Detailed Curriculum Vitae

Name: **Harold N. Trick**
Title: Professor of Plant Pathology
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Education:

Ph.D. Biology, Florida State University (FSU), Tallahassee, FL, 1995
M.A. Biology, SUNY, Binghamton, NY, 1989,
B.S. Biochemistry, State University of New York (SUNY), Binghamton, NY, 1985

Employment:

2010-present Professor. Department of Plant Pathology, Kansas State University, Manhattan, KS. Plant tissue culture, transformation and molecular biology of wheat, soybean and maize.

2004-2010 Associate Professor. Department of Plant Pathology, Kansas State University, Manhattan, KS. Plant tissue culture, transformation and molecular biology of wheat, soybean and maize.

1998-2004 Assistant Professor. Department of Plant Pathology, Kansas State University, Manhattan, KS. Plant tissue culture, transformation and molecular biology of wheat, soybean and maize.

1995-1998 Postdoctoral fellow, OARDC, Department of Horticulture and Crop Sciences, The Ohio State University, Wooster, OH. Plant tissue culture, transformation, and molecular biology. Supervisor: John J. Finer

1990-1995 Doctoral student, Department of Biological Sciences, FSU, Tallahassee, FL.

1989-1990 Research technician, Department of Biological Sciences, SUNY-Binghamton, Binghamton, NY. Cytochemistry, biochemistry, and ultrastructure of red algae. Supervisor: Curt M. Pueschel

1987-1989 Master's student, Department of Biological Sciences, SUNY-Binghamton, Binghamton, NY.

Professional Memberships:

2010-present American Society of Plant Biologists
1994-present Society for In Vitro Biology (SIVB)
2000-2008 International Association for Plant Tissue Culture
1999-2003 American Phytopathological Society

Awards:

2015 Society for In Vitro Biology Fellow Award

National and International Service:

2016 World Congress on In Vitro Biology Program Chair

Panel Review manager, Small Business Innovation Research Program (SBIR): Multifactorial Plant Health Promotion Using BPF1 Phase I and II, 2013 competition

Plant Biotechnology Section Chair, Society for In Vitro Biology (SIVB), 2012-2014

Panel Review manager, Small Business Innovation Research Program (SBIR): Multifactorial Plant Health Promotion Using BPF1 Phase I and Phase II, 2012 competition

Panel Review member, Small Business Innovation Research Program (SBIR), 2011 competition

Grant Panel Review member, CREES-Tropical and Subtropical Agriculture Research (TSTAR), 2011

Planning Committee, World Congress on In Vitro Biology (SIVB) Meeting, Bellevue, WA, June 3–7, 2012

Planning Committee 2011, Society for In Vitro Biology (SIVB) Meeting, Raleigh, NC, June 4–8, 2011

Associate Editor for *In Vitro Cell. Dev. Biol.-Plant* 2011-present

Associate Editor for *Plant Cell Tissue and Organ Culture*, 2006-2009

Planning Committee 2007, Society for In Vitro Biology (SIVB) Meeting, Indianapolis, IN June 9–13, 2007

Plant Planning Committee 2007, SIVB, Congress on In Vitro Biology

Reviewing editor for *In Vitro Cell. Dev. Biol.-Plant* 1998-2007

Plant Program Chair 2003, SIVB, Congress on In Vitro Biology

Grant Panel Review member, CREES-Tropical and Subtropical Agriculture Research (TSTAR), 2006

Grant Panel Review member, CREES-TSTAR, 2005

Grant Panel Review member, Arthropod and Nematode Gateways to Genomics, 2005

Grant Panel Review member, CREES-TSTAR, 2004

Plant Program Co-chair 2002, SIVB, Congress on In Vitro Biology

Plant Planning Committee 2000-2004, SIVB, Congress on In Vitro Biology

Plant Program Co-chair 2000, SIVB, Congress on In Vitro Biology

State, University, and Departmental Service:

2014-	5 yr review committee of the Associate Director for Research and Technology Transfer, K-State Research and Extension
2013-2014	**A**ppendix M Committee
2010-	Professional Science Master's in Biotechnology, ad hoc committee
2006-	KSU Institution Biosafety Committee, Chair
2006	Horticulture Faculty Search Committee (Biotech/Crop Improvement)
2003-2006	KSU Institution Biosafety Committee
2005-	Tissue Culture and Growth Chamber Committee, Chair
2003-2005	Plant Biotechnology Action Team, Chair
2003-2007	State of Kansas Biotech Dialogue Group
2003-	Sponsored Grants Committee
2003-	Departmental Safety Committee

Courses Taught:

1999-2005 spring semester odd years, Plant Path 911: Plant Tissue Culture and Regeneration

2007 spring semester, Plant Path 610: Biotechnology

2007-present fall semesters, Agronomy/Plant Path 610: Biotechnology

Patents:

Fellers, J.P., **Trick, H.N.,** Cruz, L., Rupp, J. 2013. Plant Germplasm Resistant to RNA Viruses. Patent Application Serial No. 14/494,661; Filed September 24, 2014; Docket No. 0146.12.

Trick, H.N., Fritz, A.K., Talukder, S. 2013. Expression of thermostable starch synthase genes improves the yield in heat stress. PCT Patent Application No. PCT/US14/50932; Dkt. 45286-PCT, filed Aug 13, 2014.

Scofield, S.R., Gillespie, M.E., Brandt, A.S., **Trick, H.N.** 2013. A Transgene Construct to Improve Fusarium Head Blight Resistance in Wheat and Barley. Patent Application Serial No. 14/163,248 – Filed January 24, 2014.

Chen Ming-Shen, Lui, Xuming, and **Trick, H.N.** 2012. *Mayetiola destructor* susceptibility gene one (*MDS-1*) and its application in pest management, PCT Patent Application PCT/US2012/020631-Filed January 9, 1012.

Trick, H.N., Li, J., Todd, T.C., 2010. "Enhancement of non-endogenous siRNA molecules using host-delivered RNAi strategy", International Application No. PCT/US2010/056358, filed Nov. 11, 2010.

Trick, H.N., Roe, J.L., Todd, T.C., Herman, M.A., 2010. Composition and methods for Controlling Plant Parasitic Nematodes. Issued September 28, 2010. U.S. Patent # 7,803,984.

Finer, J.J. and **Trick, H.N.** 1997. Method for transforming plant tissue by sonication. Issued December 2, 1997. U.S. Patent # 5,693,512.

Publication List:

Shubing Liu, Sunish K Sehgal, Meng Lin, Jiarui Li, Harold N. Trick, Bikram S Gill and Guihua Bai. 2015. Independent mis-splicing mutations in TaPHS1 causing loss of pre-harvest sprouting (PHS) resistance during wheat domestication. New PhytologistDomestication contributed to reduce seed dormancy in wheat. *accepted to New Phytologist. 4/30/15*

Ragiba Makandar, Vamsi J. Nalam, Zulkarnain Chowdhury, Sujon Sarowar, Guy Klossner, Hyeonju Lee, Dehlia McAfee, Harold N. Trick, Enrico Gobbato, Jane E. Parker, and Jyoti Shah. 2015. The combined action of ENHANCED DISEASE SUSCEPTIBILITY1 and PHYTOALEXIN DEFICIENT4 and *SENESCENCE-ASSOCIATED101* promotes salicylic acid-mediated defenses to limit *Fusarium graminearum* infection in *Arabidopsis thaliana. Mol. Plant-Microbe Interact.* April 27 **[Epub ahead of print];** http://dx.doi.org/10.1094/MPMI-04-15-0079-R

Vamsi J. Nalam, Syeda Alam, Jantana Keereetaweep, Barney Venables, Dehlia Burdan, Hyeonju Lee, Harold N. Trick, Sujon Sarowar, Ragiba Makandar, and

Jyoti Shah. 2015. Facilitation of Fusarium graminearum infection by 9-lipoxygenases in Arabidopsis and wheat. *Mol. Plant-Microbe Interact*. Jun 15. **[Epub ahead of print];** http://dx.doi.org/10.1094/MPMI-04-15-0096-R

Cruz, Luisa F., Shoup Rupp, Jessica L., **Trick, Harold N.** and Fellers, John P. 2014 Stable Resistance to Wheat streak mosaic virus in Wheat Mediated by RNAi. *In Vitro Cellular & Developmental Biology - Plant* 50 (6): 665-67.

Liu, X.M, Khajuria, C., Li, J., **Trick, H.N.**, Li, Huang, Gill, B.S., Reeck, G.R., Antony, G., White, F.F., Chen, M.S. 2013. Wheat Mds-1 encodes a heat-shock protein and governs susceptibility towards the Hessian fly gall midge. *Nature Communication* 4: 2070. http://www.nature.com/ncomms/2013/130624/ncomms3070/full/ncomms3070.html.

Saintenac, Cyrille, Zhang, Wenjun, Salcedo, Andres, Rouse, Matt, Trick, Harold N., Akhunov, Eduard, Dubcovsky, Jorge. 2013. Identification of wheat gene Sr35 that confers resistance to Ug99 stem rust race group. *Science*: 341(6147): 783-786.

Liu, Shubing, Sehgal, Sunish K., Li, Jiarui, Lin, Meng, **Trick, Harold N.**, Yu, Jianming, Gill, Bikram S. and Bai, Guihua. 2013. Cloning and Characterization of a TaMFT-Like Gene for Pre-harvest Sprouting Resistance in Wheat. *Genetics* 195: 263-273.

Lin Z., Li X., Shannon L.M., Yeh C.T., Wang M.L., Bai G., Peng Z., Li J, Trick H.N., Clemente T.E., Doebley J., Schnable P.S., Tuinstra M.R., Tesso T.T., White F., Yu J. 2012. Parallel domestication of the *Shattering1* genes in cereals. *Nature Genetics* 44(6): 720-4.

Wu, Y., Li, X., Xiang, W., Zhu, C., Lin, Z, Wu, Y., Li, J., Bai, G., Ming, L., Wang M.L., **Trick, H.N.**, Bean S.R., Tuinstra, M.R., Tesso, T.T., and Yu, J. 2012. Presence of Tannins in Sorghum Grains Is Conditioned by Different Natural Alleles of *Tan1*. *PNAS* 109(26): 10281-10286.

Brady, C.R, Li, J. Todd, T.C., Oakley, T.R., and **Trick, H.N.** 2012. Compatibility of foliar insecticides and *Heterodera glycines* bioassays. *Plant Health Progress* April 9, 2012. (doi:10.1094/PHP-2012-0409-01-BR).

Makandar, R., Nalam, V., Hyeonju Lee, H., **Trick, H.N.**, Dong, Y. and Shah, J. 2012. Salicylic acid regulates basal resistance to *Fusarium* head blight in wheat. *Mol. Plant-Microbe Interact.* 25(3): 431-439.

Lee, J., Welti, R., Schapaugh, W.T., Roth, M., Li, J. and **Trick, H.N**. 2012. Enhanced seed viability and lipid compositional changes during natural aging by suppressing phospholipase Dα in soybean seed. *Plant Biotechnology Journal* 10: 164-173.

Li, J. Todd, T.C., and **Trick, H.N.** 2011. Biotechnological application of functional genomics towards plant-parasitic nematode control. *Plant Biotechnology Journal* 9: 936–944.

Krishnan, H.B, Jang, S., Kim, S., Kerley, Wonseok, K. M.S. Oliver, M., and **Trick, H.N.** 2011. Biofortification of soybean meal: Immunological properties of the 27kDa γ-zein. *Journal of Agricultural and Food Chemistry* 59: 1223-1228.

Lee, J., Welti, R., Schapaugh, W.T., and **Trick, H.N**. 2011. Phospholipid and triacylglycerol profiles modified by *PLD* suppression in soybean seed. *Plant Biotechnology Journal* 9: 359-372.

Li, J. Todd, T.C., Oakley, T.R., Lee, J., and **Trick, H.N.** 2010. Host derived suppression of nematode reproductive and fitness genes decreases fecundity of soybean cyst nematodes. *Planta* 232:775-785.

Smith, S.M., Steinau, M. **Trick, H.N**., and Hulbert, S.H. 2010. Recombinant *Rp1* genes confer necrotic or nonspecific resistance phenotypes. *Molecular Genetics and Genomics* 283: 591-602.

Li, J. Todd, T.C., and **Trick, H.N**. 2010. Rapid *in planta* evaluation of root expressed transgenes in chimeric soybean plants. *Plant Cell Reports*. 29: 113-123.

Widholm, J.M., Finer J.J., Vodkin L.O., **Trick H.N.**, LaFayette P., Li J. and Parrott W. (2010) Soybean. In: Kempken F, Jung C (eds) Genetic modification of plants - agriculture, horticulture & forestry. Springer Verlag, Berlin, Heidelberg, New York, im Druck 64: 473-498.

Oh, M.M., **Trick H.N.**, and Rajashekar, C.B. 2009. Secondary metabolism and antioxidants are involved in environmental adaptation and stress tolerance in lettuce. *Journal of Plant Physiology* 166(2): 180-91.

Fu, J., Momčilović, I., Clemente, T.E., Nersesian, N., **Trick H.N.**, and Ristic, Z. 2008. Heterologous expression of a plastid EF-Tu reduces protein thermal aggregation and enhances CO_2 fixation in wheat (*Triticum aestivum*) following heat stress. *Plant Mol Biol.* 68(3): 277-88.

Ayella, A.K., **Trick H.N.** and Wang, W. 2007. Enhancing lignan biosynthesis by over-expressing pinoresinol lariciresinol reductase in transgenic wheat. *Molecular Nutrition & Food Research* 51: 1518–1526.

Magalhaes, JV, Liu, J., Guimarães, C.T., Lana, U.G.P., Alves, V.M.C., Wang, Y.H., Schaffert, R.E., Hoekenga, O.A., Piñeros, M.A., Shaff, J.E., Klein, P.E., Carneiro, N.P., Coelho, C.M., **Trick, H.N.**, Kochian, L.V. 2007. A member of the multidrug and toxic compound extrusion 'MATE' family is a major gene that confers aluminum tolerance in sorghum. *Nature Genetics* 39 (9): 1156-1161.

Steeves, R.M., Todd, T.C., and **Trick, H.N.** 2006. Transgenic soybeans expressing siRNAs specific to a major sperm protein gene suppress *Heterodera glycines* reproduction. *Functional Plant Biology.* 33: 991-999.

Makandar, R., Essig, J.S., Schapaugh, M.A., **Trick, H.N.** and Shah, J. 2006. Genetically engineered resistance to Fusarium head blight in wheat by expression of *Arabidopsis* NPR1. *Mol. Plant-Microbe Interact.* 19(2): 123-129.

Simons, K.J., Fellers, J.P., **Trick, H.N.**, Zhang, Z., Tai, Y.S., Gill, B.S., Faris, J.D. 2005. Molecular characterization of the major wheat domestication gene Q. *Genetics* 172: 547-555.

Zhao, B., Lin, X., Poland, J., **Trick**, **H.N.,** Leach, J.E., and Hulbert, S.H. 2005. A Maize Resistance Gene Functions against Bacterial Streak Disease in Rice, *PNAS* 2005 102: 15383-15388.

Li, Z. and **Trick, H.N.** 2005. Transgenic soybean producing phenylalanine-free zein protein. *National PKU News*. 17(1): 3-4.

Li, Z. and **Trick, H.N.** 2005. Rapid method for high-quality RNA isolation from seed endosperm containing high levels of starch. *Biotechniques* 38 (6): 872-876.

Li, Z., Meyer S., Essig J.S., Liu, Y., Schapaugh, M.A., Muthukrishnan, S., Hainline, B.E., **Trick**, **H.N.** 2005. High-level expression of maize γ-zein protein in transgenic soybean (Glycine max). *Molecular Breeding* 16: 11-20.

Zhao, B., Ardales, E.Y., Raymundo, A., **Trick**, **H.N.,** Leach, J.E., and Hulbert, S.H. 2004. The *avrRxo1* gene from the rice pathogen *Xanthomonas oryzae* pv. *oryzicola* confers a nonhost defense reaction on maize with resistance gene *Rxo1*. *MPMI* 17 (7): 771-779.

Ayliffe, M.A., Steinau, M., Park, R.F., Rooke, L., Pacheco, M.G., Hulbert, S.H., **Trick, H.N.**, Pryor, A.J. 2004. Aberrant mRNA processing prevents functional transfer of the maize *Rp1-D* rust resistance gene to wheat and barley. *MPMI* 17 (8): 853-864.

Essig, J.S., Main, M.L., and **Trick, H.N.** 2004. Genetically Engineered Crop Plants Part II: Risks and Regulations. *AIB Technical Bulletin* 26(3): 1-8.

Ornatowski,W., Jayaraj, J., Schapaugh, W.P., Muthukrishnan, S., Todd, T.C., and **Trick, H.N.** 2004. Introduction and constitutive expression of a tobacco hornworm (*Manduca sexta*) chitinase gene in soybean. *In Vitro Cell. Dev. Biol.-Plant* 40(3): 260-265.

Anand, A., Muthukrishnan, S., **Trick, H.N**., Gill, B.S. 2003. Molecular evidence for transgene silencing in wheat. *Plant Biotechnology Journal* 1: 241-251.

Huang, L., Brooks, S.A., Li, W., Fellers, J.P., **Trick, H.N**. Gill, B.S. 2003. Map-based cloning of a rust-resistance gene from bread wheat's large polyploid genome. *Genetics* 164: 655-664.

Anand, A., Zhou, T., **Trick, H.N**., Gill, B.S., Bockus, W.W., Muthukrishnan, S. 2003. Greenhouse and field testing of transgenic wheat against *Fusarium graminearum*. *Journal of Experimental Botany*. 54 (384): 1101-1111.

Trick, H.N. 2003. Researchers collaborate to produce natural high protein diet for PKU. *National PKU News*. 14 (3): 3. (*research news article*).

Bowden, R.L., **Trick, H.N.** 2002. Genetically Modified Crops Part I. Methodology and Applications. *AIB Technical Bulletin* 24 (11): 1-8.

Jeoung, J.M., Krishnaveni, S., Muthukrishnan, S., Liang, G.H., **Trick, H.N**. 2002. Optimization of Sorghum Transformation Parameters Using Genes for Green Fluorescent Protein and β-glucuronidase as Visual Markers. *Hereditas* 137: 20-28.

Webb, C.A., Richter, T.E., Collins, N.C., Nicolas, M., **Trick, H.N**., Pryor, T. and Hulbert, S.H. 2002. Genetic and molecular characterization of maize rp3 rust resistance locus. *Genetics* 162:381-394.

Janakiraman,V., Steinau, M., McCoy, S.B., **Trick, H.N.** 2002. Recent advances in wheat transformation. *In Vitro Cell. Dev. Biol.-Plant* 38:404-414.

Dinkins, R.D., Reddy, M.S.S., Meurer, C.A., Yan,B., **Trick, H.N.**, Thibaud-Nissen, F., Finer J.J., Parrott, W.A., Collins, G.B. 2001. Increased Sulfur Amino Acids in Soybean Plants Overexpressing the Maize 15 kDa Zein Protein. *In Vitro Cell. Dev. Biol.-Plant* 37: 742-747.

Yu, T.T., Skinner, D.Z., Liang, G.H., **Trick, H. N**., Huang, B. and Muthukrishnan, S. 2001. *Agrobacterium*-mediated transformation of creeping bentgrass using GFP as a reporter gene. *Hereditas* 133(3): 229-234.

Muthukrishnan, S., G. H. Liang, **H. N. Trick**, and B. S. Gill. 2001. Pathogenesis-related proteins and their genes in cereals. *Plant Cell, Tissue and Organ Culture* 64: 93-114.

Meurer, C.A., Dinkins, R.D., Redmond, C.T., McAllister, K.P., Tucker, D.T., Walker, D.R., Parrott, W. A., **Trick**, **H.N.,** Essig, J.S., Franz, H.M., Finer, J.J., Collins, G.B. 2001. Embryogenic Response of Multiple Soybean [*Glycine max* (L.) Merrill] Cultivars Across Three Locations. *In Vitro Cell. Dev. Biol.-Plant* 37:62-67.

Gill, B.S., Li, W.L., Anand, A., Fellers, J.P., **Trick, H.N.**, Muthukrishnan, S., Liu, D.J., Chen, P.D. 2000. Analysis of genes induced in wheat spikes upon infection with *Fusarium graminearum* and their manipulation to improve wheat plant resistance to *Fusarium* head scab disease. *Proceedings of the International Syposium of Wheat Improvement for Scab Resistance*. May 5-11, 2000 Suzhou and Namjing, China 136-139.

Trick, **H**.**N**., Finer, J.J. 1999. Initiation and transformation of embryogenic cultures of Ohio buckeye (*Aesculus glabra*). *In Vitro Cell. Dev. Biol.-Plant* 35:57-60.

Trick, **H**.**N**., Finer, J.J. 1998. Sonication Assisted *Agrobacterium*-mediated Transformation of soybean (*Glycine max* [L.] Merr.) embryogenic suspension tissue cultures. *Plant Cell Reports* 17:482-488.

Santarém, E.R., **Trick**, **H**.**N**., Essig, J.S., Finer, J.J. 1998. Sonication Assisted *Agrobacterium*-mediated transformation of soybean immature cotyledons: optimization of transient expression. *Plant Cell Reports* 17:752-759.

Trick, **H**.**N**. Finer, J.J.. 1997. SAAT: Sonication Assisted *Agrobacterium*-mediated Transformation. *Transgenic Research* 6 (5): 329-334.

Trick, **H**.**N**., Dinkins, R.D., Santarém, E.R., Di, R., Samoylov, V., Meurer, C., Parrott, W.A., Finer, J.J., Collins. G.B. 1997. Recent advances in soybean transformation. *Plant Tissue Culture and Biotechnology*. 3 (1): 1-26.

Trick, **H**.**N**., Bates, G.W. 1996. Bromodeoxyuridine combined with UV light and gamma irradiation promotes the production of asymmetric somatic hybrid calli. *Plant Cell Reports* 15: 986-990.

Trick, **H**.**N**., Bates G.W. 1995. Electrofusion of plant protoplasts and selection and screening for somatic hybrids of *Nicotiana*, in Methods in Molecular Biology, vol. 55: "Plant Cell Electroporation and Electrofusion Protocols", (Jac Nickoloff, ed.) Humana Press, Totowa, NJ, pp.165-179.

Trick, **H**., Zelcer, A., Bates, G.W. 1994. Chromosome elimination in asymmetric hybrids: effect of gamma dose and time in culture. *TAG* 88: 965-972.

Pueschel C.M., Eichelberger, H.H., **Trick, H.N.** 1992. Specialized calciferous cells in the marine alga *Rhodogorgon carriebowensis* and their implications for models of red algal calcification. *Protoplasma* 166: 89-98.

Pueschel, C.M., **Trick, H.N**., Norris, J.N. 1992. Fine structure of the phylogenetically important marine alga *Rhodogorgon carriebowensis* (Rhodophyta, Batrachspermales?) *Protoplasma* 166: 78-88.

Trick, H. N., Pueschel, C.M. 1991. Cytochemical evidence for homology of the outer cap layer of red algal pit plugs. *Phycologia* 30: 196-204.

Pueschel, C.M., **Trick, H.N**. 1991. Unusual morphological and cytochemical features of pit plugs in *Clathromorphum circumscriptum* (Rhodophyta, Corallinales). *Br. Phycol. J.* 26: 335-342.

Trick, H.N., Pueschel, C.M. 1990. Cytochemistry of pit plugs in *Bossiella californica* (Corallinales, Rhodophyta). *Phycologia* 29 (4): 403-409.