

Curriculum vitae
Mark Gregory Bolyard

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Education:

Bachelor of Arts, Biology, and Secondary Certification in Biology and Chemistry,
Hanover College, Hanover, IN. May, 1984.

Ph. D. in Experimental Pathology, School of Medicine, University of North Carolina,
Chapel Hill, NC. May, 1989.

Professional Experience:

Research Associate, Departments of Crop and Soil Sciences and Entomology,
Pesticide Research Center, Michigan State University, East Lansing, MI. June,
1989 to August, 1991.

Assistant Professor, Department of Biological Sciences, Southern Illinois University
Edwardsville, Edwardsville, IL. September, 1991 - June, 1996.

Associate Professor (with tenure), Department of Biological Sciences, Southern Illinois
University Edwardsville, Edwardsville, IL. July, 1996 - June, 2005.

Sabbatical Leave, Department of Biochemistry and Molecular Biology, Penn State
University College of Medicine, Hershey, PA. August, 1997 - December, 1997.

Assistant Director, Office of Science and Math Education, Southern Illinois University
Edwardsville, Edwardsville, IL. August, 2000 - June, 2001.

Director, Office of Science and Math Education, Southern Illinois University
Edwardsville, Edwardsville, IL. July, 2001 - June, 2004.

Professor, Department of Biological Sciences, Southern Illinois University Edwardsville,
Edwardsville, IL. July, 2005 – December, 2006.

Professor and Chair, Biology Department, Union University, Jackson TN. January, 2007
- present

Publications (student co-authors underlined; K-12 Teachers *):

"Integration of teaching and research revisited", M. Bolyard, submitted to **Council on Undergraduate Research Quarterly**.

"Integrating research into a large teaching laboratory", J.I.T. Jones and M. Bolyard, submitted to **Council on Undergraduate Research Quarterly**.

"Allelopathic activity of a testa-derived solution from Siberian Maple (*Acer ginnala* Maxim.) seeds", John Cawly, *Sara Newton and M. Bolyard, **Allelopathy Journal** 16:227-238, 2005.

"Expression and in vitro amidation of recombinant FMRFamide", Ian Grimes, Jason Aleman, Kevin Griffin, Betty Lawton, Tiffany Slater, Kevin Krajniak, and Mark Bolyard, **Transactions of the Illinois State Academy of Sciences** 97:23-31, 2004.

" 'Lonesome Ginkgo' lab: Embryo tissue culture from trees", Mark Bolyard and *Vicki Gillespie. **The American Biology Teacher**, 63:1-5, 2001.

- "Embryo germination in Acer ginnala Maxim. and the activity of an endogenous exudate", Sarah Vordtriede, Paul Vordtriede, Kurt E. Schulz, Frank B. Kulfinski, and Mark G. Bolyard, **Transactions of the Illinois State Academy of Sciences**, 92:59-67, 1999.
- "Regeneration of Solanum tuberosum cv. Katahdin from leaf explants in vitro", Jamie A. Cearley and Mark G. Bolyard, **American Potato Journal** 74:125-129, 1997.
- "Publishable student research generates enthusiasm and student commitment", Mark G. Bolyard, **Council on Undergraduate Research Quarterly** 17:78-81,102-104, 1996.
- "Transient GUS expression in zygotic embryos of Taxus brevifolia", Ellen C. Luan, Susan E. Allen, and Mark G. Bolyard, **In Vitro Cellular and Developmental Biology - Plant**, 32:81-85, 1996.
- "Regeneration of 'Frontier' elm from leaf explants", Mark G. Bolyard, **Journal of Environmental Horticulture**, 12:93-95, 1994.
- "Possible physiological roles for cerato-ulmin by analogy to other hydrophobins", Mariam B. Sticklen and Mark G. Bolyard, **Trends in Microbiology** 2:213-215, 1994.
- "Transgenic plants of turfgrass (Agrostis palustris Huds.) from microprojectile bombardment of embryogenic callus", Heng Zhong, Mark G. Bolyard, C. Srinivasan, and Mariam B. Sticklen, **Plant Cell Reports** 13:1-6, 1993.
- "A simple transformation system using adventitiously multiplying juneberry shoots" Ravindra K. Hajela, Neerja Hajela, Mark G. Bolyard, Wayne M. Barnes, and Mariam B. Sticklen, **HortScience** 28:330-332, 1993.
- "Expression of a modified Dutch elm disease toxin in Escherichia coli", Mark G. Bolyard & Mariam B. Sticklen, **Molecular Plant-Microbe Interactions** 5:520-524,1992.
- "Interaction of recombinant γ' and $\gamma : \gamma'$ hybrids with platelets and with the staphylococcal clumping factor", Joann M. Hettasch, Mark G. Bolyard and Susan T. Lord, **Thrombosis and Haemostasis** 68:701-706, 1992.
- "Production of insect resistant potato by genetic transformation with a δ -endotoxin gene from Bacillus thuringiensis var. kurstaki", Jianping Cheng, Mark G. Bolyard, Ramesh C. Saxena, and Mariam B. Sticklen, **Plant Science** 91:83-91, 1992.
- "Shoot regeneration from leaf explants of elm" Mark G. Bolyard, C. Srinivasan, Jianping Cheng, Mariam B. Sticklen, **HortScience** 26:1554-1555, 1991.
- "Cellular and molecular aspects of Dutch elm disease", Mariam B. Sticklen, Mark G. Bolyard, Ravindra K. Hajela, and Luc Duchesne, **Phytoprotection** 72:1-13, 1991.
- "Microprojectile- and Agrobacterium-mediated transformation of Pioneer elm", M.G. Bolyard, Ravindra K. Hajela, and M.B. Sticklen, **J. Arboriculture** 17:34-37, 1991.
- "Mutagenesis of human fibrinogen γ 259-411 synthesized in E. coli: further characterization of the role of the disulfide bond cys326-cys339 in calcium binding", Mark G. Bolyard and Susan T. Lord, **Biochemical and Biophysical Research Communications** 174:853-860, 1991.
- "Expression in Escherichia coli of the human fibrinogen B beta chain and its cleavage by thrombin", Mark G. Bolyard and Susan T. Lord, **Blood** 73:1202-1206, 1989.
- "High level expression of a functional fibrinogen gamma chain in Escherichia coli", Mark G. Bolyard and Susan T. Lord, **Gene** 66:183-192, 1988.

External Grants and Fellowships awarded:

National Science Foundation, 2003-2005, Co-PI (\$100,000; with Eric Voss [PI], Mike Shaw, Paul Wanda, and Nader Saniei)
Monsanto Foundation Fund, 2003-2005, PI (\$30,000)
Oracle Foundation, 2001-2002 (\$10,000; with Pam Keck; 2002-2003 with Daryl Floit)
Fraternal Order of the Eagles, Max Baer Heart Fund, 2000-2001 (\$5000).
Illinois Board of Higher Education, Co-PI, 2000, (\$67,423).
American Society for Biochemistry and Molecular Biology, Undergraduate Faculty Travel Fellowship, PI, 1999 (\$500).
National Institutes of Health, AREA award, PI, 1994-1997 (\$104,000; including indirect costs).
United States Department of Agriculture AREA Award, PI, 1994-1996 (\$36,993)
American Heart Association, Illinois Affiliate, PI, 1992-1994 (\$39,400).
American Philosophical Society, PI, 1992-1994 (\$1,900).
Midwest Plant Biotechnology Consortium, Co-PI, 1989-1991.
Fred C. Gloeckner Foundation, Co-PI, 1989-1990.
Predoctoral Grant-in-Aid, American Heart Association, PI, 1988-1989.

Internal Funding Awarded:

Excellence in Undergraduate Education, 1993-1997, 1999, 2000
Summer Research Fellowship, 1992-1996, 1998-2000, 2004
Assigned Time for Grant Development, 1994
Funded University Research Grant, 1993, 1995-2000, 2002
Competitive Equipment/ Research Equipment and Tools Award, 1992, 2001.
Departmental Competitive Graduate Award, 1996
Students awarded Research Grants for Graduate Students: 18
Undergraduate Research Academy Fellows: 10

Current or Past Honors and Affiliations:

2004 Paul Simon Outstanding Scholar Award, SIUE

1997 Teaching Excellence Award, SIUE

Sigma Xi ; Chapter "Researcher of the Year" for 1995-1996

Illinois State Academy of Sciences

Society for In Vitro Biology

The Potato Association of America

International Fibrinogen Research Society

Phi Kappa Phi

National Science Teachers Association

American Association for the Advancement of Science

Recent abstracts (student co-authors underlined):

"Integrative Learning and the Culminating Senior Experience at Comprehensive Universities", Doug Eder and Mark Bolyard. Integrative Learning: Creating Opportunities to Connect meeting of the American Association of Colleges and Universities. October 20-22, 2005. Denver, CO.

"Expression and amidation of calcitonin in E. coli" Amy Meyer, Jeff Carter, and Mark Bolyard. Proceedings of the 2004 Illinois State Academy of Sciences Meeting.

- "Production of recombinant amidated peptides" Julie Zurliene, Stacey Taft, Shawn Stimson, Suveetha Kavidass, Zach Heeren, Brian Back and Mark Bolyard. Proceedings of the 2004 Illinois State Academy of Sciences Meeting.
- "Exudate from *Acer ginnala* Embryos Affects Root Growth and Development of Germinating Tomato and Lettuce Seedlings" Mark Bolyard and John Cawly, Proceedings of the 19th International Congress of Biochemistry and Molecular Biology, Toronto, Canada. July, 2003 (abstract accepted; meeting cancelled)
- "In vivo system of peptide amidation" Mark Bolyard, Ian Grimes, Jason Aleman, Stephanie Uder, Proceedings of the 2003 Illinois State Academy of Sciences Meeting.
- "Modification of an *E. coli* expression vector for peptide secretion", Jeff Carter, Shawn Stimson, Stacey Taft, Tara Tiburzi, and Mark Bolyard. Proceedings of the 2003 Illinois State Academy of Sciences Meeting.
- "Investigation of the possible presence of an analog of peptidylglycine alpha amidating monooxygenase (PAM) in plants", Zara (Chowell) Walden and Mark Bolyard, Proceedings of the 2002 Illinois State Academy of Sciences Meeting. [First place in Graduate Student Competition].
- "Construction of vectors for expression of fibrinogen using a baculovirus expression system." Michael Gitcho and Mark Bolyard, Proceedings of the 2002 Illinois State Academy of Sciences Meeting.
- "Construction of an expression vector of the fusion of green fluorescent protein with cerato-ulmin, a Dutch elm disease toxin." Olga Shikapwashya and Mark Bolyard, Proceedings of the 2002 Illinois State Academy of Sciences Meeting.
- "Investigation of the possible presence of an analog of peptidylglycine alpha amidating monooxygenase (PAM) in plants", Mark Bolyard and Zara Choweller, Proceedings of the 2001 Illinois State Academy of Sciences Meeting.
- "In vivo amidation of a recombinant neuropeptide", Jason Aleman, Denise Hoyt, and Mark Bolyard, Proceedings of the 2001 Illinois State Academy of Sciences Meeting.
- "Expression and biological activity of recombinant secretin", Stephanie Uder and Mark Bolyard, Proceedings of the 2000 Illinois State Academy of Sciences Meeting.
- "Construction of a baculovirus expression vector for the production of human fibrinogen", Libbey Schwertmann, Stephanie Uder, David Farrell and Mark Bolyard, Proceedings of the 2000 Illinois State Academy of Sciences Meeting.
- "Elm trees and the production of salicylic acid in response to a wilt pathogen", Jennifer Pruitt, Guy Rowland, and Mark Bolyard, Proceedings of the 1999 Illinois State Academy of Sciences Meeting.
- "Investigation of a Siberian maple 'osmoticate': Results of a research-based laboratory course", John Cawly, Pam Keck and Mark Bolyard, Proceedings of the American Society of Biochemistry and Molecular Biology 1999 International Symposium, Abstract 1015.
- "Developments in diatom transformation technology", Jeffrey Kraemer, Mark Bolyard and Richard Brugam, Proceedings of the 1998 Illinois State Academy of Sciences Meeting.
- "Production of recombinant human fibrinogen in potato tubers: Construction of an A α expression vector and examination of protein expression among successive

- generations of transgenic plant cuttings", Jennifer Childerson and Mark Bolyard, Proceedings of the 1998 Illinois State Academy of Sciences Meeting.
- "The production of recombinant molluscan neuropeptides", Tiffany Slater, Kevin Griffin, Erica Maus, Mark Bolyard, and Kevin Krajniak. Proceedings of the Society for Integrative and Comparative Biology abstract #560, 1997.
- "Pectinase digestion and callus induction of germinated *Taxus brevifolia*", Yihui Weng and Mark Bolyard, Proceedings of the 1996 Illinois State Academy of Sciences Meeting.
- "Co-cultivation of microtuber disks of *Solanum tuberosum* cultivars Katahdin and FL1607 for expression of the gamma chain of human fibrinogen", Janice Kania and Mark Bolyard, Proceedings of the 1996 Illinois State Academy of Sciences Meeting [First place in Graduate Student Competition].
- "Production of recombinant molluscan neuropeptides", Kevin Griffin, Betty Lawton, Scott Weber, Mark Bolyard, and Kevin Krajniak, Proceedings of the 1996 Illinois State Academy of Sciences Meeting.
- "Progress towards producing the β chain of human fibrinogen protein in potato tubers", Juliet Glomb and Mark Bolyard, Proceedings of the 1996 Illinois State Academy of Sciences Meeting.
- "cDNA library construction of *Taxus* species", Xing Zhang and Mark Bolyard, Proceedings of the 1996 Illinois State Academy of Sciences Meeting.
- "The construction of binary vectors containing the cDNAs coding for human fibrinogen", Paul Vordtriede, Jamie Hensley, and Mark Bolyard, Proceedings of the 1995 Illinois State Academy of Sciences Meeting [First place in Graduate Student Competition].
- "An improved method for purification of cerato-ulmin" A. Kris Gundlach, Kevin Diel, and Mark Bolyard, Proceedings of the 1995 Illinois State Academy of Sciences Meeting.
- "DNA transformation of germinated *Taxus brevifolia* embryos", Ellen Luan and Mark Bolyard, Proceedings of the 1995 Illinois State Academy of Sciences Meeting.
- "Germination rates of immature and mature *Taxus brevifolia* embryos and transient expression in germinated embryos", Susan E. Allen and Mark G. Bolyard, Proceedings of the 1994 Illinois State Academy of Sciences Meeting.
- "Allelopathy: An investigation of *Acer ginnala*", Sarah M. Vordtriede, Paul Vordtriede, Susan E. Allen, Frank B. Kulfinski, and Mark G. Bolyard, Proceedings of the 1994 Illinois State Academy of Sciences Meeting.
- "Investigation of allelochemicals in zygotic embryos of *Acer ginnala*", Sarah M. Vordtriede, Paul Vordtriede, Susan E. Allen, Frank B. Kulfinski, and Mark G. Bolyard, Abstract SP-1012, Proceedings of the Congress on Cell and Tissue Culture, 1994.
- "Media effects on germination of Pacific yew (*Taxus brevifolia*) embryos", Susan E. Allen and Mark G. Bolyard, Proceedings of the 1993 Illinois State Academy of Sciences Meeting.
- "Progress toward the analysis of amino acid coordinates involved in human fibrinogen calcium binding" Julie A. Glasner and Mark G. Bolyard, Proceedings of the 1993 Illinois State Academy of Sciences Meeting.

- "Evaluation of parameters necessary for genetic engineering of American elm", Debbie A. Stone and Mark G. Bolyard, Proceedings of the 1993 Illinois State Academy of Sciences Meeting [Second place in Graduate Student Competition].
- "A comparative investigation of potato (cv. Katahdin) shoot regeneration from leaf tissue: An improved two-stage protocol contrasted with standardized methods", Jamie A. Hensley and Mark G. Bolyard, Proceedings of the 1993 Illinois State Academy of Sciences Meeting.
- "Progress toward the analysis of amino acid coordinates involved in human fibrinogen calcium binding" Julie A. Glasner, Angela Ruffin, and Mark G. Bolyard, National Science Foundation Conference on Diversity in the Scientific Workplace (1992).
- "Interaction of thidiazuron with other cytokinins in relation to the regeneration of American elms from leaf tissues" Patricia A. Herman and Mark G. Bolyard, Proceedings of the 1992 Illinois State Academy of Sciences Meeting.

Invited Book Chapters and Letters:

- "Toxins or signals in Dutch elm disease pathogenesis" Mark G. Bolyard, invited Letter to the Editor, **Trends in Microbiology** 5:432, 1997.
- "Genetic Transformation in *Ulmus* species (elms)", M.B. Sticklen, R.K. Hajela, M.G. Bolyard, L.S. Graham, and J.L. Sherald, in "Plant Protoplasts and Genetic Engineering" volume 29 in the Biotechnology in Agriculture and Forestry series, Y.P.S. Bajaj, ed., Springer-Verlag, 1994.

Professional:

Chair, Cell, Molecular, & Developmental Biology Division of ISAS, 2002-2006
 Manuscript reviewer, Theoretical and Applied Genetics
 Manuscript reviewer, Journal of the American Society for Horticultural Science
 Textbook reviewer for McGraw-Hill and Benjamin Cummings
 Proposal Reviewer, Consortium for Plant Biotechnology Research
 Volunteer, NSTA, St. Louis
 Science fair judge, regional and local fairs
 Session moderator, Dutch Elm Disease Symposium (1992)
 Consultant, Biotech program, Lexington, Texas School district

Additional prior Presentations and Abstracts:

- "Learning in the active voice through the departmentally-owned senior assignment", Douglas Eder, Mark Bolyard and Susan Thomas, Invited Speakers, November Conference on Assessment, Indiana University - Purdue University Indianapolis, November, 1995. [Also presented along with alumna Priscilla Block at the 11th AAHE Conference on Assessment and Quality, June 10, 1996, Washington, D.C.]
- "Transformation of Pacific yew zygotic embryos", Invited Speaker, Biology Department Seminar Series, Saint Louis University, September, 1995.
- "Transformation of Pacific yew zygotic embryos", Invited Speaker, Plant and Soil Seminar Series, Southern Illinois University at Carbondale, May, 1995.
- "Production of recombinant human fibrinogen in plants", Invited speaker, Zymogenetics, Seattle, WA, October, 1993.

- "Biotechnology in agricultural vocational programs", Invited speaker, Lexington Independent School District and the Texas Education Agency, Lexington, TX, October, 1993.
- "Strategies for the production of DED-resistant American elms", M.G. Bolyard and M.B. Sticklen. 1992 International Dutch Elm Disease Workshop. Invited speaker.
- "Analysis of activity of rice actin 1 5' sequences in transgenic creeping bantgrass (*Agrostis palustris* Huds.). Heng Zhong, Mark G. Bolyard, C.Srinivasan, and Mariam B. Sticklen. In: Asia-Pacific Conference on Agricultural Biotechnology, C. You and Z. Chen, eds. Beijing, China, 1992, invited paper.
- "Shoot regeneration system for DED susceptible and putatively resistant American elms", Mark G. Bolyard, C. Srinivasan, and Mariam B. Sticklen. Proceedings of the 1991 UCLA Symposium "Genetic Dissection of Plant Cell Processes", January, 1991. Abstract in **Journal of Cellular Biochemistry**, supplement 15A: A202.
- "Role of the COOH-terminus of the γ -chain of fibrinogen in supporting platelet aggregation as determined with recombinant γ -chains expressed in *E. coli*", J.M. Hettasch, M.G. Bolyard, and S.T. Lord. Proceedings of the American Society for Cell Biology, 1990. Abstract in **Journal of Cell Biology**, 111:404a.
- "Methods for in vitro selection of Dutch elm disease resistant American elms and expression of synthetic DNA encoding a Dutch elm disease toxin in *E. coli*", Mariam B. Sticklen, Mark G. Bolyard, and Jianping Cheng. Proceedings of the International Energy Agency Symposium on the International Exchange of Genetic Material, September 1990.
- "Strategies for producing non-toxic variants of Cerato-ulmin, a Dutch elm disease toxin, using synthetic DNA", Mark G. Bolyard and Mariam B. Sticklen. Proceedings of the 1990 UCLA Symposium "Molecular Strategies for Crop Improvement", April, 1990. Abstract in **Journal of Cellular Biochemistry**, supplement 14E: R204.
- "Expression of β -glucuronidase from *Amelanchier laevis*", Mark G. Bolyard and Mariam B. Sticklen. Proceedings of the 87th Meeting of the American Society for Horticultural Science, November 1990, In press.
- Poster presentation, 1990 Michigan Biotechnology Institute Conference, April, 1990.
- Seminar and poster presentation, 1990 Pesticide Research Center Symposium, April, 1990.
- "Expression of fibrinogen γ chain polypeptides in *E. coli* : studies on calcium binding and staphylococcal clumping", Mark G. Bolyard and Susan T. Lord. Proceedings of the 1989 Fibrinogen Workshop, pp. 21-24, Kyoto, Japan. August, 1989. (Elsevier, Amsterdam).
- Poster presentation, Chemical Abstracts Service, "Frontiers in Chemistry: Biotechnology", Columbus, OH, October, 1988.
- "Expression of the B β and γ chains of human fibrinogen in *E. coli*", Mark G. Bolyard and Susan T. Lord. Proceedings of the 1988 Fibrinogen Workshop, pp. 7-10, Milwaukee, WI, June, 1988 (Elsevier, Amsterdam), Invited speaker.
- Poster presentation, Miami/Biotechnology Winter Symposium, Miami, FL, February, 1988.
- "The A α and γ chains of fibrinogen exist as a complex in normal plasma and in the plasma of an afibrinogenemic subject." **Blood** 70:392a, abstract #1370, 1987.

Poster presentation, Oligonucleotide Colloquium on Utilizing Synthetic DNA in Biological Research, Chapel Hill, NC, April, 1987.