

Dr. Csengele Barta

Associate Professor of Biology

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Education

PhD, Biology (*Summa Cum Laude*), 2004

University of Szeged, Hungary

MS, Plant Biology, 2001

Biological Research Center of the Hungarian Academy of Sciences, Szeged, Hungary

Dual BS, Biology and Chemistry, Biology and Chemistry Education, 2000

Babes-Bolyai University, Cluj Napoca, Romania

Experience and Positions

Associate Professor, Graduate Faculty, Department of Biology, Missouri Western State University, Saint Joseph, MO, 2018 – present

Assistant Professor, Graduate Faculty, Department of Biology, Missouri Western State University, Saint Joseph, MO, 2012- 2018

Visiting Scholar, Department of Atmospheric Sciences, Texas A&M University, College Station, TX, June 20th – July 14th, 2013

Research Associate, Department of Atmospheric Sciences, Texas A&M University, College Station, TX, 2010- 2012

Research Plant Physiologist, USDA, Agricultural Research Service, Maricopa, AZ, 2007-2010

Post-Doctoral Research Fellow (EU), Institute of Agro-Environment and Forest Biology, Italian National Research Council, Rome, Italy, 2004-2007

Graduate Research Associate, Center of Excellence of the European Union, Biological Research Center of the Hungarian Academy of Sciences, Szeged, Hungary, 2001-2004

International Research Fellow (UNESCO), Biological Research Center of the Hungarian Academy of Sciences, Szeged, Hungary, 2000-2001

Undergraduate Research Fellow, Biology and Geology Department, Babes-Bolyai University, Cluj- Napoca, Romania, 1996-2000

Research Interests

Photosynthesis: photosynthesis response to abiotic stress (global climate change) and biotic impacts; photosynthesis thermo-tolerance; growth and development;

Plant secondary metabolism: abiotic stress impacts on the relationship between photosynthesis and plant secondary biogenic organic volatile compound (BVOC) synthesis and emission; the signaling role of BVOCs; the ecological consequences of global change-altered plant volatile emissions; trace gas fluxes; carbon balance; chemical ecology (plant-insect interactions);

Air pollution, Plant Ecology and Ecological modeling: forest ecology, the effects of biogenic volatiles on air quality; ozone and aerosol forming reactions of biogenic volatiles; weather/climate – vegetation feedback; climate

modeling; remote sensing; ecosystem function; primary production; environmental (abiotic and biotic) stress impact on the vegetation at regional and global scales; plant-soil-atmosphere interactions; invasive plant species biology; plant/wildlife conservation/management; land use and urban ecology;

Plant biology education: developing effective tools for teaching advanced plant ecology, environmental biology; plant physiology, plant biochemistry and molecular biology.

Awards and Honors

- 1) MWSU Honors Program, Most Influential Professor Award, Spring and Fall, 2019
- 2) LAS Faculty Development Award, MWSU, 2019
- 3) PUBLONS Peer Reviewer Award, Publons, 2018
- 4) LAS Faculty Development Award, MWSU, 2018
- 5) American Society of Plant Biologists – Primarily Undergraduate Institutions (ASPB-PUI), Plant Biology Travel Award, 2017
- 6) LAS Faculty Development Award, MWSU, 2017
- 7) LAS Faculty Development Award, MWSU, 2016
- 8) Teaching Tools in Plant Biology (ASPB and The Plant Cell) Award, 2015
- 9) American Society of Plant Biologists (ASPB), Plant Biology Travel Award, 2015
- 10) LAS Faculty Development Award, MWSU, 2015
- 11) American Society of Plant Biologists (ASPB), Plant Biology Travel Award, 2014
- 12) LAS Faculty Development Award, MWSU, 2014
- 13) American Society of Plant Biologists (ASPB), Women’s Young Investigator Award, 2013
- 14) LAS Faculty Development Award, MWSU, 2013
- 15) American Society of Plant Biologists (ASPB), Plant Biology Travel Award, 2012
- 16) Graduate Teaching Academy Senior Award, Texas A&M University, 2012
- 17) Graduate Teaching Academy Award, Texas A&M University, 2011
- 18) ARS-USDA Award for Superior Performance, 2008
- 19) Marie-Curie (EC) Post-Doctoral Research Fellowship, 2004-2007
- 20) COST- Plant Proteomics in Europe Award, 2007
- 21) Gordon Research Conference, Ventura, CA, USA, Chair’s Fund Award, 2006
- 22) BRC-HAS PhD Fellowship, 2001-2004
- 23) International Advanced Antioxidant Biochemistry Course award, Wageningen, Netherland, 2002
- 24) Bioinformatics Course Award, Polish Academy of Sciences, Warsaw, Poland, 2002
- 25) International (ITC) Research Fellowship (UNESCO&EC), 2000-2001

Funding

- 1) **Discover Science, Summer Day Camp, 2019-2020**, Missouri Western Foundation (\$ 5,742) - *principal investigator*
- 2) **Isoprene evolution in plants: drivers and climate impacts**, National Science Foundation (NSF), solicitation NSF18-587, DEB-EP, 2019 (*in preparation, submission 2020*) (\$ 624,000) –*principal investigator*
- 3) **Designing plants for the future: using biogenic volatile organic compounds (BVOC) to mediate plant abiotic and biotic stress resistance (BioVOC)**, Human Frontier Science Program, Program Grant, international collaboration (*in preparation, for the March 2020 call*) (\$ 442,500) –*principal investigator*
- 4) **Missouri Rural Research Ecosystem (MO-REACT)**, National Science Foundation (NSF), solicitation NSF17-565, 2019 (*in preparation, submission in 2020*) (\$ 1,200,000) – *co-principal investigator*
- 5) **The role of isoprene in plant development**, American Society of Plant Biologists (ASPB), 2018 (\$ 6,000) – principal investigator – Summer Undergraduate Research funding (SURF) to student Rachael Prawitz, MWSU
- 6) **Small Instrumentation Grant, funded by the Western Foundation at MWSU**, 2018 (\$ 4,000) – *principal*

- investigator*
- 7) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2018 (\$ 3,500) – principal investigator**
 - 8) **Small Instrumentation Grant, funded by the Western Foundation at MWSU, 2017 (\$ 2,000) – principal investigator**
 - 9) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2017 (\$ 3,500) – principal investigator**
 - 10) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2016 (\$ 3,500) – principal investigator**
 - 11) **Small Instrumentation Grant, funded by the Western Foundation at MWSU, 2015 (\$ 2,500) – principal investigator**
 - 12) **Expansion of the Leo Galloway Herbarium, funded by the Western Foundation at MWSU, 2015 (\$ 2,500) – co-principal investigator**
 - 13) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2015 (\$ 3,500) – principal investigator**
 - 14) **Discover Science – Summer Day Camp, funded by Boehringer Ingelheim Vetmedica Inc., 2015 (\$ 6,820) – principal investigator**
 - 15) **Discover Science – Summer Day Camp, funded by Boehringer Ingelheim Vetmedica Inc., 2014 (\$ 12,250) – principal investigator**
 - 16) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2014 (\$ 3,500) – principal investigator**
 - 17) **Program of Research, Teaching and Applied Learning (PORTAL) Research Award, MWSU, 2013 (\$3,500) – principal investigator**
 - 18) **Bilateral Cooperation Grant CNR-MTA, Italian and Hungarian Ministry of Sciences and Education, 2007-2009 (€ 15,000) - principal investigator at CNR**
 - 19) **Bilateral Cooperation Grant CNR-BAS, Italian and Bulgarian Ministry of Sciences and Education, 2007-2009 (€ 12,000) - principal investigator at CNR**
 - 20) **ACCENT–BIAFLUX Exchange of Staff Grant, collaborator: Popov Institute of Plant Physiology of the Bulgarian Academy of Sciences, 2006 (€ 5,000) - principal investigator**
 - 21) **European Science Foundation (ESF), VOCBAS Exchange Grant, collaborators: Research Center Karlsruhe, IMK-IFU, Garmisch Partenkirchen, Germany; EUS&BIOP Institutes of the GSF National Research Center for Environment and Health (Helmholtz Association), Munich, Germany, 2006 (€ 6,000) - principal investigator**
 - 22) **European Science Foundation (ESF), VOCBAS Short Visit Grant, collaborator: Research Center Karlsruhe, IMK-IFU, Garmisch Partenkirchen, Germany, 2005 (€ 3,000) - principal investigator**

Other, non-funded, but positively rated proposals:

- i) **Griffon Pathway to STEM (GPS): Enhancing Mentoring and Engagement to Excel in STEM - National Science Foundation (NSF), DUE 1742068, 2017 (\$999,938) – co-principal investigator**
- ii) **Collaborative Research: Digitization TCN, National Science Foundation (NSF) – proposal 1413839, 2014 (\$ 76,000) – principal investigator at MWSU**

Teaching/Mentoring

Courses

Department of Biology, Missouri Western State University (2012-present):

Plant Morphology, BIO 407 and 307 (starting the Fall 2019) – lecture and laboratory (upper level, majors course – re-developed; offered the Spring of odd years, lecture and 2 laboratory sections/offering)

Plant Physiology, BIO 340 and 440 (starting the Spring of 2020)– lecture and laboratory (upper level, majors course – re-developed; offered Fall semesters each year, lecture and 1 laboratory section/offering)

Honors Colloquium, HON 395 – seminar course (upper level, honors students – developed; offered in the Fall of 2014; and the Spring of 2018)

Principles of Cell Biology, BIO 106 – lecture and laboratory (introductory, majors – offered Spring and Fall semesters each year, with lecture and three or four laboratory sections, pending enrollment/offering)

Principles of Biology, BIO 101– lecture and laboratory (introductory, non-majors, offered a total of 4 lectures and 10 laboratory sections since 2012 in various semesters)

University 101 – lecture/seminar (introductory, majors, offered every Fall)

Independent Research, BIO 450 – research practicum (majors, research; offered every Spring, Fall and Summer)

Biology Teaching Practicum, BIO 420 – teaching practicum (majors, teaching; offered various Spring or Fall semesters)

Department of Atmospheric Sciences Texas A&M University, 2011 (guest lectures, ATMO 202) – majors, developed

University of Tuscia, Viterbo, Italy, 2007, “Plant emitted volatiles”, (full course in English and Italian) – upper level majors and graduates, developed

Institute of Agro-Environment and Forest Biology, Italy, lectures in Chemical Ecology, Plant Biology and Biochemistry, 2004-2007 – graduate lectures, developed

Directed student research

Department of Biology, MWSU (2012-present):

2020 (upcoming)

Alexis Hersch – Project: Chemical warfare in the plant world: the characterization of honeysuckle (*Lonicera maackii*) leaf allelochemicals.

Cody Kirschner - Project: Isoprene synthase structural modelling.

2019

Megan Morris - Project: Oak isoprene synthase protein models.

Zachary Schank – Project: The isolation and characterization of isoprene synthase genes from Missouri oaks.

Cameron Hall - Project: Variations in the gene encoding for isoprene synthase in Missouri oaks (*Quercus* spp.).

Brian Jenkins - Project: Elevated endo- and exogenous phytohormone levels alleviate the negative allelopathic effects of honeysuckle leaf extracts.

Nick Straton - Project: The isolation and characterization of isoprene synthase genes from Missouri oaks.

Cody Kirschner - Project: Isoprene synthase structural modelling.

Chayata Faye Thammarat - Project: The mechanism of active root avoidance responses in response to allelopathic inhibitors in *Brassica rapa* seedlings.

Rachael Prawitz - Project: Characterization of the seasonal pin oak (*Quercus palustris*) isoprene synthase (*Isp*) expression AND Project: The role of isoprene in plant development.

Brendan Ryan - Project: The impact of honeysuckle (*Lonicera maackii*) leaf allelochemicals on native Missouri species.

Devon Lindstrom - Project: The molecular mechanism at the basis of allelopathic inhibition of seed germination by honeysuckle (*Lonicera maackii*) leaf extract in *Brassica rapa*.

Makenzie Helsel- Project: Plants for the future: taking advantage of plant volatiles in biological pest control.

2018

Jeremy Reynolds – Project: Juglone and honeysuckle leaf extracts downregulate gibberellic acid production in *Brassica rapa* seeds, inhibiting seed germination.

Brian Jenkins - Project: Elevated endo- and exogenous phytohormone levels alleviate the negative allelopathic effects of honeysuckle leaf extracts.

Devon Lindstrom - Project: Identification of secondary metabolites involved in the allelopathic action of the invasive honeysuckle (*Lonicera maackii*).

Chayata Faye Thammarat - Project: The mechanism of active root avoidance responses in response to allelopathic inhibitors in *Brassica rapa* seedlings.

Rachael Prawitz - Project: Characterization of the seasonal pin oak (*Quercus palustris*) isoprene synthase (*Isp*) expression.

Makenzie Helsel - Project: Isoprene synthases in oaks.

William Kyle Constable - Project: The evolution of oak isoprene synthases.

Neiley Karns - Project: The isolation and characterization of the isoprene synthase protein from pin oak.

Jesica Phelan - Project: The impact of the 2018 severe drought on the oxidant-antioxidant balance, photosynthesis and isoprene emission of pin oaks in NW Missouri.

Kody Piper - Project: Does the capacity to emit isoprene provide competitive advantage to invasive species?

Mary Moore - Project: Characterization of the post oak (*Quercus stellata*) isoprene synthase (*Isp*) gene.

Kerry Moore - Project: The allelopathic effects of honeysuckle (*Lonicera maackii*) leaf extracts.

2017

Alyssa Jones - Project: Characterization of the pin oak (*Quercus palustris*) isoprene synthase (*Isp*) gene.

Reid Brown - Project: DNA isolation from pin oak buds.

Danielle Edeman - Project: Isolating DNA from mature leaves of species with high secondary metabolite contents.

Rachael Prawitz - Project: Housekeeping genes for quantitative PCR in pin oak (*Quercus palustris*) – identifying partial sequences of the 18 S rRNA, *ndhF* and *ATPβ* encoding genes.

Mackenzie Helsel - Project: Total RNA isolation from pin oak (*Quercus palustris*).

Christina Gray - Project: Isoprene synthase (*Isp*) evolution in angiosperms.

Audrey Keim - Project: Isoprene synthase gene expression in pin oak (*Quercus palustris*).

2016

Alyssa Jones - Project: Characterization of the pin oak (*Quercus palustris*) isoprene synthase (*Isp*) gene.

Kalif Leslie - Project: Pin oak (*Quercus palustris*) isoprene synthase properties.

Christina Gray - Project: The relationship between isoprene emission and senescence in pin oaks (*Quercus palustris*).

Edward Miles - Project: The molecular eco-physiology of oak marcescence. Oak isoprene synthases.

Amie Haddock - Project: Do light intensity change induced alterations in leaf isoprene emission affect the timing of senescence in velvet bean (*Mucuna pruriens*)?

Jeremy Brown - Project: Do temperature variation induced alterations in leaf isoprene emission affect the timing of senescence in velvet bean (*Mucuna pruriens*)? Isoprene synthase characterization.

Steven Bilby - Project: Challenges and solutions to quality genomic DNA isolation from mature and senescing pin oak (*Quercus palustris*) leaves.

Marissa Klingseis - Project: Do drought stress-induced alterations in leaf isoprene emission affect the timing of senescence in velvet bean (*Mucuna pruriens*)?

Chandler Gossett - Project: The impact of light quality on velvet bean (*Mucuna pruriens*) isoprene emission. *Mucuna sp.* isoprene synthase.

Alexander Duryee - Project: Taking advantage of plant metabolism in isolating high quality genomic DNA from mature pin oak (*Quercus palustris*) leaves.

Matthew Steinlage - Project: The metabolic triggers of leaf marcescence in oaks.

Erin Scott - Project: Oxidant-antioxidant balance in senescing oak leaves.

Mary-Kate Wiley - Project: Variations in the extent of lipid peroxidation during senescence in pin oak (*Quercus palustris*) leaves.

Tyler Hughes - Project: The impact of light quality on isoprene emission oak species.

Hailey Drew Mantlo - Project: Morphological differences between velvet bean plants grown under light and temperature gradient conditions.

2015

Sandra Pitcher - Project: GIS: a biological tool in the investigation of ecological consequences and the physiological mechanism at the basis of marcescence.

Edward Miles - Project: The molecular eco-physiology of oak marcescence.

Christina Gray - Project: The relationship between isoprene emission and senescence in pin oaks (*Quercus palustris*).

Bethany Bolander - Project: Seasonal variations in leaf pigment composition in pin oaks (*Quercus palustris*) in Missouri.

Lauren Alkier - Project: Designing a flow-through chamber system for plant gas exchange and volatile collection.

Jenice Bartlett - Project: Differences in the timing of the development of the abscission layer in marcescent and non-marcescent pin oak (*Quercus palustris*) leaves.

Erin Scott - Project: Oxidant-antioxidant balance in senescing oak leaves.

Heather Seever - Project: Pigment degradation dynamics in senescing pin oak leaves (*Quercus palustris*).

Carly Compton - Project: Does increasing the blue spectral component of incident irradiation alter isoprene emission rates in velvet bean (*Mucuna pruriens*)?

Nicholas Williams - Project: Detecting light-stress induced reactive oxygen species production *in vivo* in velvet bean (*Mucuna pruriens*) leaves using a novel fluorescent sensor.

2014

Sandra Pitcher - Project: The molecular eco-physiology of oak marcescence.

Derek Hullett - Project: Designing a low-cost dynamic leaf volatile collection chamber.

Jasmine Stalker - Project: Does the capacity to emit isoprene provide a competitive advantage to kudzu (*Pueraria lobata*) in Missouri?

Jessie Green - Project: The timing of senescence in marcescent and non-marcescent oak trees.

Charmaine Marie Banez - Project: Do enhanced isoprene emission rates prevent reactive oxygen formation in marcescent trees?

Jessica Foster - Project: Does modulating isoprene emission in velvet bean (*Mucuna pruriens*) affect the timing of leaf senescence?

Heather Seever - Project: The relationship between isoprene flux and abscisic acid synthesis in velvet bean (*Mucuna pruriens*) and kudzu (*Pueraria lobata*).

2013

Derek Payne - Project: Identification of marcescent tree species in NW Missouri during the winter of 2012-2013. A Global Positioning mapping study.

Tyler O. Hughes - Project: Climate change feedback on plant isoprene emissions.

Jesse Campbell - Project: Does isoprene play a role in delaying senescence in oaks under high temperature conditions?

Jake Graham - Project: Oak species in the United States: a comparative biogeography study.

Phillip Mueller - Project: Stress resistance mechanisms in marcescent tree species.

Sandra Pitcher - Project: The molecular eco-physiology of oak marcescence.

Other institutions – co- advised research (2004 - 2012):

Jonathan Gramann (PhD), Texas A&M University, 2010 - 2012

Stephanie L. White (undergraduate, sophomore), Texas A&M University, 2010

Alice Garani (undergraduate, junior), University of Bologna, 2009

Alberto Canarini (undergraduate, junior), University of Bologna, 2009

Gwen G. Coyle (research assistant), ARS-USDA, 2007-2010

Roberta Fodale (MSc), University of Palermo, Italy, 2006-2007

Clelia Oliva (MSc), Montpellier, France, 2006-2007

Alessio Fortunati (PhD), University of Tuscia, Viterbo, Italy, 2004-2007

Federico Brill (PhD), University of Tuscia, Viterbo, Italy, 2004-2007

Silvano Fares (PhD), University of Tuscia, Viterbo, Italy, 2004-2007

Domenico Serafini (PhD), University of Tuscia, Viterbo, Italy, 2004-2007

Teaching assistant advising

Department of Biology, MWSU (2012-present):

2019 – **Jackie Herron** (senior, in BIO 307)

2018 – **Morgan Wells** (junior, in BIO 106); **Tatum Thomason** (junior, in BIO 106);

2017 – **Hailey Babcock** (junior, in BIO 106);

2016 - **Joe Glise** (junior, in BIO 106); **Tess Campbell** (senior, in BIO 106)

2015 - **Allison Reed** (senior, in BIO 106); **Jami Kellam** (senior, in BIO 106); **Jasmine Colon** (senior, in BIO 106)

2014 - **Tiffany Zaroor** (senior, in BIO 106); **Dillon Howe** (senior, in BIO 101); **Jessica Foster** (junior, in BIO 106); **Bridgette French - Harbison** (junior, in BIO 101)

2013 - **Matalie Ann Lynch (Place)** (senior, in BIO 106); **Diana Ackermann** (senior, in BIO 106); **Dillon Howe** (junior, in BIO 101); **Crystal Daggett** (junior, in BIO 101)

High school teaching

Apaczai Csere Janos Lyceum, Cluj Napoca, Romania, Biology, 2000

Brassai Samuel Lyceum, Cluj Napoca, Romania, 12th grade Biology, 1999

Bathory Istvan Lyceum, Cluj Napoca, Romania, 9th grade Chemistry, 1999

Peer reviewed publications

Published & Submitted Journal Articles (peer reviewed) (* denotes student co-author)

- (1) Barta, C., Svojanovsky, S.R., Chevalier, C.D., *Bashaw, B.J., *Bilby, S.R., *Constable, W.K., *Edlin, M.L., *Helsel, M.M., *Jenkins, B.C., *Karns, N.C., *Lamey, L.M., *Lindstrom, D.S., *Moore, K.D., *Moore, M.M., *Phelan, J.M., *Piper, K.S., *Prawitz, R.A., Roy, T., *Thammarat, C.F., **Paying “the right price” for stress protection in a “volatile” future: the potential costs and benefits of emitting isoprene in a warming climate**, *Plants – under review*, 2019
- (2) Barta, C., *Bolander, B., *Bilby, S., *Brown, J., *Brown, R., *Duryee, A.M., *Edelman, D., *Gray, C., *Gossett, C., *Haddock, A., *Helsel, M., *Jones, A., *Klingseis, M., *Leslie, K., *Miles, E., *Prawitz, R., **In situ dark adaptation enhances the efficiency of DNA extraction from mature pin oak (*Quercus palustris*) leaves, facilitating the identification of partial sequences of the 18S rRNA and isoprene synthase (*IspS*) genes.** –*Plants*, 6(4), 52, 2017
- (3) Barta, C., *Jones, A., *Brown, R., *Prawitz, R., ***Quercus palustris* 18S ribosomal RNA gene, partial sequence (MF360746.1)**, Gen Bank, published gene sequence, NCBI, National Center for Biotechnology Information, 2017
- (4) Kaling M., Kanawati B., *Ghirardo A., Albert A., Winkler J.B., Heller, W., Barta, C., Loreto, F., Schmitt-Kopplin P., Schnitzler J.P., **UV-SI: UV-B mediated metabolic rearrangements in poplar revealed by non-targeted metabolomics.**, *Plant Cell and Environment*, 38(5):892-904, 2015
- (5) Wachter R.M., Salvucci M.E., Carmo-Silva A.E., Barta C., Genkov T., Spreitzer R.J., **Activation of interspecies-hybrid Rubisco enzymes to assess different models for the Rubisco-Rubisco activase interaction**, *Photosynthesis Research* 117(1-3): 557-566, 2013
- (6) Barta, C., Wachter, R.M., Dunkle, A.M., Salvucci, M.E., **Structural changes associated with the acute thermal instability of Rubisco activase**, *Archives of Biochemistry and Biophysics* 499 (1-2):17-25, 2010
- (7) Salvucci, M.E., Barta, C., Byers, J.A., *Canarini, A., **Photosynthesis and the partitioning of carbon between carbohydrates and isoprenoid pathway products in vegetatively active and dormant guayule: physiological and environmental constraints on rubber accumulation in a semi-arid shrub**, *Physiologia Plantarum*, 140(4):368-379, 2010
- (8) Behnke, K., Kaiser, A., Zimmer, I., Brüggemann, N., Janz, D., Polle, A., Hampp, R., Hänsch, R., Popko, J., Schmitt-Kopplin, P., Ehling, B., Rennenberg, H., Barta, C., Loreto, F., Schnitzler, J.P., **RNAi-mediated suppression of isoprene emission in poplar transiently impacts phenolic metabolism under high temperature and high light intensities: a transcriptomic and metabolomic analysis**, *Plant Molecular Biology*, 74(1-2):61-75, 2010
- (9) Velikova, V., Tsonev, T., Barta, C., Centritto, M., Koleva, D., Stefanova, M., Busheva, M., Loreto, F., **BVOC emissions, photosynthetic characteristics and changes in chloroplast ultrastructure of *Platanus orientalis* L. exposed to elevated CO₂ and high temperature**, *Environmental Pollution*, 157(10): 2629-2637, 2009
- (10) *Fortunati, A., Barta, C., *Brilli, F., Centritto, M., Zimmer, I., Schnitzler, J.P., Loreto, F., **Isoprene emission is not temperature-dependent during and after severe drought-stress: a physiological and biochemical analysis**, *The Plant Journal* 55(4):687-697, 2008
- (11) Timperio, A.M., D’Amici, G.M., Barta, C., Loreto, F., Zolla, L., **Proteomic, pigment composition and organization of thylakoid membranes in iron-deficient spinach leaves**, *Journal of Experimental Botany*, 58(13):3695-3710, 2007
- (12) *Brilli, F., Barta, C., *Fortunati, A., Lerdau, M., Loreto, F., Centritto, M., **Response of isoprene emission and carbon metabolism to drought in white poplar (*Populus alba*) saplings**, *New Phytologist*, 175(2):244-254, 2007
- (13) Loreto, F., Centritto, M., Barta, C., Calfapietra, C., *Fares, S., Monson, R.K., **The relationship between isoprene emission rate and dark respiration rate in white poplar (*Populus alba* L) leaves**, *Plant Cell and Environment*, 30(5):662-669, 2007
- (14) *Fares, S., Barta, C., *Brilli, F., Centritto, M., Ederli, L., Ferranti, F., Pasqualini, S., Reale, L., Tricoli, D., Loreto, F., **Impact of high ozone on isoprene emission and some anatomical and physiological parameters of**

developing *Populus alba* leaves directly or indirectly exposed to the pollutant, *Physiologia Plantarum*, 128:456-465, 2006

- (15) Loreto, F., Barta, C., *Brilli, F., Nogues, I., **On the induction of volatile organic compound emissions by plants as consequence of wounding or fluctuations of light and temperature**, *Plant Cell and Environment*, 29: 1820-1828, 2006
- (16) Barta, C., Loreto, F., **The relationship between the methyl-erythritol phosphate (MEP) pathway leading to emission of volatile isoprenoids and abscisic acid content in leaves**, *Plant Physiology*, 141: 1676-1683, 2006
- (17) Erdei, N., Barta, C., Hideg, E., Boddi, B., **Light-induced wilting and its molecular mechanism in epicotyls of dark-germinated pea (*Pisum sativum* L.) seedlings**, *Plant Cell and Physiology*, 46(1): 185-191, 2005
- (18) Barta, C., Kálai, T., Hideg, K., Vass, I., Hideg, É., **Differences in the ROS generating efficacy of various ultraviolet wavelengths in detached spinach leaves**, *Functional Plant Biology*, 31: 23-28, 2004
- (19) Barta, C., Kálai, T., Vass, I., Hideg, É., **Dansyl- and rhodamine-based fluorescent sensors for detecting singlet oxygen and superoxide production in plants *in vivo***, *Acta Biologica Szegediensis*, 46, 149-150, 2002
- (20) Hideg, É., Barta, C., Kálai, T., Vass, I., Hideg, K., Asada, K., **Detection of singlet oxygen and superoxide with fluorescent sensors in leaves under stress by photoinhibition or UV-radiation**, *Plant Cell and Physiology*, 43: 1154-1164, 2002 (top 3 of online accesses for *Plant Cell Physiology* in 2002)

Book chapters (peer reviewed)

- (21) Barta C., Carmo-Silva, A.E., Salvucci M.E., **Purification of Rubisco Activase from Leaves or after Expression in *Escherichia coli***, *Photosynthesis Research Protocols, Methods in Molecular Biology*, Springer, Humana Press, Ed. Carpentier, R., 684:363-374, 2011
- (22) Barta C., Carmo-Silva, A.E., Salvucci M.E., **Rubisco Activase Activity Assays**, *Photosynthesis Research Protocols, Methods in Molecular Biology*, Springer, Humana Press, Ed. Carpentier, R., 684:375-382, 2011
- (23) Carmo-Silva, A.E., Barta C., Salvucci M.E., **Isolation of Ribulose-1,5 Bisphosphate Carboxylase/Oxygenase from Leaves**, *Photosynthesis Research, Methods in Molecular Biology*, Springer, Humana Press, Ed. Carpentier, R., 684:339-347, 2011

Manuscripts in preparation

- (i) Barta, C., Gramman, J.H., White, S.L., Schade, G.W., **Do extreme drought conditions alter the relationship between photosynthesis and isoprene emission in oak species? An interannual study along an urban to rural environmental gradient**, 2019, *in preparation*
- (ii) Barta, C. and Williams, M., **Solving the puzzle of plant communication**, *The Plant Cell*, Teaching Tools in Plant Biology, 2019, *in preparation*
- (iii) Barta, C., Hatch, S., Svojanovski, S., Rhoad, J., Ducey, M., Eckdahl, T., ***In vivo* alkaline phosphatase activity measurements in *Escherichia coli* cells overexpressing the *phoA* gene.**, 2019, *in preparation*
- (iv) Barta, C., Hatch, S., Svojanovski, S., Rhoad, J., Ducey, M., Eckdahl, T., **Do multidisciplinary science camps enhance high school student learning and interest in pursuing a career in life-sciences?**, 2019, *in preparation*
- (v) Barta, C., **Writing a science paper: reflections on the applied learning aspects of an Honors Colloquium class.**, 2019, *in preparation*

Editorials

Plants (MDPI), Guest Editor Note, Special Issue “Plant Responses to Pollution”, 2019-2020

Journal of Visualized Experiments (JOVE), Special issue on Photosynthesis and Secondary Metabolite Assay Techniques, 2019 – 2020 (*in preparation*)

Horticulture (MDPI), Guest Editor Note, Special Issue “Abiotic Stress Responses of Plants”, 2018-2019

Conferences/Seminar proceedings (* denotes student author)

Invited Speaker

- (1) Barta, C., **Applied Learning in Plant Biology at MWSU: Challenges and Successes**, Conference on Applied Learning in Higher Education (CALHE), St. Joseph, MO, 2016
- (2) Barta, C., **Science and Society: The Science and Politics of Climate Change**. – public seminar, St. Joseph, MO, 2015
- (3) Barta, C., **Plants, meet your pollinators!** – Grand River Prairie Days, Missouri Department of Conservation, Dunn Ranch, MO, 2015
- (4) Barta, C., **Teaching students about research**. Conference on Applied Learning in Higher Education (CALHE), St. Joseph, MO, 2015
- (5) Barta, C., **Plant-pollinator interactions**. Mini-course, 2x3 hours sessions, Master Naturalists and the Master Gardeners of the University of Missouri Extension Meeting, St. Joseph, MO, 2015
- (6) Barta, C., *Gramman, J., *White, S.L., Schade, G.W., **Drought impact on photosynthesis and isoprene emission capacities of oak species in urban and rural areas of Texas**, Plant Biology – American Society of Plant Biologists Meeting, Austin, TX, 2012
- (7) Barta, C., *Gramman, J., *White, S.L., Schade, G.W., **Biogenic volatiles and the atmosphere: does climate change affect local and global emissions?**, Department of Atmospheric Sciences, Texas A&M University, College Station, 22 Nov, 2011
- (8) Barta, C., *Gramman, J., *White, S.L., Schade, G.W., **The effect of drought stress on carbon assimilation and isoprene emission capacities of oak species in urban and rural areas of Texas**, AGU Fall Meeting, San Francisco, 5-9th Dec, 2011
- (9) Barta, C., Loreto, F., **Isoprene in the plant-environment interactions**, Texas A&M University, Department of Plant, Soil and Crop Sciences, 2011
- (10) Barta, C., Wachter, R.M., Dunkle, A.M., Salvucci, M.E., **The role of Mg²⁺ and adenine nucleotides in regulating Rubisco activase stability at high temperatures**, invited mini symposium on Enzyme Regulation, Plant Biology 2010, Montreal, Canada, 2010
- (11) Barta, C., **The role of Mg²⁺ in determining Rubisco activase heat tolerance *in vitro***, ARS USDA and the Arizona State University Department of Biochemistry joint seminar, 2009
- (12) Barta, C., **Plant volatiles: secondary metabolites with multiple roles in the plant-environment interactions**, ARS-USDA seminar, 2008
- (13) Barta, C., *Fortunati, A., *Brilli, F., Loreto, F., **Arabidopsis transformed to emit isoprene are more resistant to high light and high temperatures and show a different intracellular redox balance than non-emitting wild types**, 8th TERPNET Meeting, Strasbourg, France, 2007
- (14) Barta, C., Loreto, F., Zolla, L., Timperio, A.M., *D’Amici, G.M., **Proteomic, pigment composition and organization of thylakoid membranes in iron-deficient spinach leaves**, Plant Proteomics in Europe Workshop, Munich, Germany, 2007
- (15) Barta, C., *Fortunati, A., *Brilli, F., Loreto, F., **Does isoprene protect cellular membranes from oxidative damages?** 37th Membrane Transport Congress, Sumeg, Hungary, 2007
- (16) Barta, C., *Brilli, F., *Fortunati, A., Monson, R.K., Loreto, F., **Isoprene: a metabolite with multiple roles in the plant-environment interaction**, ISONET -VOCBAS Short Course, Kuopio, Finland, 2006

- (17) Barta, C., Nogues Gonzalez, I., *Brilli, F., Velikova, V., Loreto, F., **Does isoprene protect leaves against photoinhibition?**, IInd ISONET Meeting, Benediktbeuren, Germany, 2005
- (18) Barta, C., Kálai, T., Vass, I., Hideg, K., Hideg É., **Differences in the in vivo ROS generating efficacy of different UV-A and UV-B wavelengths in leaves**, VOCBAS Summer School, Pieve Tesino, Italy, 2004
- (19) Barta, C., Kálai, T., Vass, I., Hideg, K., Hideg É., **Study of the UV- radiation generated ROS production in tobacco leaves**, IIIrd Hungarian Plant Physiology Conference, Szeged, 2002
- (20) Barta, C., Kálai, T., Vass, I., Hideg, K., Hideg É., **Action spectrum of ROS production under different wavelength UV stress**, Bioinformatics Training Course, Warsaw, Poland, 2002
- (21) Barta, C., Kálai, T., Vass, I., Hideg, K., Hideg É., **Action spectrum of ROS production under UV stress**, IInd Chemistry and Biochemistry of Antioxidants Course, Wageningen, The Netherlands, 2002

Poster presentations/Proceedings (international, national and state) (* denotes student author)

- (1) *Prawitz, R., and Barta, C.E., **Do variations in temperature and light conditions affect the relationship between isoprene emission and senescence in velvet bean (*Mucuna pruriens*)?** Plant Biology, San Jose, CA, 2019, international
- (2) Barta, C., *Brown, R., *Constable, W.K., *Hall, C.C., *Helsel, M.M., *Jenkins, B.C., *Jones, A., *Karns, N., *Kirchner, C., *Lindstrom, D., *Moore, K.D., *Moore, M.L., *Miles, E., *Morris, M., *Phelan, J., *Prawitz, R., *Schank, Z., *Straton, N., *Thammarat, C.F. 2019, **The identification of the gene encoding for isoprene synthase (*IspS*) in dominant Missouri oaks**, Plant Biology, San Jose, CA, 2019, international
- (3) Barta, C., *Jenkins, B.C., *Lindstrom, D.S., *Reynolds, J., *Karns, N., *Constable, W.K., *Phelan, J., *Helsel, M.M., *Prawitz, R., *Brown, J., *Moore, M.L., *Moore, K.D., *Thammarat, C.F., **Phytohormone treatment alleviates the negative allelopathic effects of Amur honeysuckle (*Lonicera maackii*) leaf extracts on seed germination and growth**, Missouri Academy of Sciences (MAS), Maryville, MO, 2019, state
- (4) *Lindstrom, D.S., *Jenkins, B.C., *Prawitz, R., *Helsel, M.M., *Constable, W.K., *Karns, N., *Phelan, J., *Jones, A., *Moore, M.L., *Moore, K.D., *Bolander, B., *Bilby, S., *Brown, J., *Duryee, A., *Edelman, D., *Gray, C., *Gossett, C., *Haddock, A., *Klingseis, M., *Leslie, K., *Miles, E., and Barta, C., **The identification of partial pin oak (*Quercus palustris*) and post oak (*Q. stellata*) isoprene synthase (*IsPS*) gene sequences**, Missouri Academy of Sciences (MAS), Maryville, MO, 2019, state
- (5) *Prawitz, R., *Helsel, M.M., *Lindstrom, D.S., *Jenkins, B.C., *Constable, W.K., *Karns, N., *Phelan, J., *Jones, A., *Bolander, B., *Bilby, S., *Brown, J., *Duryee, A., *Edelman, D., *Gray, C., *Gossett, C., *Haddock, A., *Klingseis, M., *Leslie, K., *Miles, E., *Moore, M.L., *Moore, K.D., and Barta, C., **In situ dark adaptation increases the efficiency of DNA extraction from mature pin oak (*Quercus palustris*) leaves, facilitating gene identification studies**, Missouri Academy of Sciences (MAS), Maryville, MO, 2019, state
- (6) Barta, C., *Jenkins, B.C., *Moore, M.L., *Moore, K.D., *Lindstrom, D.S., *Thammarat, C.F., *Reynolds, J., Svojanovsky, S.R., **Phytohormone treatment with gibberellic acid alleviates the negative allelopathic effects of Amur honeysuckle (*Lonicera maackii*) leaf extracts and juglone on seed germination and growth**, Missouri Natural Resources Conference (MNRC), Osage Beach, MO, 2019, state
- (7) Barta, C., *Jenkins, B.C., *Moore, M. L., *Moore, K.D., *Lindstrom, D.S., *Thammarat, C.F., Svojanovsky, S., **Phytohormone treatment with gibberellic acid alleviates the negative allelopathic effects of Amur honeysuckle (*Lonicera maackii*) leaf extracts on seed germination and growth**, Plant Biology, Montreal, Canada, 2018 – international
- (8) *Brown, R.N., *Jones, A.D., *Prawitz, R.A., *Helsel, M.M., *Moore, M.L., *Moore, K.D., *Constable, W.K., *Phelan, J., *Holland, E., *Bolander, B., *Bilby, S.R., *Brown, J.H., *Duryee, A.M., *Edelman, D.R., *Gray, C.E., *Gossett, C., *Haddock, A.G., *Klingseis, M.E., *Leslie, K., *Miles, E.W., Barta, C., Svojanovsky, S.R., **The identification of partial sequences of pin oak (*Quercus palustris*) and post oak (*Q. stellata*) isoprene synthase (*IspS*) genes**, Plant Biology, Montreal, Canada, 2018 – international
- (9) Barta, C., Bolander, B., Bilby, S., Brown, J., Brown, R., Duryee, A.M., Edelman, D., Gray, C., Gossett, C.,

- Haddock, A., Helsel, M., Jones, A., Klingseis, M., Leslie, K., Miles, E., Prawitz, R., ***In situ* dark adaptation enhances the efficiency of DNA extraction from mature pin oak (*Quercus palustris*) leaves, facilitating the identification of partial sequences of the 18S rRNA and isoprene synthase (*IspS*) genes.**, Plant Biology, Montreal, Canada, 2018 – international
- (10) *Brown, R., *Jones, A., *Duryee, A., *Gray, C., *Edelman, D., *Klingseis, M., *Gossett, C., *Haddock, A., *Brown, J., *Bilby, S., *Miles, E., Barta, C. **DNA isolation and amplification from mature and senescing pin oak (*Quercus palustris*) leaves: challenges and solutions**, Plant Biology, Honolulu, HI, 2017 – international
 - (11) Barta, C., *Miles, E., *Bolander, B., *Gray, C., *Jones, A., *Brown, R., *Edelman, D., *Campbell, J., **The impact of growth season length and sustained high temperatures on isoprene emission, oxidant - antioxidant balance and senescence in velvet bean (*Mucuna pruriens*)**, Plant Biology, Honolulu, HI, 2017 – international
 - (12) *Gray, C., *Edelman, D., *Jones, A., *Brown, R., *Miles, E., *Bolander, B., *Pitcher, S., Barta, C. **Does isoprene influence the onset of senescence in oaks?**, Plant Biology, Honolulu, HI, 2017 – international
 - (13) Barta, C., *Gray, C., *Edelman, D., *Jones, A., *Brown, R., *Miles, E., *Bolander, B., *Pitcher, S., **Isoprene indirectly impacts leaf shedding in Missouri oaks**, Missouri Natural Resources Conference (MNRC), 2017 – state
 - (14) *Bolander, B., Barta, C., *Pitcher, S., *Miles, E., *Bartlett, J., *Scott, E., *Drake, **The role of plant volatiles in leaf senescence**, Plant Biology, Austin, TX, 2016 - international
 - (15) Barta, C., **Plant physiological ecology research in a classroom setting: applied learning in undergraduate education.**, Ecological Society of America Meeting, Fort Lauderdale, FL, 2016- international
 - (16) *Miles, E., *Gray, C., Barta, C., **Changes in isoprene synthase (*IspS*) gene expression in senescing pin oaks in Missouri**, Ecological Society of America Meeting, Fort Lauderdale, FL, 2016 -international
 - (17) *Gray, C., *Miles, E., *Bolander, B., *Scott, E., *Wiley, M.K., *Steinlage, M., *Barta, C., **Prolonged high temperature-triggered metabolic changes delay senescence in the isoprene emitter velvet bean (*Mucuna pruriens*)**, Ecological Society of America Meeting, Fort Lauderdale, FL, 2016 - international
 - (18) Barta, C., *Pitcher, S., *Bolander, B., *Miles, E., *Bartlett, J., *Scott, E., *Drake, D., **The relationship between isoprene emission, senescence and abscission in pin oaks (*Quercus palustris*)**, Plant Biology - American Society of Plant Biologists, Minneapolis, MN, 2015 – international
 - (19) Barta, C., *Hughes, T., *Compton, C., *Williams, N., **Alterations in the spectral composition of the incident irradiation modulates isoprene emission and the environmental stress response of velvet bean (*Mucuna pruriens*)**. Ecological Society of America (ESA) Centennial Meeting, Baltimore, MD, 2015 - international
 - (20) Barta, C. **Applied Learning in undergraduate ecology and eco-physiology education.** Ecological Society of America (ESA) Centennial Meeting, Baltimore, MD, 2015 - international
 - (21) Barta, C., *Pitcher, S., *Bartlett, J., *Scott, E., *Seever, H., **Do alterations in leaf isoprene emission affect the timing of senescence in velvet bean (*Mucuna pruriens*)?**. Ecological Society of America (ESA) Centennial Meeting, Baltimore, MD, 2015 - international
 - (22) Barta, C., Hatch, S., Svojanovsky, S., Rhoad, J., Ducey, M., Eckdahl, T., **Do multidisciplinary science camps enhance high school student learning and interest in pursuing a career in life-sciences?** Association of College and University Biology Educators (ACUBE) 59th Annual Meeting, St Joseph, MO, 2015 - national
 - (23) *Pitcher, S., Barta, C., Drake, D., **GIS: a tool in plant eco-physiological studies.** Missouri Academy of Science, St. Joseph, MO, 2015 - state
 - (24) Barta, C., *Pitcher, S., Drake, D., *Bartlett, J., *Scott, E., **Oak marcescence in Missouri: an eco-physiology study.** Missouri Academy of Science, St. Joseph, MO, 2015 - state
 - (25) *Hughes, T., *Pitcher, S., *Mueller, P., *Campbell, J., Barta, C., **Models and observations: predicting future isoprene emission loads into the atmosphere.** Missouri Academy of Science, St. Joseph, MO, 2015 - state
 - (26) Barta, C., **Teaching students about research.** Conference on Applied Learning in Higher Education (CALHE), St. Joseph, MO, 2015 - national
 - (27) *Pitcher, S., Barta, C., Drake, D., **GIS: a biological tool in the investigation of ecological consequences and the physiological mechanism at the basis of marcescence.**, 46th South Dakota State University Geography Convention, 2015 - state

- (28) Barta, C., *Payne, D., *Green, J., *Hullett, D., *Stalker, J., *Banez, C. M., *Pitcher, S., Drake, D. **Does isoprene play a role in the marcescence of oaks in Missouri?** Missouri Natural Resources (MNRC), Lake of the Ozarks, 2015 - state
- (29) Barta, C., *Pitcher, S., *Mueller, P., *Campbell, J., **Does accounting for adaptation to local climate reduce the gap between models and observations in predicting future isoprene emission loads into the atmosphere?**, 99th Ecological Society of America (ESA) Meeting, Sacramento, CA, 2014 - international
- (30) *Pitcher, S., *Payne, D., Drake, *D., Barta, C., **The eco-physiology of marcescence in dominant oak species in Missouri.**, 99th Ecological Society of America (ESA) Meeting, Sacramento, CA, 2014 - international
- (31) *Campbell, J., *Mueller, P., *Pitcher, S., Barta, C., **Narrowing the gap between models and observations in predicting future isoprene loads into the atmosphere: a modelling study.**, 9th Conference on Applied Learning in Higher Education (CALHE), Saint Joseph, MO, 2014 - national
- (32) *Campbell, J., *Mueller, P., *Pitcher, S., Barta, C., **Narrowing the gap between models and observations in predicting future isoprene loads into the atmosphere: a modelling study.**, NC-2 BBB District Conference, Papillion, NE, 2014 – regional/district
- (33) *Thornton, B. and Barta, C., **Applied learning through case-studies in plant physiology: The ecological, economic and cultural necessity of Mangrove ecosystems.**, 9th Conference on Applied Learning in Higher Education (CALHE), Saint Joseph, MO, 2014 - national
- (34) *Walker, W., *Howe, D., Barta, C., **The effects of abscisic acid (ABA) and gibberellic acid (GA3) on plant development.**, 9th Conference on Applied Learning in Higher Education (CALHE), Saint Joseph, MO, 2014 - national
- (35) *Olsen, B., *Herrod, C., *Reece, R., Barta, C., **The impact of soil acidification on plant nutrition.** 9th Conference on Applied Learning in Higher Education (CALHE), Saint Joseph, MO, 2014 - national
- (36) Barta, C., *Pitcher, S., *Mueller, P., *Hughes, T.O., *Campbell, J., **Isoprene emission from the vegetation: why don't emission models always get it right?**, Plant Biology Meeting, Portland, OR, 2014 - international
- (37) Barta, C., *Campbell, J., *Hughes, T. **Climate change feedback on plant isoprene emissions.**, Missouri Natural Resources Conference, Osage Beach, MO, 2014. – state
- (38) Barta, C., Gramman, J., White, S.L., Schade, G.W., **Do extreme drought conditions alter the relationship between photosynthesis and isoprene emission in oak species? An interannual study along an urban to rural environmental gradient.** Plant Biology – American Society of Plant Biologists Meeting, Providence, RI, 2013 - international
- (39) Gramman, J., Schade, G.W., Bryan, A., Barta, C., **Urban-to-Rural Environmental Gradients in the Houston Metropolitan Area**, AGU Fall Meeting, San Francisco, 2012
- (40) Barta, C., Gramman, J., White, S.L., Schade, G.W., **Drought impact on photosynthesis and isoprene emission capacities of oak species in urban and rural areas of Texas.**, Plant Biology – American Society of Plant Biologists Meeting, Austin, TX, 2012 - international
- (37) Barta, C., *Gramman, J., *White, S.L., Schade, G.W., **Drought impact on photosynthesis and isoprene emission capacities of oak species in urban and rural areas of Texas.**, Plant Biology – American Society of Plant Biologists Meeting, Austin, TX, 2012
- (38) Barta, C., Wachter, R.M., Dunkle, A.M., Salvucci, M.E., **Structural changes associated with the thermal instability of Rubisco activase**, Plant Biology, Montreal, Canada, 2010
- (39) Barta, C., *Gramman, J., *White, S.L., Schade, G.W., **Variations in the photosynthetic carbon assimilation and isoprene emission capacities of Texas oak species during the exceptional spring 2011 drought**, 96th ESA Meeting, Austin, TX, 2011
- (40) Barta, C., Wachter, R.M., Dunkle, A.M., Salvucci, M.E., **Structural changes associated with the thermal instability of Rubisco activase**, Plant Biology, Montreal, Canada, 2010
- (41) Salvucci, M.E., Barta, C., Byers, J.A., *Canarini, A., **Effect of temperature and CO₂ enrichment on photosynthesis and the levels of carbohydrates and isoprenoid pathway products in guayule, a latex-producing shrub**, Plant Biology, Montreal, Canada, 2010
- (42) Wachter, R.M., Barta, C., Chausse, A., Salvucci, M.E., **Biophysical studies of higher plant Rubisco activase**, 19th Western Photosynthesis Conference, Pacific Grove, CA, USA, 2010

- (43) Salvucci, M.E., Barta, C., Carmo-Silva E.A., Chausse, A., Wachter, R.M., **Prospects for improving photosynthetic performance at higher temperatures by re-engineering Rubisco activase**, 19th Western Photosynthesis Conference, Pacific Grove, CA, USA, 2010
- (44) Barta C., *Brilli, F., *Fortunati, A., Loreto, F., **Does the emission of oxygenated plant volatiles reflect stress induced membrane damages?** 3rd Congress on Proton Transfer Mass Spectrometry (PTR-MS Congress), Obergurgl, Austria, 2007
- (45) Barta C., *Brilli, F., *Fortunati, A., Loreto, F., **Does isoprene synthesis in transformed *Arabidopsis thaliana* plants induce oxidative stress resistance by regulating intracellular redox balance?** Gordon Research Conference on Biogenic Hydrocarbons and the Atmosphere, Ventura, California, USA, 2007
- (46) Barta C., *Brilli, F., *Fortunati, A., Behnke, K., Schnitzler, J.P., Loreto F., **Does isoprene play a role in the adaptation of leaves to elevated ultraviolet irradiation by modulating the intra-foliar generation of reactive oxygen species (ROS)?** Botany and Plant Biology Joint Congress, Chicago, USA, 2007
- (47) *Brilli, F., Barta, C., *Fortunati, A., Centritto, M., Loreto, F., **The contribution of different carbon sources to isoprene biosynthesis during and after drought in *Populus* leaves**, ESF- VOCBAS Workshop, Wageningen, Netherland, oral presentation by Brilli, F., 2006
- (48) *Brilli, F., Barta, C., *Fortunati, A., Centritto, M., Loreto, F., **The contribution of different carbon sources to isoprene biosynthesis during and after drought stress in *Populus alba* leaves**, IIIrd European Geosciences Union (EGU) Congress, Wien, Austria, 2006
- (49) Barta, C., Velikova, V., Loreto, F., **The relationship between volatile isoprenoids and abscisic acid (ABA) biosynthetic pathway(s) in leaves**, IIIrd European Geosciences Union (EGU) Congress, Wien, Austria, solicited poster presentation, 2006
- (50) *Fortunati, A., *Brilli, F., Barta, C., Loreto, F., **Isoprene emission changes biological defence against environmental stresses in *Arabidopsis* plants**, XVth FESPB Congress, Lyon, France, 2006
- (51) Barta, C., Velikova, V., Loreto, F., **Isoprene proxies a pool of leaf abscisic acid (ABA) which regulates stomatal opening under both physiological and abiotic stress conditions**, XVth FESPB Congress, Lyon, France, 2006
- (52) *Brilli, F., Barta, C., *Fortunati, A., Centritto, M., Loreto, F., **Isoprene emission occurs independently of photosynthesis in drought stressed leaves**, IGAC Congress, Cape Town, South-Africa, 2006
- (53) *Brilli, F., Barta, C., *Fortunati, A., Centritto, M., Loreto, F., **Online analysis of the ¹³C O₂ labeling reveals the chloroplastic and extrachloroplastic carbon contribution to isoprene synthesis during drought stress in *Populus nigra* leaves**, ISONET -VOCBAS Course, Kuopio, Finland, 2006
- (54) *Fortunati, A., *Brilli, F., Barta, C., Loreto, F., ***Isps* over-expression in *Arabidopsis thaliana* triggers changes in the emission pattern of other volatile organic compounds (VOCs)**, ISONET -VOCBAS Course, Kuopio, Finland, 2006
- (55) Barta, C., Noguez, I., Velikova, V., *Brilli, F., Loreto, F., **Exogenous isoprene alleviates photodamage in xanthophyll-cycle deficient *npq1* *Arabidopsis* mutants**, TERPNET Congress, Wageningen, Holland, 2005
- (56) Barta, C., Noguez Gonzalez, I., Velikova, V., *Brilli, F., Loreto, F., **The role of exogenous isoprene in protecting *Arabidopsis* mutants deficient in the xanthophyll-cycle (*npq1*) from high light**, XVIIth International Botanical Congress, Vienna, Austria, 2005
- (57) Barta, C., Noguez Gonzalez, I., *Brilli, F., Velikova, V., Loreto, F., **Biogenic volatile organic compound (BVOC) emissions from leaves induced by oxidative stresses**, ACCENT Symposium on Biogenic Organic Volatiles, Urbino, Italy, 2005
- (58) Velikova, V., Barta, C., Noguez Gonzalez, I., *Brilli, F., Fares, S., Loreto, F., **Isoprene in a changing environment – effect of high temperature on ozone and isoprene emission**, ACCENT Symposium on Biogenic Organic Volatiles, Urbino, Italy, 2005
- (59) Barta, C., Ogawa, K., Asada, K., Hideg, É., **The role of superoxide-dismutase in detoxifying reactive oxygen species in tobacco leaves exposed to UV-radiation**, 10th Congress of the European Society for Photobiology, Vienna, Austria, 2003
- (60) Barta, C., Vass, I., Hideg, É., **The role of superoxide-dismutase in detoxifying reactive oxygen species in tobacco leaves exposed to 290 or 360 nm UV**, Vth Hungarian Photosynthesis Conference and Advanced Photosynthesis School, Noszvaj, Hungary, 2003

- (61) Barta, C., Kálai, T., Sár, C., Hideg, K., Vass, I., Hideg, É., **Detection of ROS in plants: novel techniques**, IVth Hungarian Photosynthesis Meeting, Szeged, HAS-BRC, 2001
- (62) Hideg, É., Kálai, T., Barta, C., Ogawa, K., Vass, I., Hideg, K., Asada, K., **Detecting stress induced reactive oxygen production in plants**, 9th Congress of the European Society for Photobiology, Lillehammer, Norway, 2001
- (63) Hideg, É., Asada, K., Barta, C., Bornman, J., F., Dudits, D., Hideg, K., Horváth, G. V., Kálai, T., Oberschall, A., Ogawa, K., Sár, C., Szilágyi, A., Vass, I., **Detecting ROS in plants under UV-B stress**, Plant and Ultraviolet-B Radiation Congress, Japan, oral presentation by Hideg E., 2000

Poster presentations – local (since 2012): coordinated over 250 students presenting their in-class applied learning projects at the MWSU Multidisciplinary Research Days, in St. Joseph, MO and summer research presentations of the Barta Team Isoprenado at PORTAL Showcases, representing summer research with 2-3 posters each year.

Language Skills: English, Italian, Romanian and Hungarian (*fluent*); French and Spanish (*basic*)

Service

A) Institutional Service and Leadership

1. **MWSU Faculty Senator (elected), Liaison for the Grievance Committee**, 2019 - 2021
2. **Presidential Speakers Team, Member**, 2019 - present
3. **Chair, Center for Teaching and Learning (CTL), MWSU – Fall Programming Committee**, 2019
4. **Member, General Studies Assessment Scoring Committee**, 2019
5. **Partnership for Undergraduate Lifesciences Education (PULSE, NSF) Workshop**, MWSU Biology representative, DuBois, NE, July 17, 2019
6. **Panelist, Griffon Edge – freshman orientation**, MWSU, 2019
7. **Chair, Center for Teaching and Learning (CTL), MWSU – Fall Programming Committee**, 2018
8. **Chair, Subcommittee**, Undergraduate Curriculum Committee, 2018
9. **Committee Member, Strategic Planning - Programs – MWSU**, 2018
10. **MWSU Departmental Showcase Presenter**, 2018 - present
11. **Panelist, Griffon Edge – freshman orientation**, MWSU, 2018
12. **Chair, Open House Showcase**, Department of Biology, 2018
13. **Secretary**, Undergraduate Curriculum Committee, Subcommittee C, 2017
14. **Faculty Advisor** to the Alpha Delta Gamma (ADG) Sorority, 2016 - present
15. **Chair, Women in Science Coordinator**, Women's History Month at MWSU – 2016 - present
16. **Committee Member & Liaison**, Women in Science and Mathematics institutional committee – 2016 - present
17. **Organizer & Presenter, College for Kids, Science and Science Careers (MWSU – LAS) – Humboldt Elementary**, October 28, 2016.
18. **Contributor**, MWSU Foundation Appreciation Gala, 2015 - present
19. **Committee Member**, Department of Biology Natural History Collection – since 2015
20. **Committee Member**, Women's History Month at MWSU – 2015 - present
21. **Guest Speaker**, Women's History Month at MWSU - 2015
22. **Committee Member**, Biology Activity Organizing Faculty Team - CALHE 2015
23. **Chair**, Academic Standards and Regulations Committee, MWSU, 2014 – present
24. **Member**, Undergraduate Curriculum Committee, Subcommittee C, 2014 – present
25. **Honors Program Contribution**, HON 395 Honors Colloquium Development, Fall 2014 and Spring 2018
26. **Member**, Academic Standards and Regulations Committee, MWSU, 2013 - 2014
27. **Member**, Search Committee, Plant Systematics position, MWSU, 2014 and 2016
28. **Faculty reviewer, Science**, of the Missouri General Education Assessment (MoGEA) test, 2014

29. **Invited speaker**, MWSU Student Chapter of the Wildlife Society, Awards Banquet, 2014
30. **Leo Galloway Herbarium Coordinator & Co-Curator**, Great Plains Herbarium Network, 2013 – present
31. **Faculty Mentor**, Annual Reiss Biological Station Field Trip for Biology Department Students - 2013 - present
32. **Co-advisor**, Tri-Beta Biological Honors Society, 2012 – present
33. **Member**, Principles of Biology – Biology for non-majors departmental committee, 2012 – present
34. **Greenhouse Manager** - Biology Department, 2012 – present
35. **Faculty advisor**, to 40 biology majors/semester – since 2012

B) Professional Service and Leadership

Professional Affiliations:

American Society of Plant Biologists (ASPB)
 Ecological Society of America (ESA)
 American Geosciences Union (AGU)
 Federation of the European Society of Plant Biologists (FESPB)
 Federation of Hungarian Plant Physiologists (FHPP)
 Missouri Academy of Science (MAS)

Director/ Chair/ Committee Member/Panelist

- 1) **Public Relations (PR) Chair, PUI section**, American Society of Plant Biologists (ASPB-PUI) – 2017-2019
- 2) **Volunteer**, Career advising panelist, Plant Biology Meeting, 2017
- 3) **Session Chair**, Ecological Society of America (ESA) Meeting – Chaired the “Aquatic Ecology” half-day session, Fort Lauderdale, FL, August 2016
- 4) **Career Chats**, Careers at PUI institutions, invited workshop panelist, Plant Biology Meeting, 2015
- 5) **Session Chair**, Conference on Applied Learning in Higher Education, 2015
- 6) **Secretary**, Ecological Society of America (ESA) – Primarily Undergraduate Institutions (PUI) section, 2015 – present
- 7) **Career Advisor**, American Society of Plant Biologists (ASPB) - 2015
- 8) **Session Chair**, Ecological Society of America (ESA) Meeting – Chaired the “Plants and Climate Change I” half-day session, Sacramento, CA, August 2014
- 9) **Webmaster**, Ecological Society of America (ESA) – Primarily Undergraduate Institutions (PUI) section, 2014 – present
- 10) **Session Chair**, 9th Applied learning in Higher Education Conference (CALHE) – Chaired a “Student Session”, March, 2014
- 11) **Buell Braun Award Judge**, Ecological Society of America (ESA) Meeting, Sacramento, CA, August 2014
- 12) **Volunteer**, Plant Biology Meeting, Portland, OR, July, 2014

Editor

- **Plants (MDPI)**, Special Issue “Plant Responses to Pollution”, 2019 - 2020
- **Journal of Visualized Experiments (JOVE)**, Special issue on Photosynthesis and Secondary Metabolite Assay Techniques, 2019 - 2020
- **Horticulture (MDPI)**, Special Issue, “Abiotic Stress Responses of Plants” 2018-2019

Reviewer Board

Sustainability (MDPI), 2019 - present

Reviewer

Regular: Functional Plant Biology (over 20 papers), Atmospheric Environment (over 10 papers), Plant Biology (over 5 papers), Conservation Physiology (over 5 papers), International Journal of Molecular Sciences (MDPI) (over 35 papers), Plants (over 10 papers), Sustainability (MDPI), Agriculture (MDPI) (over 5 papers); Molecules (MDPI) (over 5 papers); Horticulture (MDPI) (over 5 papers) (Regular MDPI journals reviewer since 2015)

Ad hoc (less than 4 papers): Transactions of the Missouri Academy of Sciences, Plant Biosystems, Planta, Annales Botanici Fennici, Plant Physiology, Atmosphere (MDPI), International Journal of Environmental Research and Public Health.

Online Resource Reviews: reviewed the Revel Platform (Pearson Education) for General Biology (2016)

Textbook Reviews: reviewed four chapters of the “Biology for the informed citizen” textbook, authored by Donna Bozzone and Douglas Green, published by the Oxford University Press (2014)

Panel member/Ad hoc reviewer: NSF, 2011

C) Community Service and Leadership

- 1) **Director**, Discover Science! Summer Day Camp – Advanced, Inquiry Based Molecular Biology and Biochemistry Program, 2020
- 2) **Tree Expo** – Plant Biology Exhibit, Saint Joseph, MO, 2019
- 3) **Plant Biology Exhibit**, Local and Regional STEM Highschool day, 2019
- 4) **Plant Science Specialist Consultant, Sustainable Environment Advisory Committee for the City of St Joseph, MO** – 2018 - present
- 5) **Biology Program Organizer**, “Sound of Speed Airshow” Exhibit, St. Joseph, MO, August 25 & 26, 2018
- 6) **Biology Program Organizer**, Gil Scout Camp Day – MWSU, 2018
- 7) **Program Coordinator**, Super Science Saturday - 2017- present
- 8) **Guest Speaker**, Science and Society: The Science and Politics of Climate Change, public seminar, St. Joseph, MO - 16 November, 2015
- 9) **Guest Speaker**, Grand River Prairie Days, Missouri Department of Conservation and the Nature Conservancy Organization – 2015 – present, yearly event
- 10) **Workshop Organizer & Guest Speaker, Plants and pollinators**, Master Gardeners of the University of Missouri Extension and the Master Naturalists Organization, March 25, 2015 - April 1, 2015
- 11) **Director**, Mid-America Regional Science and Engineering Fair (MARSEF), 2015, 2015-present: **science judge/panelist**
- 12) **Committee Member, Stewartsville Science Fair** - March 17, 2015
- 13) **Director**, Biology Department, Discover Science! Summer Day Camp, 2014 – present
- 14) **Committee Member**, Missouri Academy of Science, Junior High School Division, 2013 - present
- 15) **District Director**, Missouri Junior Academy of Science, MJAS, 2012- present
- 16) **Program Coordinator**, Tiny Tots Town (with the City of Saint Joseph, MO), 2012- presents
- 17) **Award Committee Member**, for Junior High School Division of MJAS, 2012 - present
- 18) **Biology Demonstration Coordinator**, Briarcliff Elementary School Visit, 2014
- 19) **Science Judge**, MARSEF, 2013 – present
- 20) **Science Fair Judge**, GEMS, Savannah, MO, 2013
- 21) **Science Judge**, West Platte Science Fair, 2012 - present
- 22) **Department Coordinator**, Super Science Saturday – Biology Department, Missouri Western State University and the Saint Joseph Museum, 2012- present
- 23) **Department Representative & Biology Program Coordinator**, Parents as Teachers, Tiny Tots Town – Biology Department, Missouri Western State University, 2012- present
- 24) **Plant Biology Activity coordinator**, Kids as Scientists, 2012

- 25) **Volunteer**, Graduate Teaching Academy, Texas A&M University, 2011- 2012
- 26) **In-field science judge**, 14th Student Research Week, Texas A&M University, 2011
- 27) **School Science Fair Judge**, 2000- present
- 28) **Workshop coordinator** of Texas A&M University science projects, workshops, field and laboratory demonstrations for teachers and students of the Jefferson Davies High School and McCullough Junior High, and employees of the Sam Houston National Forest Ranger Station, TX, 2010-2013
- 29) **Coordinator**, USDA laboratory demonstrations and guided visits of groups of visiting students and lecturers from the Arizona State University and University of Arizona, 2007-2010
- 30) **Coordinator**, Biology Journal Club and seminar coordination, 2000-2007

Professional Development – Courses, Workshops, Technical Training and Certificates

- 1) **Agilent – “Eliminate the Fear Factor” – GC and LC chromatography workshop**, June 18-19, 2019 Olathe, KS
- 2) **Partnership for Undergraduate Lifesciences Education (PULSE, NSF) Workshop**, MWSU representative, DuBois, NE, July 17, 2019
- 3) **Primarily Undergraduate Institutions Workshop**, American Society of Plant Biologists (ASPB), Honolulu, HI – June 24, 2017
- 4) **Six-Sigma White Belt Certificate (IASSC)** – certificate in quality control, 2016
- 5) **Tutorial, “Panopto,”** MWSU - August 25, 2015
- 6) **Workshop, “Federal Funding,”** Ecological Society of America (ESA), Baltimore, MD - August 13, 2015
- 7) **Workshop, “Kill the PowerPoint: Exploring Teaching Moments Via Impromptu Chalk Talks”** Ecological Society of America (ESA), Baltimore, MD - August 13, 2015
- 8) **Workshop, “Build Your Career with the Plant Physiology and Plant Cell,”** American Society of Plant Biologists (ASPB), Minneapolis, MN - July 27, 2015
- 9) **Workshop, “Education Workshop: Lessons on How to Study – Evidence from Cognitive Psychology”** American Society of Plant Biologists (ASPB), Minneapolis, MN - July 28, 2015
- 10) **Workshop, “Plant Biology Research at Primarily Undergraduate Institutions”** American Society of Plant Biologists (ASPB), Minneapolis, MN - July 25, 2015
- 11) **Great Plains Herbarium Network web interface training workshop**, Botanical Symposium, Saint Louis, MO, 2013
- 12) **“Writing and Designing NSF Proposals” Certificate**, NSF Grant Training Center, Kansas City, MO, 2013
- 13) **Global Positioning Systems**, Missouri Western State University and the Western Institute, Certified User, Saint Joseph, MO, 2013
- 14) **Graduate Teaching Academy Certificate**, Texas A&M University, College Station, TX, 2011
- 15) **Radiation Safety Course** – Radiation Physics and Engineering, Phoenix, AZ, 2008
- 16) **“Techniques in plant membrane proteomics” Training School**, COST- EC program, Munich, Germany, 2007
- 17) **“Gas exchange technology”**, Eco-Search and LI-COR Biosciences, Citta di Castello, Italy, 2007
- 18) **“Stable Isotopes, Plant VOCs and Secondary Organic Aerosols in Biosphere- Atmosphere Carbon Exchange”** ISONET -VOCBAS Short Course, Kuopio, Finland, 2006
- 19) **Proton Transfer Reaction-MS Training Courses (II&III)**, Obergurgl, Austria, 2005 and 2006
- 20) **ISONET Summer-School (II)**, Benediktbeuren, Germany, 2005
- 21) **“Biogenic Volatile Organic Compounds in the Plant-Environment Interactions” (I)** VOCBAS Summer School, Pieve Tesino, Italy, 2004
- 22) **“Solid-Phase Micro-Extraction”** Sigma-Aldrich and Supelco, Rome, Italy, 2004
- 23) **International Advanced Course - Chemistry and Biochemistry of Antioxidants**, Wageningen, Netherland, 2002
- 24) **Bioinformatics Course**, Polish Academy of Sciences, Warsaw, Poland, 2002