

## **CURRICULUM VITA**

**Marcia A. Harrison**

**Department of Biological Sciences**

**Marshall University**

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**<http://science.marshall.edu/harrison/>**

### ***Education***

B.S. (Botany), University of Vermont, 1977

M.S. (Biology), University of Michigan, 1978

Ph.D. (Botany), University of Michigan, 1983

### ***Employment***

Marshall University, Huntington, WV, Professor, 1998 to present

Marshall University, Huntington, WV, Interim Division Head of Biological Sciences, 1998 to 2000

Marshall University, Huntington, WV, Associate Professor, 1992 to 1998

Marshall University, Huntington, WV, Botany Division Coordinator, 1990 to 1991

Marshall University, Huntington, WV, Assistant Professor, 1986 to 1992

Washington University, St. Louis, MO, Research Associate 1985 to 1986

Washington University, St. Louis, MO, NASA Research Associate, 1983 to 1985

Washington University, St. Louis, MO, Lecturer for laboratory tutorial on plant physiology, 1983

University of Michigan, Ann Arbor, MI, Teaching Assistant: Plant Physiology, Cellular and Molecular Biology, Introductory Biology for Non-Majors, Genetics, and Practical Botany, 1978 to 1982

University of Vermont, Burlington, VT, Undergraduate Teaching Assistant, Introductory Botany, 1976

### ***Offices Held in State and National Scientific Organizations***

Newsletter editor and Webmaster, West Virginia Academy of Science, 1997 to present

Education Committee of the American Society for Gravitational and Space Biology, 1994 to present

Co-Editor of the Proceedings of the West Virginia Academy of Science, 2007

Host of the annual meeting of the West Virginia Academy of Science, 2007

Director, West Virginia State Science and Engineering Fair, 2000 to 2007

President of the West Virginia Jr. Academy of Science, 1999 to 2007

President, West Virginia Academy of Science, 1995 to 1997

President-Elect West Virginia Academy of Science, 1994 to 1995

### ***Memberships in Professional and Honorary Societies***

Association for Women in Science

University of Vermont Chapter of Alpha Zeta, life member

American Society for Space and Gravitational Biology, charter member

American Society of Plant Biologists

Council on Undergraduate Research

Sigma Xi (national); Marshall University Chapter of Sigma Xi

Southern Section of the American Society of Plant Biologists

West Virginia Academy of Science, life member

### ***Funded Projects***

- NSF: ADVANCE Institutional Transformation Award: Advancing women in science, math and engineering at Marshall. (2006-2009) \$1,200,000 (PI: M. Harrison; Co-PIs: B. Delidow, E. Murray, J. Silver, K. Miezio).
- WV EPSCoR Seed Grant: Cross-disciplinary research initiative in biological mathematics. (2006) \$5,000 (PI: S. Collier; Co-PIs M. Harrison, P. Saveliev, S. Sarra).
- MUF: College of Science multidisciplinary research initiative: A college-wide faculty development proposal to foster collaboration. (2006-2008) \$50,000 (primary author: M. Harrison).
- USDA CSREES NRI Equipment Grant: Kinetic analysis of plant ethylene production using photoacoustic spectroscopy. (2005-2006) \$21,000 (PIs: M. Harrison and J. Miksovska).
- WV EPSCoR Seed Grant: Light regulation of ethylene biosynthesis in *Arabidopsis*: Promoter analysis of 1-aminocyclopropane-1-carboxylic acid synthase genes. (2003) \$20,000 (PI: M. Harrison).
- American Society for Gravitational and Space Biology: Light regulation of ethylene biosynthesis during gravitropic curvature in *Arabidopsis*. (2002) \$10,000 (PI: M. Harrison).
- WV EPSCoR Research Proposal Preparation Mini-Grant: Evaluation of red-light regulation of ethylene biosynthetic genes. (2002) \$5,000 (PI: M. Harrison).
- USDA CSREES NRI Equipment Grant: Gradient thermal cyler acquisition to enhance plant gene expression research. (2001) \$10,537 (PI: M. Harrison).
- NSF: Flow cytometer acquisition. (2001) \$164,244 (PI: L. Janski; Co-PIs: S. Jackman, N. LoCascio, M. Harrison, E. Murray, C. Somerville).
- NASA Space Grant Consortium K-12 Implementation Grant: Gene mutation to demonstrate molecular techniques. (2001) \$1,200 (PI: M. Harrison; Co-PI: N. LoCascio).
- WV Department of Education: West Virginia State Science and Engineering Fair. (2001) \$2,500 (PI: M. Harrison).
- NASA Mini Enhancement Grant: Current techniques in protein and genetic engineering course. BioPharmaceutical Technology Center Institute and University of Wisconsin, Department of Oncology. (2000) \$1,000 (PI: M. Harrison).
- Association for Women in Science Career Enhancement Award: Localization of protein kinase in ethylene mutants of *Arabidopsis*. (1998) \$950 (PI: M. Harrison).
- NASA Grant: Interaction of light and ethylene in stem gravitropism. (1994-1995) \$80,000 (PI: M. Harrison).
- NASA West Virginia Space Consortium Grant: Changes in soluble cell wall proteins after gravistimulation in etiolated pea stems. (1994-1995) \$20,000 (PI: M. Harrison).
- NASA West Virginia Space Consortium Grant: Regulation of ethylene biosynthesis in closed environmental chambers. (1992-1993) \$20,000 (PI: M. Harrison).

### ***Pending Projects***

- NSF: ADVANCE Institutional Transformation Award: Advancing Women in Science, Technology, Engineering and Math at Marshall University. (2009-2011) \$800,606 (PI: M. Harrison; Co-PIs: B. Delidow, E. Murray, J. Silver, P. Logan).

### ***Publications (\*denotes undergraduate students; \*\*denotes graduate students)***

- Gilkerson\*, J.G., J.A. Kelley\*\*, and M.A. Harrison. 2009. Evaluation of ethylene production in tobacco and *Arabidopsis* induced by particle bombardment. *Bio-Rad Bulletin* 5847.
- Hogan\*, J., E. Murray, and M.A. Harrison. 2006. Evaluation of ethylene as an indicator of plant stress in hydroponic systems. *Scientia Horticulturae* 110: 311-318.
- Harrison, M.A. 2006. Role of ethylene in the regulation of stem gravitropic curvature. In: *Ethylene Action in Plants*, Professor Dr. Nafees A. Khan (ed.), Springer-Verlag GmbH Berlin Heidelberg, pp 135-149.

- Harrison, M.A. 2006. Plant hormones and signal transduction. In: *Plant Cell Biology*, W.V. Dashek and M.H. Harrison (eds), Science Publishers, Enfield, NH, pp 451-487.
- Jenski, L.J., N.D. Lees, and M.A. Harrison. 2005. Getting attention for new initiatives without making it “just more work”! *The Department Chair* 16: 15-17.
- Steed\* C.L., L.K. Taylor\*\*, and M.A. Harrison. 2004. Red-light regulation of ethylene biosynthesis and gravitropism in etiolated pea stems. *Plant Growth Regulation* 43: 117-125.
- Bassett, C.L., M.L. Nickerson, R.E. Farrell, and M.A. Harrison. 2004. Multiple transcripts of a leucine-rich repeat receptor kinase from morning glory originate from different TATA boxes in a tissue-specific manner. *Molecular and General Genetics* 271: 752-760.
- Gonzales\*, D., J. Traylor\*\*, A. Hubbard\*\*, B. Lowman\*, and M.A. Harrison. 1999. Growth and gravitropic curvature in ethylene mutants of *Arabidopsis thaliana*. *Proc. WV Acad. Sci.* 71: 33-42.
- Reuschel\*\*, W., J. Fikes\*, and M.A. Harrison. 1998. Effects of cytosolic calcium regulators on ethylene biosynthesis in etiolated pea stems. *Proc. WV Acad. Sci.* 70: 29-39.
- Harrison, M.A. 1997. Analysis of ethylene biosynthesis in plant tissue by GC-FID. In: *Plant Biochemistry/Molecular Biology Laboratory Manual*, W.V. Dashek (ed.). CRC Press, Boca Raton, FL, pp 153-164.
- Jones\*\*, R.L. and M.A. Harrison. 1996. Autoinhibition of ethylene biosynthesis in seedlings grown in closed containers. *Proc. WV Acad. Sci.* 68: 24-36.
- Steed\*, C.L. and M.A. Harrison. 1993. Effect of short-term heat-stress on the regulation of ethylene production in etiolated pea stems. *Physiol. Plant.* 87:103-107.
- Harrison, M.A. 1991. Evidence of a heat-stress signal in etiolated pea epicotyls. *Plant Science* 75:19-24.
- Elmore, H.W., B. Samples, S. Sharma, and M. Harrison. 1990. Influence of cultural and physio-chemical factors on ascorbate stability in plant tissue culture media. *Plant Cell Tissue Organ Culture* 20:131-135.
- Harrison, M.A. and B.G. Pickard. 1989. Auxin asymmetry during gravitropism by tomato hypocotyls. *Plant Physiol.* 89:652-657.
- Harrison, M.A. 1986. Apical Dominance. In: *The Encyclopedia of Science and Technology*, McGraw Hill, New York.
- Harrison, M.A. and B.G. Pickard. 1986. Evaluation of ethylene as a mediator of gravitropism by tomato hypocotyls. *Plant Physiol.* 80:592-595.
- Harrison, M.A. and B.G. Pickard. 1985. Red light shifts the locus and rate of gravitropic curvature in etiolated pea epicotyls. *The Physiologist* 28 suppl.: 103-104.
- Harrison, M.A. and P.B. Kaufman. 1984. The role of hormone transport and metabolism in apical dominance in oats. *Bot. Gaz.* 145:293-297.
- Harrison, M.A. and B.G. Pickard. 1984. Burst of ethylene upon horizontal placement of tomato seedlings. *Plant Physiol.* 75:1167-1169.
- Harrison, M.A. and P.B. Kaufman. 1983. Estimates of free and bound indole-3-acetic acid and zeatin levels in relation to regulation of apical dominance and tiller release in oat shoots. *J. Plant Growth Regul.* 2:215-223.
- Thomas, R.J., M.A. Harrison, J. Taylor, and P.B. Kaufman. 1983. Endogenous auxin and ethylene in *Pellia* (Bryophyta). *Plant Physiol.* 73:395-397.
- Harrison, M.A. and P.B. Kaufman. 1982. Does ethylene play a role in the release of lateral buds (tillers) from apical dominance in oats? *Plant Physiol.* 70:811-814.
- Harrison, M.A. and P.B. Kaufman. 1980. Hormonal regulation of lateral bud (tiller) release in oats (*Avena sativa* L.). *Plant Physiol.* 66:1123-1127.
- Harrison, M.A. and R.M. Klein. 1979. Role of growth regulators in initiation of secondary xylem and phloem cells. *Bot. Gaz.* 140:20-24.

### ***Curriculum Development Committees***

Marshall University Writing Across the Curriculum Committee, 2005 to present  
College of Science Curriculum Committee, 1988-present, Chair 1990 to 1995  
Marshall University General Education Committee member, 1995 to 1998  
Writing Across the Curriculum: Steering Committee, 1995  
Science and Math Literacy Component of the Marshall Plan: Steering Committee, 1995  
Integrated Sciences Course Development: ISC 201: Biotechnology, ISC 206: Living in Space. 1997 to 2002  
Marshall University Writing Across the Curriculum Certification: BSC 322: Principles of Cell Biology - writing intensive designation, 1995 to present; ISC 206: Living in Space - writing intensive designation, 1997 to 2002; BSC 420: Plant Physiology - writing intensive designation, 2003 to present

### ***Significant Committee Assignments at Marshall University***

Marshall Chapter of Sigma Xi, President, 2007 to present  
Marshall Chapter of the WV NASA Space Grant Consortium, Chair, (awards student scholarships, travel grants, and faculty research enhancement grants), 2001 to present  
Greenhouse, Manager, 2001 to present  
Cell Biology Facility, Manager, 2000 to present  
Search Committee for Cell Biology, Molecular Biology, and Developmental Genetics positions, Chair, 2001 to 2002  
West Virginia Board of Trustees Program Review Committee, 1994 to 2000  
Legislative Affairs Committee, Faculty Senate Subcommittee; member 1991 to 1999; Secretary 1992 to 1994; Chair 1997 to 1999

### ***Courses Taught (last 5 years)***

BSC 120: Principles of Biology – Fall 2004, Fall 2005, Fall 2006  
BSC 280: Research Rotations (undergraduate program that provides an introduction to research opportunities in Biological Sciences) – Spring 2005  
BSC 322: Principles of Cell Biology – Fall 2001, Spring 2002, Fall 2003, Spring 2003, Fall 2003, Spring 2004, Spring 2005, Spring 2006, Spring 2007, Fall 2008  
BSC 420/520: Plant Physiology – Spring 2005, Spring 2006, Spring 2009  
BSC 608: Plant Growth and Development – Spring 2002, Spring 2003, Spring 2004  
BSC 661: Seminar 1 – Fall 2004, Fall 2005, Fall 2006  
BSC 662: Seminar 2 – Fall 2001, Fall 2003  
BMS 641: Molecular Developmental Biology – (team-taught course; responsible for 4 lectures), Spring 2007

### ***Masters Theses Supervised***

Justin Hogan. 2008. Effects of flooding on ethylene production in hydroponically-grown strawberries.  
Candice Steed. 1996. Effects of gravistimulation and red light on ethylene biosynthesis and peroxidase and invertase levels in pea stems (*Pisum sativum*).  
Lewis Taylor, Jr. 1995. Evaluation of the soluble apoplastic cell wall proteins during gravitropism in etiolated pea stems.  
Lilian Rena Jones. 1995. Ethylene biosynthesis in peas (*Pisum sativum*) grown in closed canisters and peroxidase and invertase activity in gravistimulated oats (*Avena sativa*) and peas.

### ***Masters and Ph.D. Thesis Committees***

Michelle D. Trickett. 2007. Investigation of environmental microorganisms associated with the

- intrinsic microbial contamination of an alcohol-free mouthwash.
- Yeong Nam Jeong. 2007. Arsenic toxicity in PLHC-1 cell line and the distribution of arsenic in central Appalachia.
- Sherrine Ibrahim. 2002. Gravistimulation of *Pisum sativum* and expression of the cell membrane expansin proteins.
- Gregory Hunter. 2000. Medicinal plants of a southern appalachian herbal doctor.
- Kenneth Butz. 1999. Molecular mapping of the *faf(f)* (formerly *corpulent*) gene in the LA/N rat obesity model.
- Warren Reuschel, Jr. 1998. Survival and growth of seven selected wetlands plant species in a created wetland in the Kanawha River, West Virginia.
- Karen Traci Mann. 1997. *In vivo* incorporation of tritium to measure lipogenesis in red skeletal muscle: Significance of a nonlipogenic diet in LA/N *fa<sup>k</sup>* (“corpulent”) and Zucker *fa* rat strains.
- Alan Tennant. 1996. Genetic analysis of *Rhinichthys atratulus* (Pisces: Cyprinidae) in north central West Virginia.
- Julie C. Hannah. 1994. The effects of drought stress in protein synthesis and ethylene biosynthesis in sandalwood (*Santalum album* L.).
- Shivaleela Harapanahalli. 1992. Mechanisms for lipogenesis in running muscle of the obese LA/N-cp rat hindlimb and total lipid exchange in these tissues.
- Doshia Webb. 1992. The effects of artificial destratification on periphyton community structure at Beech Fork Lake.
- Jannet Hannah Mercy. 1992. Comparative studies on hormonal regulation of seedling and tiller bud growth in rice (*Oryza sativa* CV-IR-50). Ph.D. thesis, Department of Botany, Madras Christian College, India.
- Mee Young Choi. 1991. The application of artificial destratification and its effects on periphyton community at Beech Fork Lake, W.Va.

### ***Masters of Arts, Student Advisees***

- Bretton Powell, 2006 to 2007
- Iyad Kaddora, 2006 to 2008
- Olivia Boskovic, 2004 to 2006
- Aaron Porter, 2000 to 2002
- Scott Burdette, 2000 to 2002
- Joseph Kelly, 2000 to 2003
- Dora Gonzales, 1998 to 2003
- Joseph DeLapa, 1998 to 2002
- Daniel Chaffin. 1992 to 2000

### ***Honors and Awards***

- Dr. Carolyn Hunter Distinguished Faculty Service Award, 2004
- Marshall University Summer Research Grants, 1988, 1990, 1991, 1996, 1997, 2001, 2002, 2003
- NASA Research Associate award and renewal, 1983 and 1984
- Newcomb Research Fellowship in Plant Physiology at the University of Michigan, 1981 and 1982
- Block Grant from the Division of Biological Sciences at the University of Michigan, 1980 and 1982

### ***Presentations of Research Conducted at Marshall University***

- Harrison, M.A., P. Saveliev, S. Sarra, and D. Silver\*. 2008. Using MATLAB to process images for the analysis of plant organ growth and curvature. The 19<sup>th</sup> International Conference on *Arabidopsis* Research, Montreal, Canada.
- Brown\*, M.L. and M.A. Harrison. 2007. Ethylene regulation of gravitropic curvature in *Arabidopsis*

- stems. *Plant Biology & Botany* 2007: P32009. Joint Congress of the American Society of Plant Biologists and the Botanical Society of America, Chicago IL.
- Brown\*, M.L. and M.A. Harrison. 2007. Ethylene regulation of gravitropic curvature in *Arabidopsis* stems. *Proc. WV Acad. Sci.* 79: 24. Marshall University Sigma Xi Research Day; the West Virginia Academy of Sciences, Marshall University, WV.
- Harrison M.A. and M.L. Brown\*. 2006. Ethylene regulation of gravitropic curvature in *Arabidopsis* stems. *Gravitational and Space Biol. Bull.* 20: 27. The American Society for Gravitational and Space Biology, Alexandria, VA.
- Bruyer\*, J., K. Miller\*, S. Ogle\*, J. Phares\*, S. Smith\*, and M.A. Harrison. 2006. Imaging plant growth. Marshall University Sigma Xi Research Day.
- Brown\*, M. and M.A. Harrison. 2006. Ethylene regulation of the plant response to gravity. *Proc. WV Acad. Sci.* 78: 29. Marshall University Sigma Xi Research Day; the West Virginia Academy of Sciences, Shepherd, WV.
- Harrison, M., V. Boutwell\*, A. Hines\*, and Y-N. Jeong\*. 2005. Characterization of new gravity signaling components in plant stems. Marshall University Sigma Xi Research Day.
- Harrison, M.A., M. Brown\*, and M. Rivera\*. 2005. Ethylene regulation of the plant response to gravity. *Proc. WV Acad. Sci.* 77: 23. Marshall University Sigma Xi Research Day; the West Virginia Academy of Science, Morgantown WV; the Gordon Conference, Biddeford, ME.
- Hogan\*\*, J. and M.A. Harrison. 2005. Study of hypoxic conditions in hydroponically-grown strawberries. Marshall University Sigma Xi Research Day.
- Porter\*, J.E., J.D. Hogan\*, and M.A. Harrison. 2004. The interacting roles of light regulation and ethylene biosynthesis in modulating hypocotyl gravitropism. The 15<sup>th</sup> International Conference on Arabidopsis Research, Berlin, Germany.
- Harrison, M.A. and J.E. Porter\*. 2003. Role of the ethylene biosynthesis gene, 1-aminocyclopropane-1-carboxylic acid synthase (ACS), in regulating stem gravitropism. *Gravitational and Space Biol. Bull.* 17: 68. The American Society for Gravitational and Space Biology, Huntsville, AL.
- Gilkerson\*, J. and M.A. Harrison. 2003. Regulation of a peach type II chlorophyll a/b-binding protein gene by exogenous ethylene. *Plant Biology 2003*: 147. The American Society of Plant Biologists, Honolulu, HI.
- Harrison M.A. 2003. Red-light regulation of ethylene biosynthesis and gravitropism in etiolated pea stems. *Plant Biology 2003*: 155. The American Society of Plant Biologists, Honolulu, HI.
- Porter\*, J. E. and M.A. Harrison. 2003. Role of ethylene biosynthesis in hypocotyl gravitropism. The 14<sup>th</sup> International Conference on Arabidopsis Research, Madison, WI.
- Hogan\*, J., M.A. Harrison, and E. Murray. 2003. Ethylene production as an indicator of stress in hydroponically-grown strawberries. *Proc. WV Acad. Sci.* 75: 4. The West Virginia Academy of Sciences, Buckhannon, WV.
- Porter\*, J.E., J.R. Miller\*, J.M. Farley III\*, C.E. Swisher\*, and M.A. Harrison. 2003. Comparison of the effects of ethylene on hydrotropism and gravitropism in plant seedlings. Marshall University Sigma Xi Research Day.
- Hogan\*, J., T. Lynch\*, M. Taylor\*, M. Houdersheldt\*, E. Murray, and M. Harrison. 2003. Effects of flooding on ethylene production in hydroponically-grown strawberries. Marshall University Sigma Xi Research Day.
- Knapp\*, A., N.E. Saunders\*, and M.A. Harrison. 2003. Effect of aluminum stress on root growth and ethylene signal transduction pathway in *Arabidopsis* and pea. Marshall University Sigma Xi Research Day.
- Gilkerson\*, J.G., J. Kelly\*\*, and M. Harrison. 2003. Effect of particle bombardment on wound ethylene production as a confounding effect on gene expression studies. Marshall University Sigma Xi Research Day.
- Shah\*, A. and M.A. Harrison. 2003. Cloning the promoter proximal region of an ethylene biosynthetic gene. Marshall University Sigma Xi Research Day.

- Harrison, M.A. 2002. Red-light regulation of ethylene biosynthesis and gravitropism. *Plant Biology* 2002: 118. The American Society for Plant Physiologists, Denver, CO.
- Gilkerson\*, J., C. Basset, and M.A. Harrison. 2002. Regulation of a chlorophyll a/b binding protein gene by ethylene using transgenic *Arabidopsis* plants. Marshall University Sigma Xi Research Day.
- Burdette\*\*, S., S. Ibrahim\*\*, A. Porter\*\*, and M.A. Harrison. 2002. Nitrate uptake and utilization effects on growth and survival in *Arabidopsis thaliana*. Marshall University Sigma Xi Research Day.
- Porter\*\*, A., S. Burdette\*\*, S. Ibrahim\*\*, and M.A. Harrison. 2002. The interaction of phytochrome and ethylene in plant growth. Marshall University Sigma Xi Research Day.
- Hogan\*, J., A. Porter\*, M.A. Harrison, and E. Murray. 2002. Evaluation of strawberry as a candidate crop for advanced life support. Marshall University Sigma Xi Research Day.
- Ibrahim\*, S., S. Burdette\*, A. Porter\*, and M.A. Harrison. 2002. Growth analysis and acquired thermotolerance of a temperature sensitive *Arabidopsis*. Marshall University Sigma Xi Research Day.
- Harrison, M.A and A.J. Porter\*. 2001. Evaluation of red-light regulation of ethylene biosynthetic genes by relative RT-PCR. *Gravitational and Space Biol. Bull.*15: 34. The American Society for Gravitational and Space Biology, Alexandria, VA.
- Winland, K., N.J. LoCascio, and M.A. Harrison. 2001. Analysis of mitochondrial growth. Marshall University Sigma Xi Research Day.
- Kelly\*\*, J. and M.A. Harrison. 2001. Optimization of the particle bombardment technique, reporter gene transient expression, and wound ethylene studies in pea plants (*Pisum sativum*). Marshall University Sigma Xi Research Day.
- VanAtter\*, B., N. LoCascio, and M.A. Harrison. 2000. UV effect of eye development in *Medaka* embryos. Marshall University Sigma Xi Research Day.
- Hudak\*, J., L. Frost, and M.A. Harrison. 2000. Evidence of protein heat-stress signals in etiolated pea epicotyls. Marshall University Sigma Xi Research Day.
- Harrison, M.A. and D.G. Gonzales\*. 1999. Analysis of growth and gravitropism in ethylene mutants of *Arabidopsis*. *Plant Biology '99*: 148; *Proc. WV Acad. Sci.* 71: 25-26. The American Society for Plant Physiologists, Baltimore, MD; the West Virginia Academy of Science, Shepherdstown, WV.
- Stiles\*, D. and M.A. Harrison. 1999. Comparative study of UV-B radiation stress responses in the mutants, *chl1-1* and *chl1-2* of *Arabidopsis thaliana*. Marshall University Sigma Xi Research Day.
- Mohuidin\*, M. and M.A. Harrison. 1998. Regulation of ethylene biosynthesis: Possible signal transduction mechanisms. *Plant Biology '98*: #588. The American Society for Plant Physiologists, Madison, WI.
- Gonzales\*, D., J. Traylor\*\*, and M. Harrison. 1998. Growth and gravitropic curvature in *Arabidopsis* mutants which produce excess ethylene. *Proc. WV Acad. Sci.* 70: 17. The West Virginia Academy of Science, Wheeling, WV.
- Fikes\*, J., W. Reuschel\*\*, and M. Harrison. 1998. Effects of signal transduction regulators on ethylene biosynthesis in pea epicotyls. *Proc. WV Acad. Sci.* 70: 18. The West Virginia Academy of Science, Wheeling, WV.
- Hubbard\*\*, A., B. Lowman\*, and M. Harrison. 1998. Growth and gravitropic curvature in an *Arabidopsis* mutant which under-expresses ethylene. *Proc. WV Acad. Sci.* 70: 18. The West Virginia Academy of Science, Wheeling, WV.
- Steed\*, C.L. and M.A. Harrison. 1996. Interaction of light and ethylene on gravitropism in etiolated pea stems. *Gravitational and Space Biol. Bull.*10: 40. The American Society for Gravitational and Space Biology, Washington, D.C.
- Harrison, M.A. and E. Tomoye\*. 1996. Analysis of ethylene and ethane gas production in plant biosynthesis. Marshall University Sigma Xi Research Day.
- Steed\*\*, C.L., L.R. Jones\*\*, and M.A. Harrison. 1995. Effect of red light on cellular growth processes during gravitropism in etiolated pea stems. *Proc. WV Acad. Sci.* 67: 37; *Plant Physiol.* S-108: 57.

- The West Virginia Academy of Science, Huntington, WV; the American Society of Plant Physiologists, Charlotte, NC.
- Taylor<sup>\*\*</sup>, L.K. and M.A. Harrison. 1995. Evaluation of soluble cell wall proteins during gravitropism in pea stems. *Proc. WV Acad. Sci.* 67: 38; *Plant Physiol.* S-108: 57. The West Virginia Academy of Science, Huntington, WV; the American Society of Plant Physiologists, Charlotte, NC.
- Hatamzadeh<sup>\*</sup>, M, O. Ragette<sup>\*</sup>, M.A. Harrison. 1995. Protein phosphorylation in gravistimulated plant stems. Marshall University Sigma Xi Research Day.
- Steed<sup>\*\*</sup>, C.L., L.R. Jones<sup>\*\*</sup>, and M.A. Harrison. 1994. Effect of red light on ethylene biosynthesis and peroxidase/invertase activity during gravitropism in pea stems. *ASGSB Bulletin* 8: 90. The American Society for Gravitational and Space Biology, San Francisco, CA.
- Taylor<sup>\*\*</sup>, L.K and M.A. Harrison. 1994. Changes in soluble cell wall proteins after gravistimulation in etiolated pea stems. *ASGSB Bulletin* 8: 96. The American Society for Gravitational and Space Biology, San Francisco, CA.
- Jones<sup>\*\*</sup>, L.R. and M.A. Harrison. 1993. Regulation of ethylene biosynthesis in plants grown in closed environmental chambers. *ASGSB Bulletin* 7: 88. The American Society for Gravitational and Space Biology, Washington, D.C.
- Emery, E., D. Chaffin<sup>\*\*</sup>, M. Harrison, D. Evans, and D. Tarter. 1993. Acute and chronic toxicity of ichthyothereol, an ichthyotoxin from *Clibadium asperum* (Aubl.) DC (Asteraceae) of Amazonia, to the fathead minnow, *Pimephales promelas* (Rafinesque). *The ASB Bulletin* 40: 114; *Proc. WV Acad. Sci.* 65: 38. The Association of Southeastern Biologists, Virginia Beach, VA; the West Virginia Academy of Science, Elkins, WV.
- Steed<sup>\*</sup>, C.L. and M.A. Harrison. 1993. Interaction of light and ethylene in stem gravitropism. *ASGSB Bulletin* 7: 90. The American Society for Gravitational and Space Biology, Washington, D.C.
- Jones<sup>\*\*</sup>, L.R. and M.A. Harrison. 1993. Regulation of ethylene biosynthesis in plants grown in closed environmental chambers. *Proc. WV Acad. Sci.* 65: 17. The West Virginia Academy of Science, Elkins, WV.
- Chaffin<sup>\*\*</sup>, D.W. and M.A. Harrison. 1993. Tissue localization methods in plants: New applications. *Proc. WV Acad. Sci.* 65: 18. The West Virginia Academy of Science, Elkins, WV.
- Chaffin<sup>\*\*</sup>, D. W., D. K. Evans, R. Deal, and M. A. Harrison. 1992. Internal secretory anatomy in leaves and involucre bracts of *Clibadium asperum* (Aubl) DC (Asteraceae). *The ASB Bulletin* 40: 135. The Association of Southeastern Biologists, Biologists, Tuscaloosa, AL.
- Willison<sup>\*</sup> K. and M.A. Harrison. 1992. Light-regulated ethylene production during gravitropism in plant stems. *Proc. WV Acad. Sci.* 64: 19. Marshall University Sigma Xi Research Day; the West Virginia Academy of Science, East Liberty State, WV.
- Kyle<sup>\*</sup> C. and M. Harrison. 1992. Analysis of cell wall proteins from gravistimulated pea stems. *Proc. WV Acad. Sci.* 64: 15. Marshall University Sigma Xi Research Day; the West Virginia Academy of Science, East Liberty State, WV.
- Steed<sup>\*</sup> C., R. Beard<sup>\*\*</sup>, and M.A. Harrison. 1992. Regulation of ethylene biosynthesis after short-term heat stress in etiolated pea stems. *Plant Physiol.* S-99: 66. The American Society of Plant Physiologists, Pittsburgh, PA.
- Beard<sup>\*\*</sup>, R. and M.A. Harrison. 1992. Effects of *Rhizobium* infection (nodulation) on ethylene production in bean seedlings. *Plant Physiol.* S-99: 66. The American Society of Plant Physiologists, Pittsburgh, PA.
- Steed<sup>\*\*</sup>, C. and M. A. Harrison. 1991. Effect of short-term heat stress on ethylene production in pea stems. The West Virginia Academy of Science, Montgomery, WV.
- Willison<sup>\*</sup>, K. and M.A. Harrison. 1991. Protein analysis of the cell wall fluid from heat-stressed pea stems. The West Virginia Academy of Science, Montgomery, WV.
- Willison<sup>\*</sup>, K., C. Steed<sup>\*</sup>, and M.A. Harrison. 1991. Effect of short-term heat stress on ethylene biosynthesis and cell wall proteins in etiolated pea stems. Gordon Conference on Plant Molecular Biology-Signals and Patterns, Dartmouth, NH.

- Harrison, M.A. 1991. Regulation of ethylene production during the counter-reactive phase of gravitropism in etiolated pea epicotyls. *ASGSB Bulletin* 5: 84. The American Society for Gravitational and Space Biology, Arlington, VA.
- Harrison, M.A. and R.A. Beard\*. 1990. The greenhouse effect: Physiological changes in plants. *Plant Physiol.* S-93: 110. The American Society of Plant Physiologists, Indianapolis, IN.
- Harrison, M.A. 1989. Preliminary isolation of a heat stress signal in peas. *Proc. WV Acad. Sci.* 61: 5, *Plant Physiol.* S-89: 33. The American Society of Plant Physiologists, Toronto, Canada, and the West Virginia Academy of Science, Lewisburg, WV.
- Sharma\*, S., B. Samples, H.W. Elmore, and M. Harrison. 1988. Kinetics of ascorbate oxidation in plant tissue culture medium. *Proc. WV Acad. Sci.* 60: 3. The American Society of Southern Biologists, Biloxi, MS.
- Harrison, M.A. 1987. Physiology of the wounding response in plants. *Proc. WV Acad. Sci.* 59: 7. The West Virginia Academy of Science, Institute, WV.
- Harrison, M.A. 1987. Bioassay of a putative wounding factor in plants. *Plant Physiol.* S-83: 95. The American Society of Plant Physiologists, St. Louis, MO.

### **Teaching and Other Presentations**

- Harrison, M. 2009. MU-ADVANCE: Developing Faculty-Administrator Partnerships to Drive Institutional Change. 2009 Joint Annual Meeting, National Science Foundation, Washington, DC.
- Harrison, M. 2009. Advancing Women in Science, Technology, Engineering and Math at Marshall University. STaR Symposium, WV-EPSCoR, Charleston, WV.
- Harrison, M. and E. Baker. 2008. Open forum on the status of women at Appalachian colleges and universities. The Appalachian Studies Association Conference, Marshall University, Huntington, WV.
- Harrison M.A., H.M. Williams, E. Baker, B. Delidow, J. Silver, and P. Logan. 2008. MU-ADVANCE year 2: Successes and challenges at an Appalachian, primarily undergraduate institution. The Appalachian Studies Association Conference, Marshall University, Huntington, WV.
- Harrison, M.A. 2003. West Virginia State Science and Engineering Fair. The West Virginia Science Teachers Association, Snowshoe, WV. Also sponsored students to present science fair projects they had presented at the Intel International Science and Engineering Fair.
- Harrison, M.A. 2003. West Virginia State Science and Engineering Fair. The Governor's Science and Math Academy, West Virginia University, Morgantown, WV.
- Harrison, M.A. 2002. West Virginia State Science and Engineering Fair. The West Virginia Symposium for Higher Education: "Leadership in Mathematics and Science", Charleston, WV.
- Harrison, M.A. 2001. West Virginia State Science and Engineering Fair. The Higher Education Symposium for Mathematics and Science Education Conference sponsored by the West Virginia Department of Education, Charleston, WV.
- Lloyd, C., M.A. Harrison, D. Johnson, S. Lumpkin, and K. McComas. 1999. Workshop: Teaching portfolios, acts of transformation. Fourth National Writing Across the Curriculum Conference, Cornell University, Ithaca, NY.
- Harrison, M.A. 1999. Collection portfolios in science classes. Fourth National Writing Across the Curriculum Conference, Cornell University, Ithaca, NY.
- Harrison, M.A. 1999. Techno-WAC in biological sciences. Technology + WAC = Techno-WAC session. Fourth National Writing Across the Curriculum Conference, Cornell University, Ithaca, NY.
- Harrison, M.A. 1999. Project-oriented plant physiology: Responses to environmental changes. *Plant Biology '99*: #1. The American Society for Plant Physiologists, Baltimore, MD.
- Harrison, M.A. 1998. Project-oriented Plant Physiology. *Plant Biology '98*: #804. The American Society for Plant Physiologists, Madison WI.

### ***Presentations of Post-Doctoral Research Conducted at Washington University***

- Harrison, M.A. and B.G. Pickard. 1984. Burst of ethylene upon horizontal placement of tomato seedlings. *Plant Physiol.* S-75: 87. American Society of Plant Physiologists, University of California, Davis, CA.
- Harrison, M.A. and B.G. Pickard. 1987. Auxin asymmetry during "wrong-way" gravitropic curvature of tomato hypocotyls. *Plant Physiol.* S-80: 7. American Society of Plant Physiologists, Baton Rouge, LA; the American Society for Gravitational and Space Biology, Charlottesville, VA.
- Harrison, M.A. and B.G. Pickard. 1985. Red light shifts rate and locus of gravitropic curvature. 4th Annual Plant Biochemistry and Physiology Symposium, University of Missouri-Columbia, MO.
- Harrison, M.A. and B.G. Pickard. 1985. Ethylene does not mediate gravitropism of tomato hypocotyls. *Plant Physiol.* S-77: 104. The American Society of Plant Physiologists, Brown University, Providence, RI.
- Harrison, M.A. and B.G. Pickard. 1985. Red light shifts the locus and rate of gravitropic curvature in etiolated pea epicotyls. *The Physiologist* 28: 298; *ASGSB Bulletin* S-28: 103-104. American Society of Gravitational and Space Biology jointly with the American Physiological Society, Niagara, NY.
- Harrison, M.A. and B.G. Pickard. 1984. Participation of ethylene in two modes of gravistimulation of shoots. NASA Space Biology Annual Symposium, Harpers Ferry, WV.
- Harrison, M.A. 1983. Participation of ethylene in gravitropism. NASA Space Biology Annual Symposium, Arlington, VA.

### ***Presentations of Graduate Research Conducted at the University of Michigan***

- Harrison, M.A. and P.B. Kaufman. 1982. Estimates of free and bound IAA and zeatin levels involved in relation to regulation of apical dominance in oat shoots. 11th International Conference on Plant Growth Substances, The University College of Wales, Aberystwyth, UK.
- Harrison, M.A. and P.B. Kaufman. 1982. The role of cytokinin and auxin transport in apical dominance in oat shoots. *Plant Physiol.* S-69: 37. The American Society of Plant Physiologists, University of Illinois, Urbana, IL; 11th International Conference on Plant Growth Substances, The University College of Wales, Aberystwyth, UK; the Mid-West Section of the American Society of Plant Physiologists, Turkey Run, IN.
- Thomas, R.J., M.A. Harrison, F.J. Behringer, J. Taylor, and P.B. Kaufman. 1982. Production of endogenous auxin and ethylene in elongating setae of *Pellia epiphylla* sporophytes. *Bot. Soc. America Misc. Publ.* 162: 1. Botanical Society of America, Bloomington, IN.
- Harrison, M.A. and P.B. Kaufman. 1981. Hormonal control of lateral bud (tiller) development in oats. Michigan Academy of Sciences, University of Michigan, Ann Arbor, MI.
- Harrison, M.A. and P.B. Kaufman. 1981. Ethylene's involvement in the biphasic pattern of lateral bud (tiller) release in oats. *Plant Physiol.* S-76: 71. The American Society of Plant Physiologists, Laval University, Quebec City, Canada.
- Harrison, M.A. and P.B. Kaufman. 1981. Cellular aspects of the biphasic pattern of lateral bud (tiller) release in oats. *Plant Physiol.* S-67: 101. The American Society of Plant Physiologists, Laval University, Quebec City, Canada.
- Harrison, M.A. and P.B. Kaufman. 1980. Regulation of tiller release in oat shoots (*Avena sativa* L.). *Plant Physiol.* S-65: 76. American Society of Plant Physiologists, Washington State University, Pullman, WA.
- Kaufman, P.B., R. Bandurski, P. Dayanandan, R. Koning, and M. Harrison. 1979. Hormonal regulation of the negative geotropic response in *Avena* shoots. *Plant Physiol.* S-63: 143. 10th International Conference on Plant Growth Substances, University of Wisconsin, Madison, WI; the American Society of Plant Physiologists, The Ohio State University, Columbus, OH.

Harrison, M.A. 1979. The hormonal control of lateral bud development in oats (*Avena sativa* L.).  
*Plant Physiol.* S-63: 32. 10<sup>th</sup> International Conference on Plant Growth Substances, University of  
Wisconsin, Madison, WI; the American Society of Plant Physiologists, The Ohio State University,  
Columbus, OH.