selection of shrub willow bioenergy crop varieties. *BioEnerg. Res.* **2**:1-9.

Purdy, J.J. and Smart, L.B. (2008) Hydroponic screening of shrub willow (*Salix* spp.) for arsenic tolerance and uptake. *Intl. J. Phytoremed.*, **10**:515-528.

Teece, M.A., Zengeya, T., Volk, T.A., and Smart, L.B. (2008) Cuticular wax composition of *Salix* varieties in relation to biomass productivity. *Phytochemistry*, **69**:396-402.

Cameron, K.D., Phillips, I.J., Kopp, R.F., Volk, T.A., Maynard, C.A., Abrahamson, L.P., and Smart, L.B. (2008) Quantitative genetics of traits indicative of biomass production and heterosis in 34 full-sib F₁ *Salix eriocephala* families. *Bioenerg. Res.*, **1**:80-90.

Serapiglia, M.J., Cameron, K.D., Stipanovic, A.J., and Smart, L.B. (2008) High-resolution thermogravimetric analysis for rapid characterization of biomass composition and selection of shrub willow varieties. *Appl. Biochem. Biotechnol.*, **145**:3-11.

Lin, J., Gunter, L.E., Harding, S., Kopp, R.F., McCord, R.P., Tsai, C.-J., Tuskan, G.A., and Smart, L.B. (2007) Development of AFLP and RAPD markers linked to a locus associated with twisted growth in corkscrew willow (*Salix matsudana* ‘Tortuosa’). *Tree Physiol.*, **27**:1575-83.

Volk, T.A., Abrahamson, L.P., Nowak, C.A., Smart, L.B., Tharakan, P.J., and White, E.H. (2006) The development of short-rotation willow in the northeastern United States for bioenergy and bioproducts, agroforestry and phytoremediation. *Biomass Bioenerg.*, **30**:715-727.

Cameron, K.D., Teece, M.A., and Smart, L.B. (2006) Increased accumulation of cuticular wax and expression of lipid transfer protein in response to periodic drying events in leaves of tree tobacco. *Plant Physiol.*, **140**:176-183.

Cameron, K.D., Moskal, W.A., and Smart, L.B. (2006) A second member of the *Nicotiana glauca* lipid transfer protein gene family, *NgLTP2*, encodes a divergent and differentially expressed protein. *Funct. Plant Biol.*, **33**:141-152.

Smart, L.B., Volk, T.A., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., White, E.H., and Abrahamson, L.P. (2005) Genetic improvement of shrub willow (*Salix* spp.) crops for

bioenergy and environmental applications in the United States. *Unasylva*, **56**: 51-55.

- Cameron, K.D., Teece, M.A., Bevilacqua, E., and Smart, L.B.** (2002) Diversity of epicuticular wax composition among *Salix* species and *Populus* species hybrids. *Phytochemistry*, **60**:715-725.
- Kopp, R.F., Smart, L.B., Maynard, C.A., Tuskan, G.A., and Abrahamson, L.P.** (2002) Predicting within-family variability in juvenile height growth of *Salix* based upon similarity among parental AFLP fingerprints. *Theor. Appl. Genet.*, **105**:106-112.
- Kopp, R.F., Maynard, C.A., Rocha de Niella, P., Smart, L.B., and Abrahamson, L.P.** (2002) Collection and storage of pollen from *Salix* using organic solvents. *Amer. J. Bot.*, **89**:248-252.
- Kopp, R.F., Smart, L.B., Maynard, C.A., Isebrands, J.G., Tuskan, G.A., and Abrahamson, L.P.** (2001) The development of improved willow clones for eastern North America. *Forest. Chron.*, **77**:287-292.
- Smart, L.B., Moskal, W.A., Cameron, K.D., and Bennett, A.B.** (2001) *MIP* genes are down-regulated under drought stress in *Nicotiana glauca*. *Plant Cell Physiol.*, **42**:686-693.
- Smart, L.B., Cameron, K.D., and Bennett, A.B.** (2000) Isolation of genes predominantly expressed in guard cells and epidermal cells of *Nicotiana glauca*. *Plant Mol. Biol.*, **42**:857-869.
- Smart, L.B., Nall, N.M., and Bennett, A.B.** (1999) Isolation of RNA and protein from guard cells of *Nicotiana glauca*. *Plant Mol. Biol. Rep.*, **17**: 371-383.
- Smart, L.B., Vojdani, F., Maeshima, M., and Wilkins, T.A.** (1998) Genes involved in osmoregulation during turgor-driven cell expansion of developing cotton fibers are differentially regulated. *Plant Physiol.*, **116**: 1539-1549.
- Hentzen, A.E., Smart, L.B., Wimmers, L.E., Fang, H.H., Schroeder, J.I., and Bennett, A.B.** (1996) Two plasma membrane H⁺-ATPase genes expressed in guard cells of *Vicia faba* are also expressed throughout the plant. *Plant Cell Physiol.*, **37**:650-659.
- Vassiliev, I.R., Jung, Y.-S., Smart, L.B., Schulz, R., McIntosh, L., and Golbeck, J.H.** (1995) A mixed-ligand iron-sulfur cluster (C556S_{PsaB} or C565S_{PsaB}) in the F_X-binding site leads to a decreased quantum efficiency of electron transfer in photosystem I. *Biophys. J.*, **69**:1544-1553.
- Yu, J., Smart, L.B., Jung, Y.-S., Golbeck, J., and McIntosh, L.** (1995) Absence of PsaC subunit allows assembly of photosystem I core but prevents the binding of PsaD and PsaE in *Synechocystis* sp. PCC 6803. *Plant Mol. Biol.*, **29**:331-342.
- Smart, L.B., Bowlby, N.R., Anderson, S.L., Sithole, I., and McIntosh, L.** (1994) Genetic manipulation of the cyanobacterium *Synechocystis* sp. PCC 6803: development of strains lacking photosystem I for the analysis of mutations in photosystem II. *Plant Physiol.*,

104:349-354.

- Warren, P.V., Smart, L.B., McIntosh, L., and Golbeck, J.H.** (1993) Site-directed conversion of cysteine-565 to serine in PsaB of photosystem I results in the assembly of [3Fe-4S] and [4Fe-4S] clusters in F_X. A mixed-ligand [4Fe-4S] cluster is capable of electron transfer to F_A and F_B. *Biochemistry*, **32**:4411-4419.
- Smart, L.B., Warren, P.V., Golbeck, J.H., and McIntosh, L.** (1993) Mutational analysis of the structure and biogenesis of the photosystem I reaction center in the cyanobacterium *Synechocystis* sp. PCC 6803. *Proc. Natl. Acad. Sci. USA*, **90**:1132-1136.
- Smart, L.B. and McIntosh, L.** (1993) Genetic inactivation of the *psaB* gene in *Synechocystis* sp. PCC 6803 disrupts assembly of photosystem I. *Plant Mol. Biol.*, **21**:177-180.
- Smart, L.B., Anderson, S.L., and McIntosh, L.** (1991) Targeted genetic inactivation of the photosystem I reaction center in the cyanobacterium *Synechocystis* sp. PCC 6803. *EMBO J.*, **10**:3289-3296.
- Smart, L.B. and McIntosh, L.** (1991) Expression of photosynthesis genes in the cyanobacterium *Synechocystis* sp. PCC 6803: *psaA-psaB* and *psbA* transcripts accumulate in dark-grown cells. *Plant Mol. Biol.*, **17**:959-971.
- Vanneste, J.L., Smart, L.B., Zumoff, C.H., Yu, J., and Beer, S.V.** (1990) Control of fire blight by *Erwinia herbicola* Eh252: Role of antibiotic production. *Acta Hortic.*, **273**:393-394.
- Non-refereed:*
- Smart, L.B. and Cameron, K.D.** (2008) Genetic improvement of willow (*Salix* spp.) as a dedicated bioenergy crop. In Vermerris, W. E. (ed.) **Genetic Improvement of Bioenergy Crops**, Springer Science, NY, 347-376.
- Kuzovkina, Y.A., Weih, M., Romero, M.A., Charles, J., Hurst, S., McIvor, I., Karp, A., Trybush, S, Labrecque, M., Teodorescu, T.I., Singh, N.B., Smart, L.B., and Volk, T.A.** (2008) *Salix*: Botany and Global Horticulture. *Horticultural Reviews*, Vol. 34, J. Janick (ed.), John Wiley & Sons, Inc., Hoboken, NJ, pp. 447-489.
- Smart, L.B., Cameron, K.D., Volk, T.A., and Abrahamson, L.P.** (2008) Breeding, selection, and testing of shrub willow as a dedicated energy crop. **NABC Report 19 Agricultural Biofuels: Technology, Sustainability, and Profitability**, National Agricultural Biotechnology Council, Ithaca, NY, pp. 85-92..
- Volk, T.A., Amidon, T.E., Abrahamson, L.P., Smart, L.B., White, E.H., and Daley, D.** (2007) Environmental innovation: Growing willow biomass crops for renewable energy. *Clearwaters*, **37**:55.
- Smart, L.B.** (2006) "Shrub Willow Biomass Crops: Growing Energy on Underutilized Farmland", Invited Op Ed article with photo and web material, *Rochester Democrat and Chronicle*, Sept. 18, 2006.

Kopp, R.F., Smart, L.B., Maynard, C.A., Tuskan, G.T., and Abrahamson, L.P. (2001) Predicting within-family variability in juvenile height growth of *Salix* based upon similarity among parental AFLP fingerprints. *In: Dean, J.F.D. (ed.) Proceedings of the 26th Biennial Southern Forest Tree Improvement Conference, June 26-29, 2001, Athens, GA, 112-118.*

Kopp, R.F., Smart, L.B., Maynard, C.A., and Abrahamson, L.P. (2000) Willow Crop Development Center at SUNY-ESF. *In: Makkonen, H.P., Stipanovich, A.J., and Winter, W.T. (eds.) Wood and Cellulose: Building blocks for chemicals, fuels, and advanced materials. Proceedings of the 2nd Annual Partnerships in Environmental Improvement and Economic Development Conference, April 9-11, 2000, Syracuse, NY.*

Smart, L.B. (1998) review of *Molecular Biology Made Simple and Fun*, Clark, D.P. and Russell, L.D., *Nat. Area J.*, **18**:91-92.

Wilkins, T.A. and Smart, L.B. (1996) Isolation of RNA from plant tissue. In Krieg, P.A. (ed.) *A Laboratory Guide to RNA: Isolation, Analysis, and Synthesis*. New York: Wiley-Liss, Inc., pp. 21-41.

Vassiliev, I.R., Jung, Y.-S., Schulz, R., Smart, L.B., McIntosh, L., and Golbeck, J.H. (1995) Electron transfer via the F_x cluster of PS I in PsaB mutants of *Synechocystis* sp. PCC 6803. *Photosynthesis: From Light to Biosphere*, vol. II, P. Mathis (ed.) Kluwer Academic Publishers, Dordrecht, The Netherlands, pp.131-134.

Schulz, R., Smart, L.B., Yu, J., and McIntosh, L. (1995) A new set of site-directed mutations in photosystem I core reaction center from *Synechocystis* sp. PCC 6803. *Photosynthesis: From Light to Biosphere*, vol. II, P. Mathis (ed.) Kluwer Academic Publishers, Dordrecht, The Netherlands, pp.119-122.

Warren, P.V., Smart, L.B., McIntosh, L., and Golbeck, J.H. (1992) Spectroscopic characterization of mutants in F_x and the proposed leucine zipper in photosystem I. *Research in Photosynthesis, Vol. I*, N. Murata (ed.), Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 573-576.

Extension Fact Sheets: All those listed below were produced and published at SUNY College of Environmental Science and Forestry, Syracuse, NY

T. Buchholz, T. A. Volk, L. P. Abrahamson, and L. B. Smart (2008) Fact sheet: “EcoWillow v 1.0 (Beta) – An Economic Analysis Tool for Willow Short-Rotation Coppice for Wood Chip Production”

K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson (2007) Fact sheet: *Salix purpurea* ‘Allegany’

K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson (2007) Fact sheet: *Salix purpurea* ‘Onondaga’

K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson (2007) Fact sheet: *Salix miyabeana* ‘SX64’

K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson (2007) Fact sheet: *Salix miyabeana* ‘SX67’

- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix eriocephala* ‘S25’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix caprea* hybrid ‘S365’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix sachalinensis* ‘SX61’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix x dasyclados* ‘SV1’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix sachalinensis* x *S. miyabeana* ‘Sherburne’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix purpurea* ‘Fish Creek’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix purpurea* x *S. miyabeana* ‘Millbrook’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix purpurea* x *S. miyabeana* ‘Oneida’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix viminalis* x *S. miyabeana* ‘Tully Champion’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix viminalis* x *S. miyabeana* ‘Owasco’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix viminalis* x *S. miyabeana* ‘Otisco’
- K.D. Cameron, L.B. Smart, T.A. Volk, and L.P. Abrahamson** (2007) Fact sheet: *Salix sachalinensis* x *S. miyabeana* ‘Canastota’

Web sites:

Smart, L.B. (23 May 2006) “Welcome to Larry Smart’s Lab”
<http://www.esf.edu/efb/smart/>

Smart, L.B. (31 Dec. 2008) “EFB530 Plant Physiology Course Web Site”
<http://www.esf.edu/efb/course/efb530/>

Smart, L.B. (31 Dec. 2008) “BTC499 Senior Project Synthesis in Biotechnology Web Site”
<http://www.esf.edu/efb/course/btc499/>

Smart, L.B. (31 Dec. 2008) “EFB325 Cell Physiology Course Web Site”
<http://www.esf.edu/efb/course/efb325/>

Presentations:

Smart, L.B. “Genetics of yield and biomass composition of shrub willow bioenergy crops for North America”. Dept. of Horticulture, Cornell University, Ithaca, NY. Mar. 9, 2009. *Invited departmental seminar.*

Smart, L.B. “Development of Fast-Growing Shrub Willow Crops for Heat, Power, and Biofuels” New York State Maple Producer’s Winter Conference, Vernon-Verona-Sherrill High School, Verona, NY, January 10, 2009. *Invited session speaker.*

Smart, L.B. “Genetics of yield and biomass composition of shrub willow bioenergy crops for North America”. Dept. of Horticultural Sciences, Cornell University, NYS Agricultural Experiment Station, Geneva, NY. Nov. 4, 2008. *Invited departmental seminar.*

Smart, L.B., Cameron, K.D., Serapiglia, M.J., Stipanovic, A.J., Volk, T.A., and Abrahamson L.P. “Genetics of yield and biomass composition of shrub willow bioenergy crops for North America”. Short Rotation Crops International Conference, Minneapolis, MN, August 19, 2008. *Invited oral presentation* (also session chair).

Pulley, E.E. and Smart, L.B. “Characterization of arsenic uptake under phosphorus sufficient and deficient conditions in shrub willow (*Salix* spp.) clones of differing As sensitivities”. Short Rotation Crops International Conference, Minneapolis, MN, August 18-22, 2008. Poster presentation.

Smart, L.B., Cameron, K.D., Serapiglia, M.J., Volk, T.A., and Abrahamson L.P. “Breeding, selection, and commercialization of shrub willow bioenergy crops in North America” Pan-American Congress on Plants and BioEnergy, Mérida, Mexico, June 25, 2008. *Invited mini-symposium talk* (also mini-symposium chair) and poster presentation.

Smart, L.B. “Genetic improvement of shrub willow for bioenergy in North America” Rothamsted Research, UK, June 3, 2008. *Invited seminar.*

Smart, L.B. “Genetics of shrub willow as a bioenergy crop and for phytoremediation”, Dept. of Biological and Environmental Engineering - Cornell University - April 29, 2008. *Invited seminar.*

Smart, L.B. “Genetic improvement of shrub willow as a bioenergy crop for marginal ag land”, Dept. of Biology - SUNY Potsdam - March 12, 2008. *Invited seminar.*

Smart, L.B. “Genetic improvement of shrub willow as a bioenergy crop”, Northeast SunGrant Meeting, Ithaca, NY, Nov. 13, 2007. *Invited oral presentation.*

Smart, L.B. “Development of fast-growing shrub willow as a bioenergy crop”. Dept. of Forestry - Michigan State University - Oct. 23, 2007. *Invited seminar.*

Smart, L.B., Cameron, K.D., Serapiglia, M.J., Volk, T.A., and Abrahamson, L.P. “Breeding and selection of new fast-growing varieties of shrub willow for bioenergy, biofuels, and bioproducts”. Plant Biology and Bioenergy Symposium, University of Massachusetts, Amherst, MA, Oct. 13, 2007. Poster presentation.

Smart, L.B., Cameron, K.D., Serapiglia, M.J., Volk, T.A., and Abrahamson L.P. “Breeding and selection of new, high-yielding varieties of shrub willow for bioenergy, biofuels, and bioproducts” Annual Meeting of the American Society of Plant Biologists, July 8-13, 2007, Chicago, IL. *Invited Minisymposium talk* to over 500 in audience and poster presentation.

Smart, L.B., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. “Breeding, selection, and testing of shrub willow as a dedicated energy crop.” 19th Conference of the National Agricultural Biotechnology Council, Brookings, SD, May 22-24, 2007. *Invited platform presentation.*

Smart, L.B., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. “Breeding and Selection of New, High-Yielding Varieties of Shrub Willow for Bioenergy, Biofuels, and Bioproducts in North America.” EPOBIO2 Conference, Eretria Resort and Conference Center, Greece, May 14-17, 2007. *Invited poster presentation.*

Smart, L.B., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. “Selection and field testing of new high yield varieties of shrub willow for bioenergy, biofuels and bioproducts.” 29th Symposium on Biotechnology for Fuels and Chemicals. Denver, CO, April 29 – May 2, 2007. Poster presentation.

Smart, L.B. “Development of High-Yielding Varieties of Shrub Willow as a Dedicated Energy Crop.” Bioenergy Seminar Series - SUNY-ESF, Jan. 31, 2007. *Invited seminar.*

Smart, L.B., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. “Development of High-Yielding Varieties of Shrub Willow as a Dedicated Energy Crop.” The 2nd University of Connecticut Biofuels Symposium. Storrs, CT. Jan. 11, 2007 - *Invited plenary speaker.*

Smart, L.B., Cameron, K. D., Volk, T.A., Kopp, R.F. and Abrahamson, L.P. “Breeding, selection, testing and commercialization of high-yielding varieties of shrub willow for bioenergy, biofuels and bioproducts.” Short Rotation Woody Crops Operation Working Group 7th Biennial Meeting. Pasco, WA, Sept 25, 2006. Oral presentation.

Volk, T.A., Mirck, J., Purdy, J.J., Cameron, K.D., Smart, L.B., Daley, D., and Abrahamson, L.P. Screening and selection of willow clones for growth on Solvay process waste. Meeting of the International Poplar Commission Working Party in Environmental Applications of Poplar and Willow. May 17-20, 2006, Derry, N. Ireland, U.K. Oral Presentation.

Smart, L.B., Cameron, K.D., Kopp, R.F., Volk, T.A., and Abrahamson, L.P. Breeding, selection, testing, and commercialization of high-yielding varieties of shrub willow for bioenergy, biofuels, and bioproducts. 28th Symposium on Biotechnology for Fuels and Chemicals. April 30-May 3, 2006, Nashville, TN. Poster presentation.

Smart, L.B., Cameron, K.D., Lin, J., Volk, T.A., Kopp, R.F., Phillips, I.S., and Abrahamson, L.P. Breeding and Selection of High-Yielding Shrub Willow Crops in New York State. Meeting of the International Poplar Commission Working Parties in Environmental Applications, Diseases, and Production. May 24-31, 2005, Enkoping, Sweden and Tartu, Estonia. *Invited oral presentation.*

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., Volk, T.A., White, E.H., and Abrahamson, L.P. Genetic Improvement of Shrub Willow (*Salix*) as a Dedicated Crop for Bioenergy, Biofuels, and Bioproducts 27th Symposium on Biotechnology for Fuels and Chemicals. May 1-4, 2005, Denver, CO. *Invited symposium talk.*

Smart, L.B. Genetic Improvement of Shrub Willow (*Salix*) Crops for Bioenergy, Biofuels, and Bioproducts. Cornell-ESF Dialog on Biobased Industries. March 29, 2005, Ithaca, NY. Oral presentation.

Smart, L.B. Genetic improvement of willow: Its' not just for baskets anymore. Department of Plant Biology, University of New Hampshire, Durham, NH; March 24, 2005; *Graduate student invited seminar speaker.*

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., Volk, T.A., White, E.H., and Abrahamson, L.P. Genetic improvement of shrub willow (*Salix*) crops for bioenergy and environmental applications. 22nd Session of the International Poplar Commission - The Contribution of Poplars and Willows to Sustainable Forestry and Rural Development, Nov. 28 - Dec. 4, 2004, Santiago, Chile; *Plenary Oral Presentation.*

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. Genetic improvement of shrub willow (*Salix*) crops for bioenergy, biofuels, and bioproducts. Syracuse Symposium on Environmental and Energy Systems, Syracuse, NY; Oct. 25-26, 2004; Poster presentation.

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. Genetic improvement of shrub willow (*Salix*) crops for bioenergy, biofuels, and bioproducts. Annual Meeting of the American Society of Plant Biologists, July 24-28, 2004, Lake Buena Vista, FL; Poster presentation.

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Cameron, K.D., Volk, T.A., and Abrahamson, L.P. Genetic improvement of shrub willow (*Salix*) crops for bioenergy, biofuels, and bioproducts. Annual Meeting of the Northeast Section of the American Society of Plant Biologists, June 4-5, 2004, Providence, RI; Poster presentation.

Smart, L.B., Lin, J., Kopp, R.F., Phillips, I.S., Volk, T.A., and Abrahamson, L.P. Genetic improvement of shrub willow (*Salix*) crops for bioenergy, biofuels, and bioproducts. Northeast Sun Grant Initiative Planning Meeting, Buffalo, NY, April 25-27, 2004; Poster presentation.

Smart, L.B. Genetic improvement of willow: It's not just for baskets anymore. Department of Plant Pathology, Cornell University, NYS Agricultural Experiment Station, Geneva, NY; Nov. 18, 2003; *Invited seminar.*

Smart, L.B., Moskal, W.A., Wayne, L., Jack, T.J., Eshed, Y., and Bowman, J.L. Characterization of genes associated with guard cell differentiation and function in *Arabidopsis thaliana*. Plant Genetics 2003: Mechanisms of Genetic Variation, Snowbird, UT, Oct. 22-26, 2003; Poster presentation.

Smart, L.B., Cameron, K.D., Teece, M.A., and Bevilacqua, E. Diversity of epicuticular wax among willow and hybrid poplar clones. Annual Meeting of the American Society of Plant Biologists, Denver, CO, Aug. 3-7, 2002; Poster presentation.

Brant, J.O. and Smart, L.B. Expression of members of the lipid transfer protein gene family in *Arabidopsis thaliana*. Annual Meeting of the American Society of Plant Biologists, Denver, CO, Aug. 3-7, 2002; Poster presentation.

Smart, L.B., Kopp, R.F., Phillips, I.S., Maynard, C.M., Isebrands, J.G., and Abrahamson, L.P.

Willow Crop Development Center for the Northeast and North-central United States.

Invited seminars presented at:

Beijing Forestry University, Beijing, China – Dec. 10, 2001

Chinese Academy of Forestry, Beijing, China – Dec. 10, 2001

Jiangsu Province Academy of Forestry, Nanjing, China – Dec. 12, 2001

Nanjing Forestry University, Nanjing, China – Dec. 13, 2001

Smart, L.B., Kopp, R.F., Phillips, I.S., Maynard, C.M., and Abrahamson, L.P. Willow Crop Development Center for the Northeast and North-central United States. Annual D.O.E. Bioenergy Feedstock Development Program Collaborators Meeting; Memphis, TN; Nov. 6-8 2001; Oral presentation.

Smart, L.B. Gene expression in the epidermis: Guard cell differentiation and drought tolerance. Plant Biology Seminar Series, Cornell University; March 30, 2001; *Invited seminar*.

Smart, L.B. Identification of genes involved in drought tolerance. Adaptive Peaks Seminar Series, Faculty of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry, Syracuse, NY; Nov. 9, 2000; *Invited seminar*.

Smart, L.B., Kopp, R.F., Maynard, C.M., and Abrahamson, L.P. Willow Crop Development Center for the Northeast and North-central United States. Annual D.O.E. Bioenergy Feedstock Development Program Collaborators Meeting; Portland, OR; Sept. 2000; Oral presentation.

Smart, L.B., Kato, N., Smart, C.D., and Fry, W.E. Primary structure of the plasma membrane H⁺-ATPase from the oomycete, *Phytophthora infestans*, the causal agent of potato late blight. Annual Meeting of the American Society of Plant Physiologists; San Diego, CA; July 2000; Poster presentation.

Kopp, R.F., Smart, L.B., Abrahamson, L.P., and Maynard, C.M. Genetic improvement of *Salix* as a biomass energy feedstock. Annual Meeting of the Northeast Section of the American Society of Plant Physiologists; Storrs, CT; April 2000; Poster presentation.

Smart, L.B. Differentiation of the epidermis and response to drought stress. Biology Department, Binghamton University; March 31, 2000; *Invited seminar*.

Smart, L.B. Developing willows as a feedstock for bioenergy/biobased products. Ecology and Evolutionary Biology Group, Binghamton University; March 31, 2000; *Invited seminar*.

Smart, L.B., Moskal, W.A., Cameron, K.D., and Roth, J.M. Patterns of gene expression of putative aquaporin genes in guard cells and other tissues of *Nicotiana glauca*. Annual Meeting of the American Society of Plant Physiologists; Baltimore, MD; July 1999; Poster presentation.

Smart, L.B., Cameron, K.D., and Nall, N.M. The lipid transfer protein gene family and its role in plant response to drought stress. Annual Meeting of the American Society of Plant Physiologists; Baltimore, MD; July 1999; *Invited mini-symposium presentation*.

Smart, L.B., Moskal, W.A., Cameron, K.D., and Roth, J.M. Characterization of putative aquaporin genes expressed in guard cells of *Nicotiana glauca*. Annual Meeting of the Northeast Section of the American Society of Plant Physiologists; Durham, NH; April 1999; Poster presentation.

Smart, L.B., Werner, N.A., and Hammerschmidt, R. A laboratory exercise demonstrating plant defense response. Annual Meeting of the American Society of Plant Physiologists; Vancouver, British Columbia, Canada; August 1997; Poster presentation.

Smart, L.B. and Bennett, A.B. Isolation and characterization of genes predominantly expressed in guard cells of *Nicotiana glauca*. Annual Meeting of the Northeast Section of the American Society of Plant Physiologists; Ithaca, NY; April 1997; Oral presentation.

Smart, L.B., Vojdani, F., Wan, C.-Y., Maeshima, M., and Wilkins, T.A. Regulation of genes involved in cell elongation during cotton (*Gossypium hirsutum*) fiber development. Annual Meeting of the American Society of Plant Physiologists; San Antonio, TX.; July 1996; Poster presentation.

Smart, L.B. and Bennett, A.B. Characterization of genes expressed predominantly in guard cells of *Nicotiana glauca*. Annual Meeting of the American Society of Plant Physiologists; San Antonio, TX; July 1996; Poster presentation.

Smart, L.B. and Bennett, A.B. Isolation of genes with specific or enhanced expression in guard cells of *Nicotiana glauca*. Annual Meeting of the American Society of Plant Physiologists; Charlotte, NC; July 1995; Oral presentation.

Smart, L.B., Hentzen, A.E., Wimmers, L.E., Schroeder, J.I., and Bennett, A.B. Molecular characterization of H⁺-ATPase genes expressed in guard cells of *Vicia faba*. Fourth International Congress of Plant Molecular Biology; Amsterdam, The Netherlands; June 1994; Poster presentation.

Smart, L.B., Warren, P.V., Golbeck, J.H., and McIntosh, L. Mutational analysis of the photosystem I core. Gordon Conference on Plant Molecular Biology; Proctor Academy, NH; June 1992; Poster presentation.

Smart, L.B., Anderson, S.L., and McIntosh, L. Directed mutagenesis of the photosystem I core. Third Int'l Congress of Plant Molecular Biology; Tucson, AZ; Oct. 1991; Poster presentation.

Smart, L.B., Anderson, S.L., and McIntosh, L. Directed mutagenesis of the *psaB* gene encoding a PS I reaction center polypeptide in *Synechocystis* 6803. Satellite conference "Molecular Biology of Photosynthesis"; Tempe, AZ; Oct. 1991; Oral presentation.

Smart, L.B. and McIntosh, L. Regulation of genes encoding PS I and PS II proteins in *Synechocystis* PCC 6803. Annual Meeting of the American Society of Plant Physiologists; Indianapolis, IN; July 1990; Oral presentation.

Smart, L.B. and McIntosh, L. Molecular cloning and expression of the *psaA* and *psaB* genes from

Synechocystis 6803. The Third Molecular Biology of Cyanobacteria Workshop; Toronto, Ontario, Canada; July 1989; Poster presentation.

Public Service and Continuing Education Presentations:

I regularly give presentations of the willow collection and breeding program on field tours of the Tully Genetics Field Station for conferences, groups, and legislator visits.

Empire Farm Days – three-day exhibit each year in August – 2006-2008.

New York State Fair – two-day exhibit in Horticulture Building in August – 2003-2008.

Perennial Bioenergy Feedstock Day – Field tour – USDA Big Flats Plant Material Center – July 29, 2008 - 105 guests.

Interview with Terry Ettinger for “Weeder’s Digest” on WSYR radio - March 20, 2008

Geneva League of Women Voters - “Development of Willow as a Dedicated Energy Crop” - Geneva, NY - Feb 5, 2008 - lay audience of ~35.

Geneva Renewable Energy Group “Development of High-Yielding Varieties of Shrub Willow as a Dedicated Energy Crop.” Geneva, NY, March 4, 2007 - 30 guests.

Finger Lakes Forum “Development of High-Yielding Varieties of Shrub Willow as a Dedicated Energy Crop.” Geneva, NY, Feb. 19, 2007 - 60 guests.

Mechanisms of Herbicide Action: The Utility Perspective

Five lectures on plant physiology delivered at workshop on herbicides for utility right-of-way management, SUNY-ESF, March 11-13, 2002 – 120 registrants.

Workshops Attended:

Willow Identification Workshop, Dr. George Argus and New York Flora Association, Canton, NY, June 10-11, 2005.

Training Workshop “Measuring Photosynthesis Using the LI-6400” held at LI-COR, Inc., Lincoln, NE, April 9-10, 2002

Northeast Regional Workshop on USDA-CSREES Competitive Grants Program
Hotel Syracuse, Syracuse, NY, October 18, 2001

Grant Awards:

T.A. Volk, T.E. Amidon, C. Baier, T. Buchholz, R.H. Germain, M. Kelleher, V. Luzadis, R.W. Malmshheimer

“Renewable Fuels Roadmap and Sustainable Biomass Feedstock Supply for New York”
New York State Energy Research and Development Authority (subcontract from Pace University)
Total award: \$110,007; Start date: 12/1/2008; End date: 11/30/2009

L.B. Smart, L.P. Abrahamson, C.A. Maynard, and T.A. Volk

“Applying Genomic Approaches to the Improvement of Shrub Willow Bioenergy Crops”
USDA-CSREES McIntire-Stennis Program
Total award: \$58,720 (direct costs only), Start date: 8/15/2008; End date: 9/30/2010

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Developing Living Snowfences in New York”
New York State Department of Transportation
Total award: \$280,254, Start date: 8/1/2008; End date: 12/31/2011

A.J. Stipanovic, L.B. Smart, and W.T. Winter

“Purchase of a New Thermogravimetric Analyzer for Biomass Characterization”
USDA-CSREES - National Research Initiative Competitive Grants Program
Total Award: \$50,000, Start date: 8/1/2008; End date: 7/31/2009

L.P. Abrahamson, L.B. Smart, and T.A. Volk

“Wood Biomass as an Alternative Farm Product”
USDA-CSREES
Total award: \$133,459, Start date: 5/29/2008; End date: 5/1/2009

L.B. Smart, L.P. Abrahamson, and T.A. Volk

“Demonstrating Improved Yield and Encouraging Adoption of New Varieties of Fast-Growing Shrub Willow Bioenergy Crops”
New York Farm Viability Institute
Total award: \$125,000; Start date: 4/1/2008; End date: 9/30/2009

T.A. Volk, L.P. Abrahamson, L.B. Smart, and E.H. White

“Overcoming Barriers to Facilitate the Commercialization of Willow Biomass Crops as a Feedstock for Biofuels, Bioenergy, and Bioproducts”
USDA Rural Development (USDA-DOE Biomass R&D Program)
Total award: \$813,415, Start date: 11/8/2006; End date: 2/7/2010

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Reducing the cost of willow biomass by improving harvest system efficiency and reducing harvesting costs”
New York State Energy Research and Development Authority
Total award: \$126,688, Start date: 8/16/2006; End date: 6/30/2009

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Center of Excellence in Watershed Application and Technology - Willow Biomass Project”
New York City Department of Environmental Protection (subcontract from SUNY-Delhi)
Willow Biomass Task: \$384,615, Start date: 7/1/2006; End date: 6/30/2009

L.B. Smart, L.P. Abrahamson, and T.A. Volk

“Establishing a Commercial Willow Biomass Crop Nursery in New York State”

New York State Energy Research and Development Authority

I submitted proposals to PON737 (\$250,000) and PON936 (\$40,000) in cooperation with Double A Vineyards, Inc. NYSERDA awarded \$290,000 to Double A Vineyards with a subcontract to ESF.

Total subcontract award: \$80,000 Start date: 5/25/2006; End date: 5/24/2007

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Growing Willow Biomass Crops in the Tug Hill Region”

New York State Department of Agriculture and Markets

Total award: \$60,000, Start date: 5/8/2006, End date: 11/7/2007

J.P. Gibbs and L.B. Smart

“Bog Turtle Dispersal and Population Monitoring”

NYS Department of Environmental Conservation - Endangered Species Unit

Total award: \$155,000, Start date: 4/1/2006; End date: 3/31/2009

L.B. Smart, L.P. Abrahamson, and T.A. Volk

“Expanding Markets for Fast-growing Varieties of Shrub Willow”

New York State Office of Science, Technology, and Academic Research (NYSTAR)

Total award: \$200,000, Start date: 3/1/2006, End date: 8/31/2008

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Biomass Crops as a Source of Locally Produced Renewable Fuel in Northern New York”

New York State Energy Research and Development Authority (NYSERDA)

Total award: \$191,013, Start date: 1/11/2006, End date: 12/31/2008

J.P. Gibbs, D.J. Leopold, and L.B. Smart

“Determination of Lupine Variability and Implications for the Karner Blue Butterfly Management”

NYS Department of Environmental Conservation - Endangered Species Unit

Total award: \$80,000, Start date: 1/1/2006, End date: 12/31/2008

A.J. Stipanovic, K.D. Cameron, and L.B. Smart

“NMR and TGA Methods for Rapid Selection of Willow Varieties with Optimum Wood Properties”

USDA-CSREES McIntire-Stennis Program

Total award: \$52,000 (direct costs only), Start date: 9/1/2005, End date: 8/31/2007

T.A. Volk, L.P. Abrahamson, and L.B. Smart

“Establishing a Willow Clone-Site Trial”

Jefferson Community College (subcontract of New York State grant)

Total award: \$25,955, Start date: 5/1/2005, End date: 4/30/2007

L.B. Smart, T.R. Horton, and T.A. Volk

“Breeding of Willow and Characterization of Microbial Associations for the Remediation of Contaminated Soils”

USDA-CSREES McIntire-Stennis Program

Total award: \$75,169 (direct costs only), Start date: 8/30/2004, End date: 9/30/2007

L.B. Smart, L.P. Abrahamson and T.A. Volk

“Establishing Commercial Willow Biomass Crop Nurseries in New York State”
New York State Energy Research and Development Authority (NYSERDA)
Total award: \$40,000, Start date: 7/26/2004, End date: 7/31/2005

L.B. Smart, L.P. Abrahamson, and T.A. Volk

“Genetic Improvement of Willow”
US Dept. of the Interior / US Forest Service
Total award: \$210,000, Start date: 4/1/2004, End date: 3/31/2007

L.B. Smart

“Acquisition of a Quantitative, Real-Time PCR System to Study Expression of Guard-Cell-Specific Genes and for Quantitative Sequence Detection”
USDA-CSREES National Research Initiative Competitive Grants Program
Total award: \$23,152, Start date: 8/1/2003, End date: 7/31/2004

L.B. Smart

“Characterization of Genes Associated with Differentiation and Function of Guard Cells”
USDA-CSREES National Research Initiative Competitive Grants Program
Total award: \$128,450, Start date: 9/1/2002, End date: 8/31/2005

L.B. Smart

“Training in the use of the LI-COR LI-6400 for measurement of photosynthesis”
NYS/UUP PDQWL-Individual Development Awards
Total award: \$275, Start date: 4/8/2002, End date: 4/11/2002

M.A. Teece and L.B. Smart

“Stable Isotope and Chemical Analysis of Leaf Properties Associated with Drought Tolerance in Willow Clones”
USDA-CSREES McIntire-Stennis Program
Total award: \$76,440 (direct costs only), Start date: 10/1/2001, End date: 9/30/2004

L.B. Smart and J.P. Gibbs

“Assessment of the Genetic Diversity and Heterozygosity of Potential Sources of Biomass Willow Stock in the Northeast and Northcentral United States”
USDA-CSREES McIntire-Stennis Program
Total award: \$76,540 (direct costs only), Start date: 10/1/2000, End date: 9/30/2004

L.B. Smart, L.P. Abrahamson, R.F. Kopp, and C.A. Maynard

“Willow Crop Development Center for the Northeast and North-central U.S.”
New York State Energy Research and Development Authority (NYSERDA)
Total award: \$50,000, Start date: 6/20/2000, End date: 6/19/2003

L.B. Smart, L.P. Abrahamson, R.F. Kopp, and C.A. Maynard

“Willow Crop Development Center for the Northeast and North-central U.S.”
U.S. Dept. of Energy - Oak Ridge National Lab, Bioenergy Feedstock Development Program

Total award: \$215,156, Start date: 6/15/2000, End date: 3/15/2003

L.B. Smart

“Cloning of guard cell specific genes by enhancer trap tagging”
USDA-CSREES National Research Initiative Competitive Grants Program
Total award: \$50,000, Start date: 9/15/1999, End date: 9/14/2002

L.B. Smart

“Development of digital images for teaching and research in physiology”
NYS/UUP PDQWL-Individual Development Awards
Total award: \$300.00, Start date: 8/24/1998, End date: 5/15/1999

L.B. Smart

“Characterization of Facilitated Water Flux Across Guard Cell Membranes: Analysis of Cell-Specific Patterns of Aquaporin Gene Expression”
NYS/UUP PDQWL-Individual Development Awards
Total award: \$800, Start date: 5/18/1998, End date: 8/15/1998

L.B. Smart and W.A. Powell

“Engineering Increased Cuticle Deposition in Transgenic Hybrid Poplar”
USDA-CSREES McIntire-Stennis Program
Total award: \$78,131 (direct costs only), Start date: 6/1/1997, End date: 9/30/2001

Student/Scientist Training:

Post-Doctoral Researchers:

- Kimberly Cameron, Ph.D. Sr. Research Scientist (April 2004 - *present*)
- Richard Kopp, Ph.D. Research Scientist (Nov. 2000 - June 2002)
current position: Research Associate, Syracuse Research Corp.,
Syracuse, NY

Graduate Students (Current - SUNY-ESF):

- Michelle Serapiglia Ph.D. candidate, started Aug. 2005 (co-major professor with Art Stipanovic)

Graduate Students (Graduated - SUNY-ESF):

- Emily Pulley M.S. July 2008
“Molecular Basis for Differential Uptake and Sensitivity to Arsenic Among
Clones of Shrub Willow”
current position: Research Associate, Edenspace Corp. Chantilly, VA
- Dongqing Yan M.P.S. Aug. 2007
current position: Ph.D. student, Upstate Medical University, Syracuse, NY
- Jason Purdy M.S., July 2006
“Assessing the Potential of Shrub Willow (*Salix* spp.) and the Role of Fungal
Symbioses in Phytoremediation Applications”
current position: Environmental Scientist, Loureiro Engineering Associates,
Inc., Plainville, CT
- Juan Lin Ph.D., June 2006
“Molecular Analysis and Assessment of the Genetic Diversity of Native and
Naturalized Shrub Willows”
current position: Research Associate, Department of Epidemiology &
Population Health, Albert Einstein College of Medicine, Bronx, NY
- Todd Polanowicz M.P.S., May 2005
current position: Manager of Business Development, Mascoma Corp.
Cambridge, MA
- Ingrid Phillips M.S., Dec. 2002 (Co-major professor with C. Maynard)
“Quantitative Genetics of Traits Predictive of Biomass Yield in First- and
Second-Generation *Salix eriocephala*”
current position: Research Specialist, Dept. of Genetics and Molecular
Biology, Cornell Univ.

- William Moskal, Jr. M.S., July 2002
 “Isolation of Guard-Cell-Specific Genes by Enhancer Trap Tagging in *Arabidopsis thaliana*”
current position: Research Associate, Dow AgroSciences, Indianapolis, IN
- Kimberly Cameron Ph.D., June 2001
 “Chemical Analysis of Epicuticular Wax and the Role of Lipid Transfer Protein in Wax Deposition”
current position: Sr. Research Scientist, Environmental and Forest Biology, SUNY-ESF
- Richard Kopp Ph.D., Nov. 2000 (Co-major professor with L. Abrahamson)
 “Genetic Improvement of *Salix* Using Traditional Breeding and AFLP Fingerprinting”
current position: Research Associate, Syracuse Research Corp., Syracuse, NY
- Eriko Motegi M.S., Aug. 2000 (Co-major professor with J. Gibbs)
 “Genetic Diversity of Sugar Maple (*Acer saccharum*) Populations in Relation to Stand Disturbance History”
current position: unknown
- Nobutaka Kato M.P.S., Sept. 1999 (Co-major professor with T. Donovan)
current position: Postdoctoral Fellow, Scripps Research Inst., LaJolla, CA

I have served on the graduate steering committees of over 25 other SUNY-ESF and Syracuse University students since 1996.

Undergraduate Student Researchers:

Undergraduate Honors Program (SUNY-ESF):

- Alyssa DeLeon Honors Thesis May 2009
 “Molecular Analysis of Genes Related to Arsenic Uptake and Detoxification in Sensitive and Tolerant Varieties of Shrub Willow (*Salix* spp.)”
- Laura Wayne Honors Thesis May 2006
 “Isolation and Characterization of a Guard-Cell-Associated Enhancer Trap Line of *Arabidopsis thaliana*”
current position: Ph.D. student, Washington State University

Independent Researchers, College Work-Study Employees, and paid Research Project Aides

Cornell University

Kayleigh Hogan - summer 2009 research aide (student at Univ. of Rochester)

Peter Purdy - summer 2009 research aide (student at Morrisville College)

Cullen White- summer 2009 research aide (student at Hobart College)

SUNY-ESF

Gabe Kellman, class of 2011

Mark Jackling, class of 2011

Andrew Dimezza, class of 2010

Amy Fox, class of 2010

Samantha Holcomb, class of 2010

Leticia Izquierdo, class of 2010

Jason Maurer, class of 2010

Matthew Oliver, class of 2010

Molly Payne, class of 2010

Chelsea Sheridan, class of 2010

Craig Tompkins, class of 2010

Susan Carlton, B.S. 2009

Robert Collignon, B.S. 2009

Alyssa DeLeon, B.S. 2009

ASPB SURF Awardee

Lindsay Gedacht, B.S. 2009

Saeko Hamada, B.S. 2009

Steve Letkowsky, M.S. 2009

Derek Proulx, B.S. 2009

Hajime Akada, B.S. 2008

Charles Curry, B.S. 2008

Celia Dubin, B.S. 2008

Shaunna Escobar, B.S. 2008

Charles Fouch, B.S. 2008

Adam Robadee, B.S. 2008

Edward Rowe, B.S. 2008

Andrew Schneider, B.S. 2008

Thomas Burchhardt, B.S. 2007

Kathleen Pitcher, B.S. 2007

Irony Sade, B.S. 2007

Jon Tarasiewicz, B.S. 2007

Maxwell Wightman, B.S. 2007

Michael Fenton, B.S. 2006

Jason Oliver, B.S. 2006

Michael Johnson, B.S. 2006

Laura Wayne, B.S. 2006

ASPB SURF Awardee

Steven McElwain

Robert Justin Wright

Howard Fung

Jeffrey Villari, B.S. 2005

Daniel Clune, B.S. 2003

Norman Dart, B.S. 2003

William Shaw, B.S. 2003

Jeremy Bovay, B.S. 2002

Jason Brant, B.S. 2002

Jason Corwin, B.S. 2002

Michelle Decker, B.S. 2002

Kathleen Deyle, B.S. 2002

Caron Gala, B.S. 2002

Peter Greeno, B.S. 2002

Emily Mooney, B.S. 2002

Justin Lind, B.S. 2002

Leif Lovig, B.S. 2002

Nick Boyea, B.S. 2001

Rita Parsons, B.S. 2001

Jessica Carrero, B.S. 2000

Edward Ditommaso, B.S. 2000

William Moskal, B.S. 2000

Samantha Callender, B.S. 1999

Todd Castoe, B.S. 1999

Steve Desimone, B.S. 1999

Christina Thompson, B.S. 1999

Nicole Nall, B.S. 1998

Jeffrey Roth, B.S. 1998

Nicole Werner, B.S. 1998

High School Student Researchers:

Alyson Waring, Sandy Creek H.S., class of 2008

Amanda Clark, Skaneateles H.S., class of 2007

Andrew Middleton, Skaneateles H.S., class of 2007

Kay Leopold, Christian Brothers Academy, class of 2004
Kaitlin Corona, Skaneateles H.S., class of 2003
Laura Wayne, Skaneateles H.S., class of 2003
Jennifer Musial, Oneida H.S., class of 1999
Deepa Popuri, Oneida H.S., class of 1998

Teaching Experience:

Regular course instruction (SUNY-ESF):

Fall 1997-2002 and Fall 2004-2008 EFB325 Cell Physiology (3 credits, avg. enrollment = 95)
Spring 1997-2009 EFB530 Plant Physiology Lecture (3 credits, avg. enrollment = 20)
EFB531 Plant Physiology Lab (2 credits, avg. enrollment = 8)
Spring 2004-2009 BTC499 Senior Synthesis in Biotechnology (1 credit, avg. enrollment = 15)

Periodic course instruction:

Fall 2006 Instructor
BTC132 Orientation to Biotechnology, SUNY-ESF
Fall 1997, 2000, and 2007 Instructor
EFB797 Graduate Seminar in Plant Physiology & Genetics, SUNY-ESF
Spring 2000 Guest lecturer
EFB427/627 Plant Developmental Biology, SUNY-ESF
Fall 1998-2001 Guest lecturer
Fall 2004-2005 EFB132 Orientation Seminar, SUNY-ESF
Spring 1998-2000 Instructor
Fall 2001, Spr 2005 EFB733 Techniques in Plant Physiology, SUNY-ESF
Spring 1998 Instructor
EFB496 Undergraduate Research Seminar, SUNY-ESF
Fall 1996 Instructor (team taught)
EFB325 Cell Physiology, SUNY-ESF
Spring 1990 Graduate Teaching Assistant
Intro Plant Physiology, Michigan State University
Fall 1989 Graduate Teaching Assistant
General Genetics, Michigan State University
Spring 1986 Undergraduate Teaching Assistant
Intro Plant Breeding, Cornell University

Undergraduate Teaching Assistants Supervised (EFB325 Cell Physiology, EFB530 Plant Phys):

Jennifer Lillie (Fall 2008)
Tyler Hoffman (Fall 2007)
Nickolas Kohl (Fall 2006)
Lisa Krause (Fall 2005)
Christina Hazard (Fall 2002)
Alena Marr (Spring 2002)
Leif Lovig (Fall 2001)
Benjamin Gillen (Fall 2001)
Jessica Veeder (Fall 2000)
Scott Lewins (Fall 1999)
Nicole Nall (Fall 1998)
Jeffrey Roth (Fall 1997)

Departmental Administrative Service:

2002 - 2009 Supervisor of Ms. Bridget McMaster, Instructional Support Specialist, Environmental and Forest Biology, SUNY-ESF

Departmental, College, and Professional Service:

Dec. 2007 - present	Editorial Board, <i>BioEnergy Research</i>
Aug. 2006 - present	Executive Committee and Membership Committee (Northeast Section Representative), American Society of Plant Biologists
June 2003 - present	Executive Committee, Northeast Section, American Society of Plant Biologists (<i>Chair and Annual Meeting host in 2007</i>)
Aug. 1999 - May 2009	Institutional Biosafety Committee, SUNY-ESF
Jan. 1997 - May 2009	Lowe-Wilcox Scholarship Selection Committee (<i>Chair 1999-2009</i>), EFB, SUNY-ESF
Sept. 1997 - May 2009	Radiation Safety Committee, SUNY-ESF
Sept. 2007 - Feb. 2009	Curriculum & Course Assessment Committee, EFB, SUNY-ESF
Nov. 2006 - May 2007	Search Committee (Chair), Asst. Professor in Diseases of Fish and Wildlife, SUNY-ESF
July 2004 - June 2007	Faculty Committee on Instruction, SUNY-ESF (Chair, July 2005 - June 2007)
June 2005 - June 2006	Executive Committee, Structural Biology, Biochemistry, and Biophysics (SB ³) Program, SUNY-ESF/Syracuse University/SUNY Upstate Medical University
Dec. 2003 - Jan. 2005	Search Committee, Asst. Professor of Biochemistry, Chemistry, SUNY-ESF
Oct. 2002 - Dec. 2002	Ad Hoc Positions Committee (Chair), EFB, SUNY-ESF
April 2002 - Sept. 2002	Biotechnology Research Center Building Planning Committee, SUNY-ESF/SUNY Upstate Medical University
Jan. 2002 - May 2005	Graduate Admissions Committee, Structural Biology, Biochemistry, and Biophysics (SB ³) Program, SUNY-ESF/Syracuse University/SUNY Upstate Medical University
Oct. 2001 - May 2006	Building and Equipment Advisory Team (Chair), EFB, SUNY-ESF
Oct. 2000 - June 2005	Initiative on Research and Graduate Strategy Committee, SUNY-ESF

Oct. 2000 - May 2001	Middle States Association Accreditation Subcommittee on Faculty, Administration and Staff, and the Board of Trustees, SUNY-ESF
Aug. 2000 - Oct. 2000	Information Technology Instruction Task Force, SUNY-ESF
Jan. 2000 - June 2000	Search Committee, Assistant for Instructional Resources, Instructional Development, Evaluation, and Services, SUNY-ESF
April 1999 - April 2001	Executive Committee, Northeast Section, American Society of Plant Biologists
Sept. 1998 - Mar. 1999	Search Committee, Asst. Professor of Plant Developmental Biology, EFB, SUNY-ESF
Jan. 1998 - July 1998	Search Committee, Asst. Professor of Fisheries Biology, EFB, SUNY-ESF
Oct. 1997 - March 1998	Search Committee (Chair), Instructional Support Specialist (Electronics Tech), Analytical and Technical Services, SUNY-ESF
Sept. 1997 - May 2002	Curriculum & Course Assessment Committee, EFB, SUNY-ESF
Sept. 1997 - May 2000	Faculty Advisor, Graduate Student Association, SUNY-ESF
Sept. 1997 - May 1999	Faculty Committee on Research, SUNY-ESF
Sept. 1991 - Sept. 1992	Faculty Committee Representative, D.O.E.-Plant Research Lab, Michigan State University
Sept. 1990 - Sept. 1991	Admissions Committee, D.O.E.-Plant Research Lab, Michigan State University
Sept. 1989 - Sept. 1991	Admissions Committee, Genetics Program, Michigan State University
Sept. 1988 - Sept. 1989	Seminar Committee, D.O.E.-Plant Research Lab, Michigan State University

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Planta
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Trends in Plant Science
 USDA McIntire-Stennis Program
 USDA-NRI Competitive Grants Program