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I. PERSONAL HISTORY AND PROFESSIONAL EXPERIENCE

A. Educational Background

University of Sheffield, U.K., B.Sc., Department of Animal and Plant Sciences, 1998
University of Sheffield, U.K., Ph.D., Department of Animal and Plant Sciences, 2003

B. Academic Positions

2002-2003 Fulbright Scholar, Department of Plant Biology, UIUC
2002-2004 Postdoctoral Research Associate, Department of Plant Biology, UIUC
2004-2007 Research Fellow, Institute for Genomic Biology, UIUC
2007-2013 Assistant Professor, Department of Plant Biology, UIUC
2007-2013 Assistant Professor, Institute for Genomic Biology, UIUC
2013-2018 Associate Professor, Department of Plant Biology, UIUC
2013-2018 Associate Professor, Institute for Genomic Biology, UIUC
2013-2018 Associate Professor, Department of Crop Sciences, UIUC
2016-2017 Visiting Scientist, Carnegie Institute for Plant Biology, Stanford, CA
2018- Professor, Department of Plant Biology, UIUC
2018- Professor, Institute for Genomic Biology, UIUC
2018- Professor, Department of Crop Sciences, UIUC
2019-2020 Acting Head of Department, Department of Plant Biology, UIUC
2019-2020 Theme Leader, Feedstock Production, CABBI
2019- Professor, Center for Digital Agriculture, UIUC
2020- Head of Department, Department of Plant Biology, UIUC
2020- Director, Center for Advanced Bioenergy & Bioproducts Innovation, UIUC

C. Other Professional Employment

2013 Consultant to Koch Fertilizer

D. Honors, Recognitions, and Outstanding Achievements

1998 J.G. Boswell Prize for B.Sc. in Plant Sciences, University of Sheffield
1999 Scurfield Bursary for Overseas Ph.D. Research, University of Sheffield
2002 Fulbright Scholar
2007 Teacher Ranked Excellent by Students (*Plants & Global Change*)
2008 Dean's Teaching Fellow, College of Liberal Arts & Sciences, UIUC
2008 Teacher Ranked Excellent by Students (*Global Warming, Biofuels, Food*)
2009 Teacher Ranked Excellent by Students (*Plants & Global Change*)
2010 Faculty Fellow, Environmental Change Institute, UIUC
2011 Beckman Fellow, Center for Advanced Studies, UIUC
2011 Teacher Ranked Excellent by Students (*Plants & Global Change*)
2013 I.C. Gunsalus Fellow, College of Liberal Arts and Sciences, UIUC
2013 Arnold O. Beckman Research Award
2015 Teacher Ranked Excellent by Students (*Plants & Global Change*)

- 2016 Calvin-Benson Award for outstanding early career research, International Society of Photosynthesis Research
- 2017 University Scholar, Office of the President, University of Illinois System
- 2018 Teacher Ranked Excellent by Students (*Plants & Global Change*)
- 2019 Elected Fellow of the American Association for the Advancement of Science (AAAS)
- 2020 Martin & Ruth Massengale Lecturer, Crop Science Society of America Annual Meeting.
- 2020 Teacher Ranked Excellent by Students (*Plants & Global Change*)
- 2021 Arnold O. Beckman Research Award

E. Invited Lectures and Invited Conference Presentations

1. How will the major agricultural ecosystem of the U.S. respond to global climate change in 2050? (2003) *Fulbright Commission Lecture, Astra-Zeneca HQ, UK.*
2. How will leaf respiration respond to future CO₂-rich atmospheres? (2004) *Department of Ecology and Evolutionary Biology, University of Kansas.*
3. How will leaf respiration respond to future CO₂-rich atmospheres? (2004) *Department of Crop Sciences, UIUC.*
4. Measuring diurnal courses of gas exchange and chlorophyll fluorescence in the field. (2005) *International Workshop on Photosynthetic Gas Exchange and Chlorophyll Fluorescence Measurement, Universidad Autonoma de Nuevo Leon, Mexico.*
5. Microarray analysis of gene expression responses in soybean to growth at elevated [O₃]. (2006) *USDA NE1013 National Program Workshop, UIUC.*
6. Food for thought: crop responses to climate change in the 21st century. (2006) *Natural Science Colloquia, Illinois Wesleyan University.*
7. Ecological genomics: new insights from microarray analysis of soybean responses to elevated CO₂ and O₃ under Free-Air Concentration Enrichment. (2006) *Department of Ecology and Evolutionary Biology, University of Colorado.*
8. Food for thought: Crop responses to climate change in the 21st century. (2006) *International Education Symposium, Hathaway Brown School, Shaker Heights, OH.*
9. Plant responses to global change and a new genomic ecology approach. (2006) *Department of Plant Biology, UIUC.*
10. Elevated CO₂ does not stimulate C₄ photosynthesis directly, but impacts water relations and indirectly enhances carbon gain during drought stress in maize (*Zea mays*) grown under free-air CO₂ enrichment (FACE). (2006) *Crop Science Society of America Annual Meeting, Indianapolis, IN.*
11. Ecological genomics: new insights from microarray analysis of soybean responses to elevated CO₂ and O₃ under Free-Air Concentration Enrichment. (2006) *Department of Molecular Genetics and Microbiology, University of Florida.*
12. Plant responses to global change and a new genomic ecology approach. (2007) *Division of Biology, Imperial College, London, UK.*

13. How will the gene expression profile, biochemistry and physiology of soybean leaves respond to growth at elevated [CO₂] under open-air field conditions? (2007) *Institute for Genomic Biology Fellows Symposium, UIUC.*
14. Using microarrays to reveal the mechanism of crop responses to global climate change under field conditions. (2007) *International Rice Research Institute Workshop – Cool Rice for a Warmer World, Huazhong Agricultural University, Wuhan, China.*
15. Functional genomics and field ecology: Mechanistic insights from microarray analysis of soybean responses to elevated [CO₂]. (2007) *Ecological Society of America Annual Meeting, San Jose, CA.*
16. Design and analysis of microarray experiments for global change research. (2007) *Workshop on Statistical Analysis and Data Integration in Plant Genomic Ecology Research, UIUC.*
17. Physiological, biochemical and molecular analysis of the coordinated up-regulation of photosynthetic, respiratory and biosynthetic metabolism in soybean leaves under Free-Air CO₂ Enrichment. (2007) *14th International Congress of Photosynthesis, Glasgow, UK.*
18. Food (and fuel) for thought: Plant responses to climate change. (2008) *National Climate Change Teach-In, Urbana Free Library, Urbana, IL.*
19. Genomic Ecology of soybean responses to elevated [CO₂] and drought. (2008) *Facing the future, International Joint Workshop of AspenFACE, SoyFACE and SFB projects, Rhinelander, WI.*
20. Food (and fuel) for thought: Plant responses to climate change. (May 2008) *Earth Day Lecture, Students for Environmental Concerns, UIUC.*
21. Corn and soybean responses to climate change (May 2008) *Monsanto Headquarters, St Louis.*
22. Lecture to High School Science Teachers conference on The Global Demand for Biofuel (June 2008), titled, “*The Ecology of Biofuels*”.
23. Lecture to Middle School Girls attending summer science camp, Girls Adventures in Math, Engineering and Science (GAMES; July 2008), titled *Climate Change and Food.*
24. The Genomic Basis of stimulated respiration by plants growing under elevated carbon dioxide. (Aug 2008) *Gordon Research Conference, Photosynthesis: from genome to biome.*
25. Lecture to visiting delegation from AAPRESID, the Argentinean No-Till Farmers Association (Sept 2008), titled *Food (and fuel) for thought: plant responses to climate change.*
26. Genomic ecology of soybean responses to elevated [CO₂]. (Nov 2008) *UIUC Keck Center for Comparative and Functional Genomics Microarray Workshop.*
27. Crop responses to climate change (March 2009) *A New Green Revolution Meeting Global Food and Energy Demands. A Joint Area Centers Symposium.*
28. Genomic, Physiological & Ecological Responses of Soybeans to Elevated [CO₂]: A Case Study from SoyFACE (March 2009) *Ecological Society of Japan, Annual Meeting.*

29. Genomic, physiological and ecological responses of soybean to free-air CO₂ enrichment (March 2009) *500th seminar at National Institute for Agro-Environmental Sciences, Tsukuba, Japan.*
30. Genomic, physiological and ecological responses of soybean to free-air CO₂ enrichment (March 2009) *National Agricultural Research Center for Tohoku Region, Morioka, Japan.*
31. Genomic Ecology of Global Change (April 2009) *National Evolutionary Synthesis Center Workshop, Toward A New Synthesis of the Evolutionary History and Ecology of C₄ Grasses, Durham, NC.*
32. Transcriptional reprogramming of leaf metabolism under elevated CO₂ stimulates respiration in soybean (May 2009) *International Conference for Plant Mitochondrial Biology.*
33. Lecture to Middle School Girls attending, Girls Adventures in Math, Engineering and Science summer science camp at UIUC (July 2009), titled *Climate Change and Food.*
34. Lecture to visiting delegation from AAPRESID, the Argentinean No-Till Farmers Association (Sept 2009), titled *Food (and fuel) for thought: plant responses to climate change.*
35. Food for thought – crop responses to climate change (October 2009) *Meeting of Students for Environmental Concerns, UIUC.*
36. How will elevated CO₂ impact photosynthesis of tropical plants? (November 2009) *23rd New Phytologist Symposium Carbon Cycling in Tropical Ecosystems, Guangzhou, China.*
37. The Environmental Change Biology Podcast Project (December 2009) *Environmental Change Institute Annual Symposium, UIUC.*
38. Transcriptional reprogramming of leaf carbon metabolism in plants growing at elevated [CO₂] (March 2010) *Kansas State Functional Genomics Consortium Symposium, Manhattan, KS.*
39. Global environmental change impacts on plant function and agroecosystem services (April 2010) *Geography Department Seminar, King's College London, UK.*
40. The elevated CO₂ by drought interaction: a saviour or false hope for future food production? (April 2010) *Stockholm Environmental Institute Seminar, University of York, UK.*
41. The elevated CO₂ by drought interaction: a saviour or false hope for future food production? (April 2010) *Department of Animal and Plant Sciences Seminar, University of Sheffield, UK.*
42. Rising atmospheric CO₂ and the future of C₄ crops for food and fuel (August 2010) *Symposium on C₄ Plant Biology, CAS-MPG Partner Institute for Computational Biology, Chinese Academy of Sciences, Shanghai, China.*
43. Crop adaptation for an elevated [CO₂] world (August 2010) *Royal Society International Scientific Seminar, Atmospheric CO₂ and green evolution, Kavli Royal Society Center, UK.*

44. Genomic ecology of plant responses to global environmental change (November 2010) *Using Functional Genomics to Harness Adaptive Traits in Australian Native Plants Workshop, University of Western Australia, Australia.*
45. What will be the effect of the climate change on crop production (November 2010) *Environmental Change Institute Annual Symposium, UIUC.*
46. Do we really need more experiments to understand how vegetation change is driven by rising atmospheric CO₂ concentrations? (January 2011) *South African CO₂ and Vegetation Consortium Workshop, Grahamstown, South Africa.*
47. Soybean and maize responses to global environmental change at SoyFACE (March 2011) *CO₂ Symposium, Smithsonian Tropical Research Institute, Panama.*
48. Transcriptional reprogramming of respiration to optimize plant metabolism in response to stress and resource availability (May 2011) *Institute for Genomic Biology Fellow's Symposium, UIUC.*
49. Transcriptional reprogramming of respiration in response to global environmental change (May 2011) *Penn State Plant Biology Symposium.*
50. Rising atmospheric CO₂ and the future of C4 crops for food and fuel (July 2011) *International Botanical Congress, Melbourne, Australia.*
51. Transcriptional reprogramming of respiration under elevated CO₂ and elevated O₃ (July 2011) *International Botanical Congress, Melbourne, Australia.*
52. Non-optimal responses to drought stress of soybean grown at elevated CO₂ in the field (July 2011) *International Botanical Congress, Melbourne, Australia.*
53. New rice for an elevated CO₂ future (Nov 2011) *International Rice Research Institute, Philippines.*
54. Climate-proofing rice for farmers in the tropics (December 2011) *Environmental Change Institute Annual Symposium, UIUC.*
55. Environmental change impacts on soybean rooting, food production and ecosystem function (Dec 2011) *Environmental Change Institute Annual Symposium, UIUC.*
56. Climate change and crops (Jan 2012) Lecture to Mahomet Junior High School Students
57. Transcriptional reprogramming of respiration in response to global environmental change (March 2012) *Okazaki Biology Conference 8, Japan.*
58. Plant interactions with the atmospheric CO₂ pool – a phytocentric view of the global carbon cycle (April 2012) *Department of Geology, UIUC.*
59. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (May 2012) *Lancaster Environment Center, University of Lancaster, UK.*
60. Data and models for predicting water processes in rainfed agriculture – the plant scale (June 2012) *Water in Bioenergy Agroecosystems Workshop, Chicago, Energy Biosciences Institute.*
61. Next-generation elevated CO₂ experiments for climate-proofing crops (July 2012) *World Crop FACE Workshop, Tsukuba, Japan.*

62. SoyFACE overview (July 2012) *World Crop FACE Workshop, Tsukuba, Japan.*
63. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (July 2012) *World Crop FACE Workshop, Tsukuba, Japan.*
64. Integration of physiology, genomics and genetics to understand and improve crop productivity in a changing world (July 2012) *CSIRO, Canberra, Australia.*
65. Integrating transcriptomics and physiology (September 2012) *SEB Plant Environmental Physiology Group, Ecophysiology Techniques Workshop, Lisbon, Portugal.*
66. Acclimation of stomatal function to elevated O₃ (September 2012) *White Rose Workshop on Regional Scale Ecosystem Model Development, University of York, UK (presentation via video conference)*
67. Plants iView: a plug-n-play outreach program for Plant Biology (March 2013) *Department of Plant Biology Colloquium, UIUC.*
68. A universal playbook for stomata in C₃ plants: fact or fiction? (April 2013) *Department of Plant Biology Colloquium, UIUC.*
69. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (May 2013) *Interdisciplinary Plant Group Symposium on Roots, University of Missouri, Columbia, MO.*
70. Transcriptional reprogramming of plant metabolism in response to global environmental change (May 2013) *Beijing Genome Institute-Institute for Genomic Biology Workshop, UIUC.*
71. Corn (June 2013) *Workshop on for Champaign Unit 4 High School Teachers.*
72. Elevated CO₂ ameliorates stress under mild drought but exacerbates stress under severe drought in soybean (July 2013) *American Society of Plant Biologists Annual Meeting, Providence, RI.*
73. SoyFACE: a field laboratory for adaptation of C₄ (and C₃) crops to global environmental change (August 2013) *International Symposium for C₄ and CAM Plant Biology, UIUC.*
74. Have we been ignoring physiological plasticity and genetic variation in stomatal function as a significant source of error in models of water and carbon fluxes? (August 2013) *International Photosynthesis Congress, St Louis, MO.*
75. A universal playbook for stomata in C₃ plants: fact or fiction? (August 2013) *ATMS571 Department of Atmospheric Science, UIUC.*
76. Plants iView: a plug-n-play outreach program for Plant Biology (September 2013) *Purdue University.*
77. Elevated CO₂ ameliorates stress under mild drought but exacerbates stress under severe drought in soybean (October 2013) *Physiological and Molecular Plant Biology Seminar, UIUC.*
78. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (January 2014) *Department of Plant Biology Seminar, Carnegie Institute, Palo Alto, CA.*

79. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (February 2014) *Department of Plant Sciences Seminar, UC Davis, CA.*
80. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (February 2014) *Hydrosystems Group Seminar, UIUC.*
81. Should the paradigm of reduced plant drought stress at elevated CO₂ be hung out to dry? (March 2014) *MEPS Symposium, Texas A&M, College Station, TX.*
82. Should the paradigm of reduced plant drought stress under elevated [CO₂] be hung out to dry? (April 2014) *Monsanto, St Louis, MO.*
83. Targets for improving simulation of plant carbon-water interactions in earth system models (April 2014) *New Phytologist Workshop on Representation of Photosynthesis in Earth System Models, Montauk, NY.*
84. Crop Adaptation & High-Throughput Field Phenotyping (June 2014) *Monsanto-Illinois Meeting on Crop Nutrient Management, Institute for Genomic Biology, UIUC.*
85. Elevated CO₂ ameliorates stress under mild drought but exacerbates stress under severe drought in soybean (July 2014) *Society for Experimental Biology Annual Meeting, Manchester, UK.*
86. A universal playbook for stomata in C₃ plants: fact or fiction? (July 2014) *American Society of Plant Biologists Annual Meeting, Portland, OR.*
87. Using genomic tools to understand crop responses to a future, elevated [CO₂] world (July 2014) *Genomics for Teachers Workshop, Institute for Genomic Biology, UIUC.*
88. Measurement, analysis and interpretation of A/c_i curves to evaluate the factors limiting photosynthetic CO₂ fixation (Sept 2014) *SEB Plant Environmental Physiology Group, Ecophysiology Techniques Workshop, Lisbon, Portugal.*
89. Crop responses and adaptation to climate change (Oct 2014) *UK-US Taskforce on Resilience of the Global Food Supply Chain to Extreme Events, Willis Tower, Chicago, IL.*
90. The future of crops with global environmental change (Dec 2014) *Chambana Science Café, Pizza M, Urbana, IL.*
91. How much will elevated CO₂ offset crop yield losses in a hotter, drier future? (December 2014) *Departmental Seminar, Penn State University, PA.*
92. Genomic Solutions for Adapting Crops to Global Change (Feb 2015) *Osher Life Long Learning Institute, Champaign, IL.*
93. SoyFACE: A field laboratory for study of crop global change biology (March 2015) *Visit of ARPA-E panel managers to UIUC, Institute for Genomic Biology, UIUC.*
94. My teaching and research with LAS students (repeated 3 times, March and April 2015) *Admitted Students Day, LAS, UIUC.*
95. How much will elevated CO₂ offset crop yield losses in a hotter, drier future? (May 2015) *UGA Plant Center Symposium, University of Georgia, GA.*

96. Modification of the response of photosynthetic productivity to drought by elevated CO₂ concentrations – has its significance been misunderstood? (June 2015) *School of Biological Sciences, University of Essex, UK.*
97. Measurement, analysis and interpretation of leaf gas exchange (July 2015) *The Flux Course, Rocky Mountain Research Station, CO.*
98. Genetic and genomic approaches to understand and improve maize responses to ozone (Sept 2015) *NSF Plant Genome Research Program PIs Meeting, Washington DC.*
99. Adapting crops to climate change – a 21st century science problem (Sept 2015) *LAS Recruitment Event, UIUC.*
100. Adapting crops to climate change – a 21st century science problem (Sept 2015) *Looking in the Right Direction: Carl Woese and the New Biology, IGB, UIUC.*
101. A rapid optical profilometry and computer vision method for phenotyping leaf epidermal structure applied to genetic and environmental control of stomatal patterning in the model C₄ species maize and setaria (Nov 2015) *Workshop on Plant Development and Drought Stress, Asilomar, CA.*
102. Adapting Crops to Climate Change (Nov 2015) *The IGB Fellows Alumni lecture, IGB, UIUC.*
103. Rapid optical profilometry and computer vision of leaf epidermal structure applied to genetic and environmental control of stomatal patterning in model C₄ species (Jan 2016) *The Plant and Animal Genome Conference, San Diego, CA.*
104. High fidelity-rapid phenotyping in field experiments to advance adaptation of crops to global change (Apr 2016) *Collaboration Symposium, Donald Danforth Plant Science Center, St Louis, MO.*
105. High fidelity-rapid phenotyping in field experiments to advance adaptation of crops to global change (Apr 2016) *Department of Plant Biology Colloquium, UIUC.*
106. Targets for Crop Adaptation Discovered in Free-Air CO₂ Enrichment (FACE) Field Experiments (May 2016) *Adaptation Futures 2016 – practices and solutions, Rotterdam, The Netherlands.*
107. SoyFACE: A field laboratory for study of crop global change biology (May 2016) *Visit of Provost Delegation from Birmingham University, UK to UIUC.*
108. High fidelity detection of QTL for biomass production from rapid imaging of a C₄ grass crop in the field (July 2016) *American Society of Plant Biologists Annual Meeting, Austin, TX.*
109. Improving drought tolerance and water use efficiency in C₄ crops (Aug 2016) *Agronomy Day, Illinois Experimental Research Farm, UIUC.*
110. Rising [CO₂] as a benefit and challenge to improving crop photosynthesis (Aug 2016) *Plenary lecture for Calvin Award, International Congress on Photosynthesis Research, Maastricht, The Netherlands.*

111. Vertically integrating analyses of plant carbon, water and nutrient relations to understand and improve crop performance (Oct 2016) *Seminar, Department of Global Ecology, Carnegie Institute for Science, Stanford, CA.*
112. Water Efficient Sorghum Technologies (Nov 2016) *ARPA-E TERRA and OPEN program PIs meeting, Phoenix, AZ.*
113. High fidelity phenotyping of productivity, WUE and drought traits in the model C4 grasses maize, sorghum and setaria (March 2017) *Seminar, International Rice Research Institute, Philippines.*
114. Development and application of novel phenotyping techniques to understand the genetic control of productivity and drought traits in the model C4 grass Setaria (Feb 2017) *Plenary talk, 2nd International Genetics Conference, Donald Danforth Plant Science Center, St Louis, MO.*
115. Stomata and water use efficiency at the core of plant-environment interactions (Apr 2017) *Seminar, School of Plant Sciences, University of Arizona, AZ.*
116. Water Efficient Crop Technologies (Sept 2017) *Value Proposition, Ag Innovation Showcase, St Louis, MO.*
117. Phenomics of stomata and water use efficiency in model C4 crops (Feb 2018). *Phenome 2018, Tucson, AZ.*
118. Phenomics of stomata and water use efficiency in model C4 crops (March 2018). *UIUC Department of Plant Biology Departmental Colloquium.*
119. High-throughput Phenotyping of Leaf Traits to Understand Plant Carbon, Water and Nitrogen Relations (April 2018). *Plant Phenomics Symposium, University of Nebraska.*
120. Academic Highlights – The Illinois campus as an inventor’s workshop for the crops of the future (Sept 2018). *University of Illinois Board of Trustees Meeting.*
121. Stress tolerant crops for the future (Oct 2018) *Presentation to UIUC Alumni and Donors, World of Genomics, St Louis Science Center.*
122. Phenomics of stomata and water use efficiency in model C4 crops (June 2018). *American Society for Plant Biology Annual Meeting, Montreal, Canada.*
123. Plant science for sustainability and resilience to climate change (April 2018) *Agriculture and Consumer Economics Library, UIUC.*
124. Water Efficient Sorghum Technologies (Oct 2018) *ARPA-E TERRA and OPEN program PIs meeting, San Francisco, CA.*
125. Studying climate change on the farm: free-air CO₂ enrichment experiments (Oct 2018) *ARPA-E TERRA and OPEN program PIs meeting, San Francisco, CA.*
126. Phenomics of stomata and water use efficiency in model C4 crops (September 2018). *Bayer Crop Science Seminar, St Louis, MO.*
127. 25 years of FACE experiments – evidence for or against elevated CO₂ reducing evapotranspiration and ameliorating plant drought stress? (August 2018) *Ecological Society of America Annual Meeting, New Orleans, LA.*

128. Phenomics of stomata and water use efficiency in model C4 crops (August 2018). *University of New Mexico Department of Biology Departmental Colloquium.*
129. High-throughput Phenotyping of Leaf Traits to Understand Plant Carbon, Water and Nitrogen Relations (September 2018). *SEB Plant Environmental Physiology Group, Ecophysiology Techniques Workshop, Lisbon, Portugal.*
130. Phenomics of stomata and water use efficiency in model C4 crops (March 2019). *UIUC Center for Digital Agriculture Kickoff Event.*
131. Phenomics of stomata and water use efficiency in model C4 crops (May 2019). *UIUC Physiological and Molecular Plant Biology Seminar.*
132. Addressing the challenge of climate change for crops (June 2019). *Bayer Crop Science Fellows Colloquium, St Louis, MO.*
133. Phenomics of stomata and water use efficiency in model C4 crops (November 2019). *Purdue University Seminar.*
134. Using computer vision to relieve the crop phenotyping bottleneck (February 2020). *UIUC Center for Digital Agriculture Symposium*
135. Progress toward the “plants as factories” paradigm for bioenergy in grasses (February 2020). *DOE Genomic Science Program Annual PIs meeting*
136. The Phenomics of Stomata and Water Use Efficiency in C4 crops (December 2020). *ARPA-E TERRA Program PIs Meeting*
137. The Phenomics of Stomata and Water Use Efficiency in C4 crops (October 2020). *Martin and Ruth Massengale Lecture to the Annual Meeting of the Crop Science Society of America*
138. The Phenomics of Stomata and Water Use Efficiency in C4 crops (Feb 2021). *University of Missouri Interdisciplinary Plant Group seminar*
139. The Phenomics of Stomata and Water Use Efficiency in C4 crops (March 2021). *UIUC Department of Plant Biology colloquium*
140. The Phenomics of Stomata and Water Use Efficiency in C4 crops (April 2021). *DOE BRC Sorghum workshop*
141. Overcoming bottlenecks in field-based root phenotyping using thousands of minirhizotrons (May 2021). *11th Symposium of the International Society of Root Research and Rooting 2021*
142. Phenotyping stomatal anatomy and function (Sept 2021) *Society for Experimental Biology Environmental Physiology Group, Virtual Workshop on Field and Laboratory Techniques*
143. Lessons on G x E from a phenomics approach to studying stomata and water use efficiency in C4 crops (Oct 2021) *Purdue Graduate Student Plant Science Symposium*

144. Research-Driven Innovation for the Decarbonized Economy (Apr 2022) *Pennsylvania State University Biorenewables Symposium*
145. The Phenomics of Stomata and Water Use Efficiency in C4 crops (May 2022). *Keynote, UIUC Institute for Genomics Biology, Fellow's Symposium.*
146. Phenomics of Stomata and Water Use Efficiency in C4 crops (May 2022). *Center for Sorghum Improvement Seminar, Kansas State University.*
147. Phenomics of Stomata and Water Use Efficiency in C4 crops (June 2022). *Gordon Research Conference, Vascular Plant Biology.*

F. Offices Held in Professional Societies

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|----------------|---|
| 2018 – 2019 | Convener, Crop Molecular Genetics Group, Society for Experimental Biology, UK |
| 2019 – present | Convener, Photosynthesis Group, Society for Experimental Biology, UK |

G. Editorship of Journals or Other Learned Publications

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|----------------|---|
| 2009 – 2017 | Editor, <i>Photosynthesis Research</i> |
| 2012 – 2016 | Editor, <i>Food and Energy Security</i> |
| 2013 – 2018 | Editorial Review Board, <i>Plant Cell & Environment</i> |
| 2017 – 2020 | Guest Editor, <i>The Plant Cell</i> |
| 2017 – 2020 | Academic Editor, <i>Plant Direct</i> |
| 2019 – present | Associate Editor, <i>Plant Cell & Environment</i> |

H. Grants Received

CURRENT PROJECTS

I Baxter, A Cousins, J Dinneny, A Kausch, **ADB Leakey**, T Mockler, S Rhee, D Voytas; *Using systems approaches to improve photosynthesis and water use efficiency in sorghum*, DOE Biosystems Design, 09/2017 – 09/2022, \$ 16,067,714 (\$2,127,099 to UIUC).

ADB Leakey, EH DeLucia, SP Long, S Moose, H Zhao, M Khanna, ME Hudson, C Rao, W Yang, V Singh, *et al.*; *Center for Advanced Bioenergy and Bioproducts Innovation*, DOE Bioenergy Research Center, 12/2017 – 11/2022, \$104M.

ADB Leakey, I Baxter, J Dinneny C Pignon; *Transcriptomics of water use efficiency traits in sorghum and setaria*, Joint Genome Institute Community Sequencing Project, 2018-2024.

JC Mortimer, F Brandizzi, **ADB Leakey**, H Scheller, D Ware, Z Xin; *Sequencing of sorghum EMS mutants*, Joint Genome Institute Community Sequencing Project, 2018-2021.

V Adve *et al.* (**ADB Leakey senior personnel**); *Artificial intelligence for future agricultural resilience, management, and sustainability*, USDA-NIFA Artificial Intelligence Institute, 09/01/2020 – 08/31/2025, \$19,998,045 (approx \$350,000 to Leakey).

ADB Leakey, EA Ainsworth; *Using high throughput phenotyping to assess the leaf economics spectrum of C4 bioenergy crops*. Arnold O. Beckman Research Award, UIUC, 2021, \$29,848.

A Jones, **ADB Leakey**, C Jones; *Collaborative Research: RoL – Rules for Dynamic-Light Environmental Sculpting of Genomes*. NSF Rules of Life, Integrative Organismal Systems; 01/04/2021 – 01/03/2025, \$1,212,609 to UIUC.

PAST PROJECTS

ADB Leakey; *Astra-Zeneca Fulbright Scholar*, Fulbright Commission, 07/2002 - 07/2003, \$22,000.

EH Delucia, EA Ainsworth, M Berenbaum, **ADB Leakey**, DR Ort, A Zangrel; *Genomic Regulation of the Response of an Agroecosystem to Elements of Global Change*, Department of Energy, 01/2009 – 12/2009, \$250,000.

SP Long, **ADB Leakey**, EH DeLucia, DR Ort; *How will productivity, evapotranspiration & insect herbivory of the Midwest agroecosystem respond to the combined drought and elevated [CO₂] anticipated for 2050?* DOE National Institute for Climate Change Research, 07/2007 - 06/2010, \$368,648.

ADB Leakey, EA Ainsworth; *Integrated Enhancement of Global Change Biology Classes*, Environmental Change Institute - UIUC, 06/2009 – 05/2010, \$4,880.

TE Twine and **ADB Leakey**; *Agroecosystems: Effects of changes in climate, carbon dioxide, and ozone over the central United States*, DOE National Institute for Climate Change Research, 05/2008 - 04/2011, \$360,717.

EA Ainsworth, CJ Bernacchi, EH Delucia, **ADB Leakey**, DR Ort; *ECI Student Ambassadors for SoyFACE*, Environmental Change Institute - UIUC, 06/2009 – 05/2011, \$25,000.

ADB Leakey; *ECI Faculty Fellowship*, Environmental Change Institute - UIUC, 06/2010 – 05/2011, \$10,000.

ADB Leakey, DR Ort; *Altered Root-To-Shoot Signaling and Osmotic Adjustment as Key Determinants of Soybean Stress Tolerance Under Drought and Elevated [CO₂]*, USDA NIFA, 01/2010 – 12/2012, \$349,266.

ADB Leakey; *Environmental Change Impacts on Crop Rooting, Food Production and Ecosystem Function*, Environmental Change Institute - UIUC, 06/2010 – 05/2012, \$24,790.

ADB Leakey; *Plants iView – An After School Program in Plant Biology*, American Society of Plant Biologists Education Foundation, 10/2011 – 9/2012, \$19,919.

ADB Leakey; *Testing Setaria drought response under Midwest U.S. field conditions*, Donald Danforth Plant Science Center, 10/2011 – 12/2012, \$99,828.

ADB Leakey; *Plants iView – An After School Program in Plant Biology*, Office for Public Engagement, UIUC, 01/2012 – 12/2012, \$19,744.

ADB Leakey; *Global Environmental Change Outreach Project*, UIUC Center for Global Studies, 1/2013 – 12/2013. \$3000.

ADB Leakey; Arnold O. Beckman Research Award, UIUC, 2013, \$30,000.

ADB Leakey; *Meeting: C4 + CAM Plant Biology 2013*, NSF IOS, 4/2013 – 3/2014, \$12,800.

ADB Leakey; *C4 and CAM Plant Biology Symposium 2013*, DOE, 6/2013-5/2014, \$9,420.

ADB Leakey; *EBI 2011: Sustainability of Woody Biofuel Feedstocks*, Energy Biosciences Institute, 1/2012 – 12/2014, \$602,931.

ADB Leakey; *Sustainability of Woody Biofuel Feedstocks*, Energy Biosciences Institute, 1/2015 – 12/2015, \$101,401.

I Baxter, A Cousins, J Dinneny, **ADB Leakey**, T Mockler, S Rhee, Voytas; *A systems-level analysis of drought and density response in the model C4 grass Setaria viridis*, DOE Biosystems Design, 10/2012 – 8/2018, \$ 12,140,437 (\$1,997,547 to UIUC).

EA Ainsworth, **ADB Leakey**, P Brown, L McIntyre; *Genetic and Genomic Approaches to Understand and Improve Maize Responses to Ozone*, NSF Plant Genome, 1/2013 – 12/2019, \$5,733,823.

EA Ainsworth, **ADB Leakey**, D Bush; *Phloem Loading as a Driver of Plant Photosynthetic Responses to Carbon Supply*, USDA-AFRI, 1/2015-12/2018, \$474,099.

ADB Leakey; *Student Ambassadors of System Biology for Sustainable Food and Energy*, Department of Ed. Title VI National Resource Center in Global Studies, 2014-2018 \$40,000.

ADB Leakey, CJ Bernacchi, PJ Brown, E Buckler, J Burke, T Clemente, M Gore, SP Long, DR Ort, E Spalding ; *Novel Technologies to Solve the Water Use Problem of High Yielding C4 Bioenergy and Bioproduct Feedstocks*, Advanced Research Projects Agency – Energy, 4/2016-9/2019, \$4,995,967.

C Topp, I Baxter, N Goldenfeld, **ADB Leakey**; *An integrated phenomics approach to identifying the genetic basis for maize root structure and control of plant nutrient relations*, NSF Plant Genome, 2016-2020, \$3,930,496. (\$1,768,240 to UIUC)

ADB Leakey, TAM Pugh; *Leading the way to a new global consensus on carbon dioxide impacts on crops and forests*, BRIDGE Seed Fund Grant, 2017-2018, \$4,400.

ADB Leakey, N Ahuja, J Hart; *Using Computer Vision to Relieve the Crop Phenotyping Bottleneck*, UIUC Center for Digital Agriculture Seed Grant, 2019-2020, \$50,000.

Manuel Garcia, **ADB Leakey**; *Novel Deep Learning Methods for In Situ Fine Roots Measurements*, DOE SBIR Phase I Grant in collaboration with UHV Technologies, Inc., 2/18/2020 - 10/18/2020 (\$60,000 to Leakey)

Andrea Pearce, **ADB Leakey**; *Progressive Automation of Minirhizotron Root Image Analysis through Advanced Contextualization and Machine Learning*, DOE SBIR Phase I Grant in collaboration with Transcend Engineering, 2/18/2020 - 10/18/2020 (\$29,991 to Leakey)

I. Review Panels (e.g., for Governmental Agencies, Educational Institutions)

2008 Panel member evaluating proposals to the Midwest Region of DOE's *National Institute for Climate Change Research*.

2009 Panel member evaluating proposals to the European Commission's 7th Framework program on *Forest Ecosystem Genomics*.

- 2012 Panel member evaluating proposals to the American Society of Plant Biologists Summer Undergraduate Research Fellowship (SURF) program.
- 2014 Panel member evaluating proposals to UC Davis' *Signature Research in Genomics* program.
- 2015 Panel member evaluating proposals to NSF's *Integrated Environmental Physiology* program.

II. PUBLICATIONS AND CREATIVE WORKS

A. Doctoral Thesis Title

Photosynthetic and growth responses of dipterocarp tree seedlings to dynamic irradiance

B. Books Authored or Co-Authored (in print or accepted.)

C. Books Edited or Co-Edited (in print or accepted)

D. Chapters in Books (in print or accepted)

1. DR Ort, EA Ainsworth, M Aldea, DJ Allen, CJ Bernacchi, MR Berenbaum, GA Bollero, G Cornic, PA Davey, O Dermody, FG Dohleman, JG Hamilton, EA Heaton, **ADB Leakey**, J Mahoney, TA Mies, PB Morgan, RL Nelson, A Rogers, AR Zangerl, X-G Zhu, EH DeLucia & SP Long (2006) SoyFACE: The effects and interactions of elevated [CO₂] and [O₃] on soybean. In: *Managed ecosystems and CO₂: Case studies, processes and perspectives* Ed: J Nösberger *et al.* Ecological Studies Series. Springer Verlag, pp. 71-86.
2. SP Long, EA Ainsworth, CJ Bernacchi, PA Davey, GJ Hymus, **ADB Leakey**, PB Morgan & CP Osborne (2006) Long term responses of photosynthesis and stomata to elevated [CO₂] in managed systems. In: *Managed ecosystems and CO₂: Case studies, processes and perspectives* Ed: J Nösberger *et al.* Ecological Studies Series. Springer Verlag, pp. 253-270.
3. **ADB Leakey**, EA Ainsworth, CJ Bernacchi, X Zhu, SP Long & DR Ort (2012) Photosynthesis in a CO₂ rich atmosphere. In: *Photosynthesis: A Comprehensive Treatise Physiology, Biochemistry, Biophysics and Molecular Biology*. 34: 733-768. Eds: JJ Eaton-Rye and BC Tripathy. Springer.
4. **ADB Leakey** (2012) Biogeochemical cycles and the flow of energy in the earth system. *Sustainability: A comprehensive foundation* Eds. T Thesis and J Tomkin. Online, open source textbook - <http://cnx.org/content/col11325/latest/>
5. **ADB Leakey** (2014) The Anthropocene: Plants in a New Environmental Domain. In: *The Plant Sciences*. In press. Ed: RK Monson. Springer. DOI 10.1007/978-1-4614-7612-2_6_1

E. Monographs (in print or accepted)

F. Articles in Journals (in print or accepted)

1. **ADB Leakey**, MC Press, JD Scholes & JR Watling (2002) Relative enhancement of photosynthesis and growth at elevated CO₂ is greater under sunflecks than uniform irradiance in a tropical rain forest tree seedling. *Plant, Cell & Environment* 25: 1701-1714.
2. **ADB Leakey**, MC Press & JD Scholes (2003) Patterns of dynamic irradiance affect the photosynthetic capacity and growth of dipterocarp tree seedlings. *Oecologia* 135: 184-193.
3. **ADB Leakey**, JD Scholes & MC Press (2003) High temperature inhibition of photosynthesis is greater under sunflecks than uniform irradiance in a tropical rain forest tree seedling. *Plant, Cell & Environment* 26: 1681-1690.
4. **ADB Leakey**, CJ Bernacchi, FG Dohleman, DR Ort & SP Long (2004) Will photosynthesis of maize (*Zea mays*) in the U.S. Corn Belt increase in future [CO₂] rich atmospheres? An analysis of diurnal courses of CO₂ uptake under Free-Air Concentration Enrichment (FACE). *Global Change Biology* 10: 951-962.
5. **ADB Leakey**, JD Scholes & MC Press (2005) Physiological and ecological significance of sunflecks for dipterocarp seedlings. *Journal of Experimental Botany* 56: 469-482.
6. SP Long, EA Ainsworth, **ADB Leakey** & PB Morgan (2005) Global food insecurity. Treatment of major food crops with elevated carbon dioxide and ozone under large-scale fully open-air conditions suggests models may seriously overestimate future yields. *Philosophical Transactions of the Royal Society* 360: 2011-2020.
7. **ADB Leakey**, M Uribeharrea, EA Ainsworth, SL Naidu, A Rogers, DR Ort & SP Long (2006) Photosynthesis, productivity and yield of *Zea mays* are not affected by open-air elevation of CO₂ concentration in the absence of drought. *Plant Physiology* 140: 779-790.
8. SP Long, EA Ainsworth, **ADB Leakey**, J Nosberger & DR Ort (2006) Food for thought: Lower than expected crop yield stimulation with rising carbon dioxide concentrations. *Science* 312: 1918-1921.
9. **ADB Leakey**, CJ Bernacchi, DR Ort & SP Long (2006) Long-term growth of soybean at elevated [CO₂] does not cause acclimation of stomatal conductance under fully open-air conditions. *Plant, Cell & Environment* 29: 1794-1800.
10. CJ Bernacchi, **ADB Leakey**, LE Heady, PB Morgan, A Rogers, SP Long & DR Ort (2006) Hourly and seasonal variation in photosynthesis and stomatal conductance of soybean grown at future CO₂ and ozone concentrations for three years under fully open air conditions. *Plant, Cell & Environment* 29: 2077-2090.
11. SP Long, EA Ainsworth, **ADB Leakey**, DR Ort, J Nosberger & D Schimel (2007) Crop models, CO₂, and climate change – Response. *Science* 315: 460-460.
12. EA Ainsworth, A Rogers, **ADB Leakey**, LE Heady, Y Gibon, M Stitt & U Schurr (2007) Does elevated [CO₂] alter diurnal C uptake and the balance of C and N metabolites in sink and source soybean leaves? *Journal of Experimental Botany* 58: 579-591.
13. SD Wullschleger, **ADB Leakey** & SB St Clair (2007) Functional genomics and ecology – a tale of two scales. *New Phytologist* 176: 735-739.

14. EA Ainsworth, **ADB Leakey**, DR Ort, SP Long. (2008) FACE-ing the facts: Inconsistencies and interdependence among field, chamber and modeling studies of elevated [CO₂] impacts on crop yield and food supply. *New Phytologist* 179: 1-5.
15. EA Ainsworth[¶], A Rogers[¶], **ADB Leakey**[¶] (2008) Targets for crop biotechnology in a future high-CO₂ and high-O₃ world. *Plant Physiology* 147: 13-19. [¶]these authors contributed equally to this work. *** This paper was amongst the top 10 “most read” articles in *Plant Physiology* in November and December 2008 ***
16. EA Ainsworth, C Beier, C Calfapietra, R Ceulemans, M Durand-Tardif, GD Farquhar, DL Godbold, GR Hendrey, T Hickler, J Kaduk, DR Karnosky, BA Kimball, C Korner, M Koornneef, T Larfarge, **ADB Leakey**, KF Lewin, SP Long, R Manderscheid, DL McNeil, TA Mies, F Miglietta, JA Morgan, J Nagy, RJ Norby, RM Norton, KE Percy, A Rogers, J-F Soussana, M Stitt, H-J Weigel and JW White (2008) Next Generation of elevated [CO₂] experiments with crops: a critical investment for feeding the future world. *Plant, Cell and Environment* 31: 1317-1324
17. P Li, EA Ainsworth, **ADB Leakey**, A Ulanov, V Lozovaya, DR Ort, HJ Bohnert (2008) Arabidopsis transcript and metabolite profiles: ecotype-specific responses to open-air elevated [CO₂]. *Plant, Cell and Environment* 31: 1673-1687
18. QS Qiu, JL Huber, FL Booker, V Jain, **ADB Leakey**, EL Fiscus, PM Yau, DR Ort & SC Huber (2008) Increased protein carbonylation in leaves of *Arabidopsis* and soybean in response to elevated [CO₂] and [O₃]. *Photosynthesis Research* 97: 155-166.
19. **ADB Leakey**, F-Xu, K Gillespie, J McGrath, EA Ainsworth, DR Ort (2009) Genomic basis for stimulated respiration by plants growing under elevated carbon dioxide. *Proceedings of the National Academy of Sciences* 106: 3597-3602 *** This paper was highlighted on F1000***
20. **ADB Leakey**, EA Ainsworth, SM Bernard, RJC Markelz, DR Ort, S Placella, A Rogers, MD Smith, E Sudderth, DJ Weston, SD Wullschleger, S Yuan (2009) Gene expression profiling – opening the black box of plant ecosystem responses to global change *Global Change Biology* 15: 1201-1213.
21. **ADB Leakey** (2009) Rising atmospheric carbon dioxide concentration and the future of C₄ crops for food and fuel. *Proceedings of the Royal Society B: Biological Sciences* 276: 2333-2343.
22. **ADB Leakey**, EA Ainsworth, CJ Bernacchi, A Rogers, SP Long & DR Ort (2009) Elevated CO₂ effects on plant carbon, nitrogen and water relations: six important lessons from FACE. *Journal of Experimental Botany* 60: 2859-2876.
23. FG Dohleman, EA Heaton, **ADB Leakey**, SP Long (2009) Does greater leaf-level photosynthesis explain the larger solar energy conversion efficiency of Miscanthus relative to switchgrass? *Plant, Cell & Environment* 32: 1525-1537.
24. A Rogers, EA Ainsworth, **ADB Leakey** (2009) Will elevated carbon dioxide concentration amplify the benefits of nitrogen fixation by legumes? *Plant Physiology* 151: 1009-1016.
25. C Calfapietra, EA Ainsworth, C Beier, P De Angelis, DS Ellsworth, DL Godbold, GR Hendrey, T Hickler, MR Hoosbeek, DF Karnosky, J King, C Körner, **ADB Leakey**, KF Lewin, M Liberloo, SP Long, M Lukac, R Matyssek, F Miglietta, J Nagy, RJ Norby, R Oren, KE

- Percy, A Rogers, G Scarascia Mugnozza, M Stitt, G Taylor, R Ceulemans (2010) Challenges in elevated CO₂ experiments on forests. *Trends in Plant Science* 15: 5-10.
26. C Stohr, RG Darmody, B Wimmer, I Krapac, K Hackley, A Iranmanesh, **ADB Leakey** (2010) Detecting carbon dioxide emissions in soybeans by aerial thermal infrared imagery. *Photogrammetric Engineering and Remote Sensing* 76: 735-741.
 27. EJ Edwards, CP Osborne, CAE Stromberg, SA Smith, WJ Bond, PA Christin, AB Cousins, MR Duvall, DL Fox, RP Freckleton, O Ghannoum, J Hartwell, Y Huang, CM Janis, JE Keeley, EA Kellogg, AK Knapp, **ADB Leakey**, DM Nelson, BH Passey, JM Saarela, RF Sage, OE Sala, N Salamin, CJ Still, B Tipple (2010) The Origins of C₄ Grasslands: Integrating Evolutionary and Ecosystem Science. *Science* 328: 587-591.
 28. U Rascher, B Biskup, **ADB Leakey**, JM McGrath, EA Ainsworth (2010) Altered physiological function, not structure, drives increased radiation use efficiency of soybean grown at elevated CO₂. *Photosynthesis Research* 105: 15-25.
 29. J Firm, JL Moore, AS MacDougall, ET Borer, EW Seabloom, J HilleRisLambers, WS Harpole, EE Cleland, CS Brown, JMH Knops, SM Prober, DA Pyke, KA Farrell, JD Bakker, LR O'Halloran, PB Adler, SL Collins, CM D'Antonio, MJ Crawley, EM Wolkovich, KJ La Pierre, BA Melbourne, Y Hautier, JW Morgan, **ADB Leakey**, A Kay, R McCulley, KF Davies, CJ Stevens, CJ Chu, KD Holl, JA Klein, PA Fay, N Hagenah, KP Kirkman, YM Buckley (2011) Abundance of introduced species at home predicts abundance away in herbaceous communities. *Ecology Letters* 14: 274-281. *** This paper was highlighted on F1000***
 30. RJC Markelz, RS Strellner, **ADB Leakey** (2011) Impairment of C₄ photosynthesis by drought is exacerbated by limiting nitrogen and ameliorated by elevated [CO₂] in maize. *Journal of Experimental Botany* 62:3235-3246.
 31. CJ Bernacchi, **ADB Leakey**, BA Kimball, DR Ort (2011) Growth of soybean at future tropospheric ozone concentrations decreases canopy evapotranspiration and soil water depletion. *Environmental Pollution* 159: 1464-1472.
 32. **ADB Leakey**, JA Lau (2012) Evolutionary context for understanding and manipulating plant responses to past, present and future atmospheric [CO₂]. *Philosophical Transactions of the Royal Society B* 367: 613-629.
 33. KM Gillespie, F Xu, KT Richter, JM McGrath, RJC Markelz, DR Ort, **ADB Leakey**, EA Ainsworth (2012) Greater antioxidant and respiratory metabolism in field-grown soybean exposed to elevated O₃ under both ambient and elevated CO₂ concentrations. *Plant, Cell & Environment* 35: 169-184.
 34. **ADB Leakey**, KA Bishop, EA Ainsworth (2012) A multi-biome gap in understanding of crop and ecosystem responses to elevated CO₂. *Current Opinion in Plant Biology* 15: 228-236.
 35. C Decock, H Chung, R Venterea, SB Gray, **ADB Leakey**, J Six (2012) Elevated CO₂ and O₃ modify N turnover rates, but not N₂O emissions in a soybean agroecosystem. *Soil Biology and Biochemistry* 51: 104-114.
 36. S Vicca, AK Gilgen, S Camino, FE Dreesen, JS Dukes, M Estiarte, SB Gray, G Guidolotti, **ADB Leakey**, R Ogaya, DR Ort, M Ostrogovic, S Rambal, J Sardans, M Schmitt, M Siebers, L van der Linden, O van Straaten, A Granier (2012) Urgent need for basic treatment data to make precipitation manipulation experiments comparable. *New Phytologist* 195:518-522.

37. KR Walters, SI Rupassara, RJC Markelz, **ADB Leakey**, W Muir, BR Pittendrigh (2012) Methamphetamine causes anorexia in *Drosophila melanogaster*, exhausting metabolic reserves and contributing to mortality. *The Journal of Toxicological Sciences* 37:773-790.
38. CL Casteel, OK Niziolek, **ADB Leakey**, MR Berenbaum, EH DeLucia (2012) Effects of elevated CO₂ and soil water content on phytohormone transcript induction in *Glycine max* after *Popillia japonica* feeding. *Environmental Entomology* 6:439-447.
39. SB Gray, RS Strellner, KK Puthuval, R Shulman, MH Siebers, A Rogers, **ADB Leakey** (2013) Minirhizotron imaging reveals nodulation of field-grown soybean is enhanced by Free-Air CO₂ Enrichment only when combined with drought stress. *Functional Plant Biology* 40:137-147.
40. MZ Hussain, A Vanlooche, MH Siebers, UM Ruiz-Vera, RJC Markelz, **ADB Leakey**, DR Ort, CJ Bernacchi (2013) Future carbon dioxide concentration decreases canopy evapotranspiration and soil water depletion by field-grown maize. *Global Change Biology* 19:1572-1584.
41. LA Cernusak, K Winter, JW Dalling, JAM Holtum, C Jaramillo, C Korner, **ADB Leakey**, RJ Norby, B Poulter, BL Turner, SJ Wright (2013) Tropical forest responses to elevated [CO₂]: current knowledge and opportunities for future research. *Functional Plant Biology* 40:531-551.
42. TE Twine, JJ Bryant, K Richter, CJ Bernacchi, K McConnaughay, S Morris, **ADB Leakey** (2013) Impacts of elevated CO₂ concentration on the productivity and surface energy budget of the soybean and maize agroecosystem in the Midwest U.S. *Global Change Biology* 19:2838-2852.
43. EW Seabloom, ET Borer, Y Buckley, EE Cleland, K Davies, J Firn, WS Harpole, Y Hautier, E Lind, A Macdougall, JL Orrock, SM Prober, P Adler, J Alberti, TM Anderson, JD Bakker, LA Biederman, D Blumenthal, CS Brown, LA Brudvig, M Caldeira, C Chu, MJ Crawley, P Daleo, EI Damschen, CM D'Antonio, NM DeCrappeo, CR Dickman, G Du, PA Fay, P Frater, DS Gruner, N Hagenah, A Hector, A Helm, H Hillebrand, KS Hofmockel, HC Humphries, O Iribarne, VL Jin, A Kay, KP Kirkman, JA Klein, JMH Knops, KJ LA Pierre, LM Ladwig, JG Lambrinos, **ADB Leakey**, Q Li, W Li, R Mcculley, B Melbourne, CE Mitchell, JL Moore, J Morgan, B Mortensen, LR O'Halloran, M Partel, J Pascual, DA Pyke, AC Risch, R Salguero-Gomez, M Sankaran, M Schuetz, A Simonsen, M Smith, C Stevens, L Sullivan, GM Wardle, EM Wolkovich, PD Wragg, J Wright, L Yang (2013) Predicting invasion in grassland ecosystems: is exotic dominance the real embarrassment of richness? *Global Change Biology* 19:3677-3687.
44. AB Cousins, M Johnson, **ADB Leakey** (2014) Photosynthesis and the environment. *Photosynthesis Research* 119:1-2.
45. RJC Markelz, LX Lai, LN Vossler, **ADB Leakey** (2014) Transcriptional reprogramming and stimulation of leaf respiration by elevated CO₂ concentration is diminished, but not eliminated, under limiting nitrogen supply. *Plant, Cell & Environment* 37:886-898.
46. ET Borer, EW Seabloom, DS Gruner, WS Harpole, H Hillebrand, E Lind, PB Adler, J Alberti, TM Anderson, JD Bakker, LA Biederman, D Blumenthal, CS Brown, LA Brudvig, Y Buckley, M Cadotte, C Chu, EE Cleland, MJ Crawley, P Daleo, EI Damschen, K Davies, NM DeCrappeo, G Du, J Firn, Y Hautier, RW Heckman, A Hector, A Helm, J HilleRisLambers, O Iribarne, JA Klein, JMH Knops, KJ LA Pierre, **ADB Leakey**, W Li, A Macdougall, R Mcculley, B Melbourne, CE Mitchell, JL Moore, B Mortensen, LR O'Halloran, JL Orrock, J

- Pascual, SM Prober, DA Pyke, AC Risch, M Schuetz, MD Smith, C Stevens, L Sullivan, RJ Williams, PD Wragg, J Wright, L Yang (2014) Herbivores and nutrients control grassland plant diversity via light limitation *Nature* 508:517-520.
47. RJC Markelz, LN Vossler, **ADB Leakey** (2014) Developmental stage specificity of transcriptional, biochemical and CO₂ efflux responses of leaf dark respiration to growth of *Arabidopsis thaliana* at elevated [CO₂]. *Plant, Cell & Environment*. 37:2542-2552.
 48. SS Myers, A Zanobetti, I Kloog, P Huybers, **ADB Leakey**, A Bloom, E Carlisle, LH Dietterich, G Fitzgerald, T Hasegawa, NM Holbrook, RL Nelson, MJ Ottman, V Raboy, H Sakai, KA Sartor, J Schwartz, S Seneweera, M Tausz, Y Usui (2014) Rising concentration of atmospheric CO₂ threatens human nutrition. *Nature*. 510:139-143
 49. KA Bishop, **ADB Leakey**, EA Ainsworth (2014) Do seasonal temperature and water inputs predict the relative response of C₃ crops to elevated carbon dioxide concentration? An analysis of open top chamber and Free Air CO₂ Enrichment (FACE) studies. *Food & Energy Security*. 3:33-45.
 50. D Wang, D Jaiswal, DS LeBauer, TM Wertin, **ADB Leakey**, SP Long (2015) A physiological and biophysical model of coppice willow (*Salix* spp.) production and predicted yields for the contiguous USA in current and future climate scenarios. *Plant, Cell & Environment* 38:1850-1865.
 51. SH Siebers, CR Yendrek, D Drag, AM Locke, L Rios Acosta, **ADB Leakey**, EA Ainsworth, CJ Bernacchi, DR Ort (2015) Heat waves imposed during early pod development in soybean (*Glycine max*) cause significant yield loss despite a rapid recovery from oxidative stress. *Global Change Biology* 21:3114-3125.
 52. LH Dietterich, A Zanobetti, I Kloog, P Huybers, **ADB Leakey**, AJ Bloom, E Carlisle, N Fernando, G Fitzgerald, T Hasegawa, NM Holbrook, RL Nelson, R Norton, MJ Ottman, V Raboy, H Sakai, KA Sartor, J Schwartz, S Seneweera, Y Usui, S Yoshinaga, SS Myers (2015) Impacts of elevated atmospheric CO₂ on nutrient content of important food crops. *Scientific Data* 2:150036, 10.1038/sdata.2015.36
 53. RJ Webster, SM Driever, J Krondijk, J McGrath, **ADB Leakey**, K Siebke, T Demetriades-Shah, S Bonnage, T Peloe, T Lawson, SP Long (2016) High C₃ photosynthetic capacity and high intrinsic water use efficiency underlies the high productivity of the bioenergy grass *Arundo donax*. *Scientific Reports* 6:20694.
 54. H Flores-Moreno, PB Reich, EM Lind, LL Sullivan, EW Seabloom, L Yahdjian, AS MacDougall, L Reichmann, J Alberti, S Baez, JD Bakker, MW Cadotte, MC Caldeira, EJ Chaneton, C D'Antonio, PA Fay, J Firn, N Hagenah, WS Harpole, O Iribarne, KP Kirkman, JMH Knops, KJ La Pierre, R Laungani, **ADB Leakey**, RL McCulley, JL Moore, J Pascual, ET Borer (2016) Climate modifies response of non-native and native species richness to nutrient enrichment. *Philosophical Transactions of the Royal Society B* 371(1694):20150273.
 55. SB Gray, O Dermody, SP Klein, AM Locke, JM McGrath, RE Paul, DM Rosenthal, UM Ruiz-Vera, MH Siebers, R Strellner, EA Ainsworth, CJ Bernacchi, SP Long, DR Ort, **ADB Leakey** (2016) Intensifying drought eliminates the expected benefits of elevated [CO₂] for soybean. *Nature Plants* doi:10.1038/nplants.2016.132

56. CR Yendrek, T Tomaz, CM Montes, Y Cao, AM Morse, PJ Brown, LM McIntyre, **ADB Leakey**, EA Ainsworth (2017) High-throughput phenotyping of maize leaf physiological and biochemical traits using hyperspectral reflectance. *Plant Physiology* 173:614-626.
57. A Rogers, BE Medlyn, JS Dukes, G Bonan, S von Caemmerer, MC Dietze, J Kattge, **ADB Leakey**, LM Mercado, U Niinemets, IC Prentice, SP Serbin, S Sitch, DA Way, S Zaehle (2017) A roadmap for improving the representation of photosynthesis in Earth system models. *New Phytologist* 213:22-42.
58. KJ Wolz, TM Wertin, M Abordo, D Wang, **ADB Leakey** (2017) Variation in stomatal function is integral to modeling plant carbon and water fluxes. *Nature Ecology & Evolution* 1:1292-1298
59. MJ Feldman, RE Paul, D Banan, JF Barrett, J Sebastian, MC Yee, H Jiang, AE Lipka, TP Brutnell, JR Dinneny, **ADB Leakey**, I Baxter (2017) Time dependent genetic analysis links field and controlled environment phenotypes in the model C4 grass *Setaria*. *PLoS Genetics* 13(6): e1006841.
60. P Wang, E Marsh, EA Ainsworth, **ADB Leakey**, Sheflin AM, D Schachtman (2017) Shifts in microbial diversity in agricultural soils, rhizosphere and roots in two major cropping systems under elevated CO₂ and O₃. *Scientific Reports* 7: 15019 DOI:10.1038/s41598-017-14936-2
61. CR Yendrek, G Erice, CM Montes, T Tomaz, C Sorgini, PJ Brown, LM McIntyre, **ADB Leakey**, EA Ainsworth (2017) Elevated ozone reduces photosynthetic carbon gain by accelerating leaf senescence of inbred and hybrid maize in a genotype-specific manner. *Plant Cell & Environment* 40:3088-3100.
62. Z Jin, EA Ainsworth, **ADB Leakey**, DB Lobell (2018) Increasing drought will diminish the benefits of elevated carbon dioxide for soybean yields across the US Midwest. *Global Change Biology* 24:E522-E533.
63. D Banan, RE Paul, MJ Feldman, M Holmes, H Schlake, H Jiang, I Baxter, **ADB Leakey** (2018) High fidelity detection of QTL hotspots for crop biomass production from low cost imaging in the field. *Plant Direct* 2(2): DOI: 10.1002/pld3.41
64. K Głowacka, J Kromdijk, K Kucera, J Xie, AP Cavanagh, L Leonelli, **ADB Leakey**, DR Ort, KK Niyogi, SP Long (2018). PsbS Overexpression Increases the Efficiency of Water Use in a Field-Grown Crop. *Nature Communications* 9:868
65. KA Bishop, P Lemonnier, JC Quebedeaux, CM Montes, **ADB Leakey**, EA Ainsworth (2018) Similar photosynthetic response to elevated carbon dioxide concentration in species with different phloem loading strategies. *Photosynthesis Research* <https://doi.org/10.1007/s11120-018-0524-x>
66. R Valluru, EE Gazave, SB Fernandes, JN Ferguson, R Lozano, P Hirannaiah, T Zuo, PJ Brown, **ADB Leakey**, MA Gore, ES Buckler, N Bandillo (2019) Deleterious Mutation Burden and Its Association with Complex Traits in Sorghum (*Sorghum bicolor*). *Genetics* 211(3): 1075-1087.
67. **ADB Leakey**, JN Ferguson, CP Pignon, A Wu, Z Jin, GL Hammer, DB Lobell (2019) Water use efficiency as a constraint and target for improving the resilience and productivity of C3 and C4 crops. *Annual Review of Plant Biology* 70:781-808. <https://doi.org/10.1146/annurev-arplant-042817-040305>.

68. NE Choquette, F Ogut, TM Wertin, CM Montes, CA Sorgini, AM Morse, PJ Brown, **ADB Leakey**, LM McIntyre, EA Ainsworth (2019) Uncovering hidden genetic variation in photosynthesis of field-grown maize under ozone pollution. *Global Change Biology* 25, 4327-4338.
69. JPR dos Santos, SB Fernandes, S McCoy, R Lozano, PJ Brown, **ADB Leakey**, ES Buckler, AAF Garcia and MA Gore (2020) Novel Bayesian Networks for Genomic Prediction of Developmental Traits in Biomass Sorghum. *G3 – Genes Genomes Genetics* 10(2):769-781.
70. S Bharath, ET Borer, LA Biederman, DM Blumenthal, PA Fay, LA Gherardi, JMH Knops, **ADB Leakey**, L Yahdjian, EW Seabloom (2020) Nutrient addition increases grassland sensitivity to droughts. *Ecology* <https://doi.org/10.1002/ecy.2981>
71. JM Wedow, C Burroughs, L Rios Acosta, **ADB Leakey**, Ainsworth EA (2021) Age-dependent increase in a-tocopherol and phytosterols in maize leaves exposed to elevated ozone pollution. *Plant Direct* 5, e00307.
72. CP Pignon, **ADB Leakey**, SP Long, J Kromdijk (2021) Drivers of natural variation in water-use efficiency under fluctuating light are promising targets for improvement in sorghum. *Frontiers in Plant Science* 12:627432.
73. KS Ely, A Rogers, DA Agarwa, EA Ainsworth, L Albert, A Ali, J Anderson, MJ Aspinwall, C Bellasio, CJ Bernacchi, S Bonnage, TN Buckley, J Bunce, AC Burnett, FA Busch, A Cavanagh, LA Cernusak, R Crystal-Orenelas, J Damerow, KJ Davidson, MG De Kauwe, MC Dietze, TF Domingues, ME Dusenage, DS Ellsworth, JR Evans, PPG Gauthier, BO Gimenez, EP Gordon, CM Gough, AH Halbritter, DT Hanson, M Heskell, JA Hogan, JR. Hupp, K Jardine, JKattge, T Keenan, J Kromdijk, DP Kumarathunge, J Lamour, **ADB Leakey**, DS LeBauer, Q Li, MR Lundgren, N McDowell, K Meacham-Hensold, BE Medlyn, DJP Moore, R Negron-Juarez, Ü Niinemets, CP Osborne, AL Pivovarov, H Poorter, SC Reed, Y Ryu, A Sanz-Saez, SC Schmiege, SP Serbin, TD Sharkey, M Slot, NG Smith, BV Sonawane, PF South, DC Souza, JR Stinziano, E Stuart-Haentjens, SH Taylor, MD Tejera, J Uddling, V Vandvik, C Varadharajan, AP Walker, BJ Walker, JM Warren, DA Way, BT Wolfe, J Wu, SD Wullschlegel, C Xu, Z Yan, D Yang (2021) A reporting format for leaf-level gas exchange data and metadata. *Ecological Informatics*, doi.org/10.1016/j.ecoinf.2021.101232
74. S Varela, T Pederson, CJ Bernacchi, **ADB Leakey** (2021) Understanding Growth Dynamics and Yield Prediction of Sorghum Using High Temporal Resolution UAV Imagery Time Series and Machine Learning. *Remote Sensing* 13:1763. <https://doi.org/10.3390/rs13091763>
75. PT Prakash, D Banan, RE Paul, MJ Feldman, D Xie, L Freyfogle, I Baxter, **ADB Leakey** (2021) Correlation and co-localization of QTL for stomatal density and canopy temperature under drought stress in Setaria. *Journal of Experimental Botany* 72(13): 5024-5037.
76. NS Jaikumar, SS Stutz, SB Fernandes, **ADB Leakey**, CJ Bernacchi, PJ Brown, SP Long (2021) Can improved canopy light transmission ameliorate loss of photosynthetic efficiency in the shade? An investigation of natural variation in *Sorghum bicolor*. *Journal of Experimental Botany* 72(13):4965-4980.

77. J Xie, SB Fernandes, D Mayfield-Jones, G Erice, M Choi, AE Lipka, **ADB Leakey** (2021) Optical topometry and machine learning to rapidly phenotype stomatal patterning traits for maize QTL mapping. *Plant Physiology* 187:1462-1480.
78. JF Ferguson, SB Fernandes, B Monier, ND Miller, D Allen, A Dmitrieva, P Schmuker, R Lozano, R Valluru, ES Buckler, MA Gore, PJ Brown, EP Spalding, **ADB Leakey** (2020) Machine learning enabled phenotyping for GWAS and TWAS of WUE traits in 869 field-grown sorghum accessions. *Plant Physiology* 187:1481-1500.
79. CP Pignon, SB Fernandes, R Valluru, N Bandillo, R Lozano, ES Buckler, MA Gore, SP Long, PJ Brown, **ADB Leakey** (2021) Phenotyping stomatal closure by thermal imaging for GWAS and TWAS of water use efficiency-related genes. *Plant Physiology* 187:2544-2562.
80. AB Keller, E Borer, S Collins, P Fay, LC Delancey, KS Hofmockel, **ADB Leakey**, MA Mayes, E Seabloom, CA Walter, Y Wang, Q Zhao, SE Hobbie (2022) Soil carbon stocks in temperate grasslands differ strongly across sites but are insensitive to decade-long fertilization. *Global Change Biology* 28(4):1659-1677.
81. S Varela, TL Pederson, **ADB Leakey** (2022) Implementing Spatio-Temporal 3D-Convolution Neural Networks and UAV Time Series Imagery to Better Predict Lodging Damage in Sorghum. *Remote Sensing* 14(3):733.
82. J Lamour, KJ Davidson, KS Ely, G Le Moguedec, **ADB Leakey**, QY Li, SP Serbin, A Rogers (2022) An improved representation of the relationship between photosynthesis and stomatal conductance leads to more stable estimation of conductance parameters and improves the goodness-of-fit across diverse data sets. *Global Change Biology* early access <https://doi.org/10.1111/gcb.16103>.
83. AB Rajurkar, SM McCoy, J Ruhter, J Mulcrone, L Freyfogle, **ADB Leakey** (2022) Installation and imaging of thousands of minirhizotrons to phenotype root systems of field-grown plants. *Plant Methods* 18, 39. <https://plantmethods.biomedcentral.com/articles/10.1186/s13007-022-00874-2>
84. R Ding, J Xie, D Mayfield-Jones, Y Zhang, S Kang, ADB Leakey (2021) Plasticity in stomatal behavior across a gradient of water supply is consistent among field-grown maize inbred lines with varying stomatal patterning. *Plant, Cell & Environment*, in press <https://doi.org/10.1111/pce.14358>
85. AV Nanni, AM Morse, JRB Newman, NE Choquette, JM Wedow, Z Liu, **ADB Leakey**, A Conesa, EA Ainsworth, LM McIntyre (2022) Ozone sensitivity of diverse maize genotypes is associated with differences in gene regulation, not gene content. *Genome Research*, in press.

G. Creative Works – not applicable

H. Patents

IDF submitted to UIUC OTM in 2019 “Improved Water Use Efficiency Gene”

I. Bulletins, Reports, or Conference Proceedings (in print or accepted)

1. Leakey RRB, Kranjac-Berisavljevic G, Caron P, Craufurd P, Martin A, McDonald A, Abedini W, Afiff S, Bakurin N, Bass S, Hilbeck A, Jansen T, Lhaloui S, Lock K, Newman J, Primavesi O, Sengooba T, Ahmed M, Ainsworth L, Ali M, Antona M, Avato P, Barker D, Bazile D, Bosc P-M, Bricas N, Burnod P, Cohen J, Coudel E., Dulcire M, Dugué P, Faysse N, Farolfi S, Faure G, Goli T, Grzywacz D, Hocdé H, Imbernon J, Ishii-Eiteman M, **Leakey ADB**, Leakey C, Lowe A, Marr A, Maxted N, Mears A, Molden D, Muller JP, Padgham J, Perret S, Place F, Reid R, Riches C, Scherr S, Sibelet N, Simm G, Temple L, Tonneau JP, Trebuil G, Twomlow, S., Voituriez T, Wack AL, Abate T, Butler LM. (2008) Impacts of AKST on development and sustainability goals. In: *International Assessment of Agricultural Science and Technology for Development: Global Report*, Chapter 3. Eds: Watson R, Herren H, Wakhungu J. Island Press , New York , USA.
2. C Walthall, J Hatfield, L Lengnick, E Marshall, P Backlund, M Walsh, S Adkins, M Aillery, E Ainsworth, C Ammann, C Anderson, I Bartomeus, L Baumgard, D Blumenthal, F Booker, B Bradley, J Bunce, K Burkey, S Dabney, J Delgado, J Dukes, A Funk, K Garrett, M Glenn, D Grantz, D Goodrich, S Hu, C Izaurrealde, R Jones, S-H Kim, **ADB Leakey**, K Lewers, T Mader, A. McClung, J. Morgan, L. Morton, D. Muth, M. Nearing, D. Oosterhuis, D Ort, C Parmesan, W Pettigrew, W Polley, R Rader, C Rice, M Rivington, E Roskopf, W Salas, L Sollenberger, R Srygley, C Stöckle, E Takle, D Timlin, J White, R Winfree, L Wright-Morton, and L Ziska (2012) *Climate Change and Agriculture: Effects and Adaptation*. USDA Technical Bulletin 1935. Washington, D.C.
3. †R Bailey, TG Benton, A Challinor, J Elliott, D Gustafson, B Hiller, A Jones, M Jahn, C Kent, K Lewis, T Meacham, M Rivington, D Robson, R Tiffin, D Wuebbles, J Beghin, J Buttriss, R Bhunnoo, C Brown, K Carlson, E Chavez, N deVore, K Donaldson, R Douglas, G Friend, O Gray, J Gullede, J Hjelle, J Horrell, K Huddah, D Krohn, **ADB Leakey**, M Levy, V Loughlan, B Phillipson, G Prpich, S Robinson, S Sharpe, L Stanbrough, J Westwood (2015) *Extreme weather and resilience of the global food system*. Final Project Report from the UK-US Taskforce on Extreme Weather and Global Food System Resilience, The Global Food Security Programme, UK.
4. D Wubbles, J Angel, K Petersen, M Lemke, D Abrams, J Allen, A Ballinger, J Coppess, S Czesny, Q Dai, S Dorevitch, J Ellis, T Ford, B Gramig, E Grossman, A hager, C Harbach, L Iverson, A Jain, W Kelly, M Khanna, P Kumar, K Kunkel, ADB Leakey, TS Lin, M Markus, J Matthews, S McConkey, G McIssac, J Miller, W Miller, A Packman, J Quebedeaux, C Roswell, S Saha, S Sanyal, N Seiter, A Sharma, T Steckler, C Stone, C Suski, J Taft, E Wahle, M Ward, Z Zhang (2021) *An assessment of the impacts of climate change in Illinois*. The Nature Conservancy, Illinois, https://doi.org/10.13012/B2IDB-1260194_V1.

J. Abstracts (in print or accepted)

1. **ADB Leakey**, JR Watling, JD Scholes, MC Press. Elevated CO₂ and sunflecks interact to increase photosynthesis and growth in the dipterocarp rain forest seedling *Shorea leprosula*. *British Ecological Society Winter Meeting, Birmingham, UK, 2001*.

2. **ADB Leakey**, JR Watling, JD Scholes, MC Press. Elevated CO₂ and sunflecks interact to increase photosynthesis and growth in the dipterocarp rain forest seedling *Shorea leprosula*. *Society for Experimental Biology Annual Meeting, Canterbury, UK, 2001*.
3. **ADB Leakey**, JR Watling, JD Scholes, MC Press. Elevated CO₂ and sunflecks interact to increase photosynthesis and growth in the dipterocarp rain forest seedling *Shorea leprosula*. *International Congress on Photosynthesis, Brisbane, Australia, 2001*.
4. **ADB Leakey**, JD Scholes, MC Press. Sunfleck patterns and light quality impact on the photosynthesis and growth of dipterocarp seedlings. *British Ecological Society Winter Meeting, Warwick, UK, 2001*.
5. **ADB Leakey**, P Davey, A Rogers, EH DeLucia, B Drake, R Murthy, DF Karnosky, SP Long. How will leaf respiration in the dark respond to growth under elevated [CO₂]? *Ecological Society of America Annual Meeting, Savannah, GA, 2003*.
6. **ADB Leakey**, CJ Bernacchi, FG Dohleman, DR Ort, SP Long (2003) Will photosynthesis of maize (*Zea mays*) in the U.S. Corn Belt increase in future [CO₂]-rich atmospheres? *American Society of Plant Biologists Annual Meeting, Honolulu, HI, 2003*.
7. **ADB Leakey**, CJ Bernacchi, FG Dohleman, DR Ort, SP Long. How will crops in the Midwest U.S. respond to drought under future CO₂ rich atmospheres? *Crop Science Society of America Annual Meeting, Denver, CO, 2003*.
8. **ADB Leakey**, CJ Bernacchi, F Below, R Bordigno, T Mies, PB Morgan, R Nelson, DR Ort, M Uribebarrea, O Dermody, SP Long. How will the major agricultural ecosystem of the U.S. respond to atmospheric change? *American Association for the Advancement of Science Annual Meeting, Seattle, WA, 2004*.
9. **ADB Leakey**, JD Scholes, MC Press. Physiological and ecological significance of sunflecks for dipterocarp seedlings. *Society of Experimental Biology Annual Meeting, Heriot-Watt University, Edinburgh, UK, 2004*.
10. S Van Bloem, **ADB Leakey**, M Gonzalez-Meler, SP Long, R Thomas. Effects of CO₂ and drought on N₂ fixation in field-grown soybean plants. *Ecological Society of America Annual Meeting, Montreal, Canada, 2005*.
11. **ADB Leakey**, CJ Bernacchi, SP Long, DR Ort. Elevated CO₂ does not stimulate C₄ photosynthesis directly, but impacts water relations and indirectly enhances carbon gain during drought stress in maize (*Zea mays*) grown under free-air CO₂ enrichment (FACE). *Society of Experimental Biology Symposium, Barcelona, Spain, 2005*.
12. SP Long, EA Ainsworth, CJ Bernacchi, **ADB Leakey**, PB Morgan, S Naidu, A Rogers, HJ Bohnert, DR Ort, R Nelson. Mechanisms of plant responses to global atmospheric change. *International Botanical Congress, Vienna, Austria, 2005*.
13. KM Gillespie, JM Chae, **ADB Leakey**, EA Ainsworth. How will future levels of CO₂ and O₃ affect antioxidant metabolism in soybean? *American Society of Plant Biologists Annual Meeting, Boston, MA, 2006*.
14. **ADB Leakey**, M Uribebarrea, EA Ainsworth, SL Naidu, A Rogers, DR Ort, SP Long. Photosynthesis, productivity and yield of maize are not affected by open-air elevated of

CO₂ concentration in the absence of drought. *American Society of Plant Biologists Annual Meeting, Boston, MA, 2006.*

15. F Xu, **ADB Leakey**, KM Gillespie, EA Ainsworth, DR Ort. Gene expression profiles of soybean from FACE exposure to elevated tropospheric [O₃] and [CO₂]. *American Society of Plant Biologists Annual Meeting, Boston, MA, 2006.*
16. FG Dohleman, EA Heaton, **ADB Leakey**, SP Long. Can increased daily carbon assimilation coupled with a longer growing season explain the difference in biomass accumulation between two potential bioenergy crops? *American Society for Plant Biologists Annual Meeting, Boston, MA, 2006.*
17. **ADB Leakey**, F Xu, KM Gillespie, EA Ainsworth, SP Long, DR Ort. How will the gene expression profile, biochemistry and physiology of soybean leaves respond to growth at elevated [CO₂] under open-air field conditions? *American Society for Plant Biologists Annual Meeting, Boston, MA, 2006.*
18. **ADB Leakey**, EAA Ainsworth, CJ Bernacchi, FG Dohleman, S Naidu, A Rogers, M Uribebarrea, DR Ort, SP Long. Elevated CO₂ does not stimulate C₄ photosynthesis directly, but impacts water relations and indirectly enhances carbon gain during drought stress in maize (*Zea mays*) grown under free-air CO₂ enrichment (FACE). *Crop Science Society of America Annual Meeting, Indianapolis, IN, 2006.*
19. **ADB Leakey**, SP Long, DR Ort. Characterizing changes in soil moisture due to reduced transpiration of soybean and maize at elevated [CO₂] over 3-years of free-air concentration enrichment (FACE). *American Society for Plant Biologists Symposium on Transpiration, Snowbird, UT, 2006.*
20. **ADB Leakey**, CJ Bernacchi, DR Ort, SP Long. Long-term growth of soybean at elevated [CO₂] does not cause acclimation of stomatal conductance under fully open-air conditions. *American Society for Plant Biologists Symposium on Transpiration, Snowbird, UT, 2006.*
21. FG Dohleman, E Heaton, **ADB Leakey**, SP Long. Does increased daily carbon assimilation coupled with a higher Leaf Area Index and longer growing season explain the difference in productivity between two potential bioenergy crops? *American Society of Plant Biologists Annual Meeting, Chicago, IL, 2007.*
22. F Xu, **ADB Leakey**, KM Gillespie, EA Ainsworth, DR Ort. Response of soybean gene expression to growth at chronic elevated ozone levels. *The Arabidopsis Meeting, Beijing, 2007.*
23. KM Gillespie, JM Chae, **ADB Leakey**, EA Ainsworth. Integration of metabolite with transcript and enzyme activity profiles of the antioxidant system in soybeans when grown at elevated levels carbon dioxide and ozone. *American Society of Plant Biologists Annual Meeting, Chicago, IL, 2007.*
24. **ADB Leakey**, F Xu, KM Gillespie, EA Ainsworth, SP Long, DR Ort. Physiological, biochemical and molecular analysis of the coordinated up-regulation of photosynthetic, respiratory and biosynthetic metabolism in soybean leaves under Free-Air CO₂ Enrichment. *14th International Congress of Photosynthesis, Glasgow, Scotland, 2007.*

25. KM Gillespie, F Xu, A Rogers, **ADB Leakey**, DR Ort, EA Ainsworth. Integrated analysis of the genomic, biochemical and physiological responses of a model ecosystem to global change. *Ecological Society of America Annual Meeting, San Jose, CA, 2007.*
26. **ADB Leakey**, F Xu, KM Gillespie, EA Ainsworth, SP Long, DR Ort. Functional genomics and field ecology: Mechanistic insights from microarray analysis of soybean responses to elevated [CO₂]. *Ecological Society of America Annual Meeting, San Jose, CA, 2007.*
27. EA Ainsworth, **ADB Leakey**, SP Long, DR Ort, A Rogers. (Nov 2007) FACE Experiments with Crops: A Quantitative Review of Results and Discussion of Future Opportunities. *Crop Science Society of America Annual Meeting.*
28. **ADB Leakey**, J Sun, RJC Markelz & DR Ort (July 2008) Stimulated photosynthesis alters sugar and amino-acid profiles, lowers osmotic potential and improves water status of soybean leaves under free-air CO₂ enrichment. *American Society for Plant Biologists Annual Meeting.*
29. **ADB Leakey**, CJ Bernacchi, DR Ort & SP Long (2008) Long-term growth of soybean at elevated [CO₂] does not cause acclimation of stomatal conductance under fully open-air conditions. *American Geophysical Union Winter Meeting.*
30. RJC Markelz, R Strellner, **ADB Leakey** (2009) How will limiting N availability alter the response of C₄ photosynthesis in maize to elevated [CO₂] and drought under open-air field conditions? *American Society for Plant Biologists Annual Meeting.*
31. SB Gray, JM McGrath, O Dermody, EA Ainsworth, DR Ort, **ADB Leakey** (2009) Temperature and precipitation interactions eliminate benefits of free-air CO₂ enrichment to soil moisture availability for soybean in 2 out of 5 years. *American Society for Plant Biologists Annual Meeting.*
32. J Bryant, K Richter, **ADB Leakey**, TE Twine (2009) Biophysical impact from increasing carbon dioxide on U.S. Agroecosystems. *American Geophysical Union Winter Meeting.*
33. J Bryant, K Richter, **ADB Leakey**, TE Twine (2010) Biophysical effects on U.S. soybean agroecosystems from increasing carbon dioxide concentration. *American Meteorological Society Annual Meeting.*
34. SB Gray, RS Strellner, **ADB Leakey** (2010) Free-air CO₂ enrichment does not lessen the impact of drought on soybean photosynthesis under field conditions. *Ecological Society of America Annual Meeting, Pittsburgh, PA.*
35. TE Twine, J Bryant, SB Gray, **ADB Leakey** (2010) Simulating the response of soybean to elevated CO₂ across the Midwest United States: effects on the surface energy and water budgets. *Ecological Society of America Annual Meeting, Pittsburgh, PA.*
36. P Schmitz, SB Gray, CJ Bernacchi, **ADB Leakey**, P Kumar, SP Long (2010) Water extraction and hydraulic redistribution by soybean at daily time scales under elevated CO₂ and drought. *American Geophysical Union Winter Meeting, San Francisco, CA.*
37. **ADB Leakey** (2011) Transcriptional reprogramming of carbon metabolism in soybean grown at elevated CO₂ and elevated O₃. *South African Association of Botany Annual Meeting, Grahamstown, South Africa.*

38. **ADB Leakey** (2011) Rising atmospheric CO₂ and the future of c4 crops for food and fuel. *International Botanical Congress, Melbourne, Australia.*
39. **ADB Leakey** (2011) Transcriptional reprogramming of respiration under elevated CO₂ and elevated O₃. *International Botanical Congress, Melbourne, Australia.*
40. **ADB Leakey** (2011) Non-optimal responses to drought stress of soybean grown at elevated CO₂ in the field. *International Botanical Congress, Melbourne, Australia.*
41. SB Gray, RS Strellner, KK Puthuval, **ADB Leakey** (2011) Elevated CO₂ increases stomatal closure under reduced soil moisture in soybean (*Glycine max*). *American Society for Plant Biologists Annual Meeting.*
42. KT Richter, AM Betzelberger, **ADB Leakey** (2011) Growth of soybean at elevated ozone concentrations leads to stomatal acclimation that can be incorporated into ecosystem models by reparameterization of the Ball-Berry function. *American Society for Plant Biologists Annual Meeting.*
43. KA Bishop, **ADB Leakey**, EA Ainsworth (2012) Quantifying gaps in understanding crop and ecosystem responses to elevated CO₂. *American Society for Plant Biologists Annual Meeting.*
44. RM Peery, B Hug, RJC Markelz, R Kelly, M Segura, SB Gray, C Leisner, B Slattery, J Han, **ADB Leakey** (2012) Plants iView - an outreach program in plant biology for middle school students. *American Society for Plant Biologists Annual Meeting.*
45. SB Gray, KK Puthuval, RS Strellner, **ADB Leakey** (2012) Elevated atmospheric CO₂ impacts on root depth distribution, abscisic acid signaling and stomatal response to drought in field grown soybean. *American Society for Plant Biologists Annual Meeting.*
46. RJC Markelz, LX Lai, **ADB Leakey** (2012) Limiting nitrogen availability diminishes, but does not eliminate, the stimulation of leaf respiration by elevated carbon dioxide concentration. *American Society for Plant Biologists Annual Meeting.*
47. MZ Hussain, A VanLoocke, **ADB Leakey**, CJ Bernacchi (2012) Future carbon dioxide concentration decreases canopy evapotranspiration and soil water depletion by field grown maize. *American Meteorological Society's 30th Conference on Agricultural and Forest Meteorology.*
48. RJC Markelz, L Vossler, **ADB Leakey** (2013) Elevated CO₂ induced transcriptional reprogramming of respiration and a stimulation of dark respiration as *Arabidopsis thaliana* leaves transition from sinks and to sources. *Keystone Symposia on Plant Abiotic Stress and Sustainable Agriculture: Translating Basic Understanding to Food Production.*
49. SB Gray, KK Puthuval, RS Strellner, RE Paul, SP Klein, **ADB Leakey** (2013) Elevated atmospheric CO₂ alters root depth distribution, enhancing abscisic acid signaling and stomatal closure under drought in field-grown soybean. *Keystone Symposia on Plant Abiotic Stress and Sustainable Agriculture: Translating Basic Understanding to Food Production.*
50. SB Gray, M Sierbers, CJ Bernacchi, S Klein, C Ng, DR Ort, RE Paul, KK Puthuval, A Rogers, RE Shulman, RS Strellner, M Suguitan, **ADB Leakey** (2013) Should the paradigm

- of reduced plant drought stress at elevated CO₂ be hung out to dry? *American Society for Plant Biologists Annual Meeting*.
51. KJ Wolz, K Richter, TM Wertin, M Abordo, A Betzelberger, **ADB Leakey** (2013) Have we been ignoring physiological plasticity and genetic variation in stomatal function as a significant source of error in models of water and carbon fluxes? *International Photosynthesis Congress*.
 52. TM Wertin, KJ Wolz, M Adorbo, **ADB Leakey** (2013) Have we been ignoring interspecific variation in stomatal function as a significant source of error in models of carbon and water fluxes? *American Geophysical Union Annual Meeting*.
 53. E.A. Ainsworth, PJ Brown, **ADB Leakey**, LM McIntyre, I Barrios-Perez, B Dalsing, G Erice, C Leisner, C Montes, A Morse, L Rios-Acosta, S-I Shim, C Sorgini, C Yendrek (2014) Sites of sensitivity to ozone in diverse maize inbred lines. *Plant and Animal Genome*.
 54. **ADB Leakey**, KJ Wolz, TM Wertin, M Abordo, D Wang (2014) Stomatal function should be modeled as variable rather than universal across C₃ species. *American Society for Plant Biologists Annual Meeting*.
 55. SB Gray, M Sierbers, CJ Bernacchi, S Klein, C Ng, DR Ort, RE Paul, KK Puthaval, A Rogers, RE Shulman, RS Strellner, M Suguitan, **ADB Leakey** (2014) Should the paradigm of reduced plant drought stress at elevated CO₂ be hung out to dry? *Society for Experimental Biology Annual Meeting*.
 56. EA Ainsworth, PJ Brown, **ADB Leakey**, LM McIntyre, I Barrios-Perez, B Dalsing, G Erice, C Leisner, C Montes, A Molineaux, A Morse, L Rios-Acosta, S-I Shim, C Sorgini, T Tomaz, C Yendrek (2015) Sites of Sensitivity to Oxidative Stress from Ozone Exposure in Diverse Maize Inbred Lines. *Plant and Animal Genome Conference*.
 57. D Banan, M Holmes, H Schlake, RE Paul, MJ Feldman, I Baxter, **ADB Leakey** (2015) Rapid Hemispherical Photographic Phenotyping of Productivity and Canopy Dynamics in a Setaria. *Plant and Animal Genome Conference*.
 58. C Yendrek, T Tomaz, C Montes, G erice, L Rios_Acosta, PJ Brown, **ADB Leakey**, EA Ainsworth (2015) Integrating Hyperspectral Reflectance Spectroscopy into the Field Phenotyping Toolkit - A Case Study in Maize Subjected to Elevated [Ozone] in the US Mid-West. *Plant and Animal Genome Conference*.
 59. RE Paul, D Banan, SP Serbin, MJ Feldman, I Baxter, **ADB Leakey** (2015) Leaf-Level Hyperspectral Reflectance As a Tool for Measuring Photosynthetic Capacity in C4 Grasses. *Plant and Animal Genome Conference*.
 60. G Erice, T Tomaz, L Rios-Acosta, C Montes, A Molineaux, I Resano, CA Sorgini, C yendrek, A Morse, L Young, PJ Brown, LM McIntyre, EA Ainsworth, **ADB Leakey** (2015) Variation in sensitivity yield loss to ozone of diverse inbred and hybrid maize lines. *Maize Genetics Conference*.
 61. L Rios-Acosta, T Tomaz, G Erice, M kendzior, M Lewis, I Resano-Goizueta, I Barrios-Perez, E Campbell, C Ilunga, M Kmet, C Sorgini, PJ Brown, LM McIntyre, EA Ainsworth, **ADB Leakey** (2015) Effects of elevated ozone on tassel and ear traits in diverse inbred and hybrid maize. *Maize Genetics Conference*.

62. CA Sorgini, PJ Brown, EA Ainsworth, **ADB Leakey** (2015) Effects of ozone on maize ear architecture. *Maize Genetics Conference*.
63. CR Yendrek, T Tomaz, C Montes, G Erice, PJ Brown, LM McIntyre, **ADB Leakey**, EA Ainsworth (2015) Estimating ozone sensitivity in diverse maize germplasm with hyperspectral reflectance spectroscopy. *Maize Genetics Conference*.
64. RE Paul, D Banan, SP Serbin, MJ Feldman, I Baxter, **ADB Leakey** (2015) Leaf-Level Hyperspectral Reflectance As a Tool for Measuring Photosynthetic Capacity in C4 Grasses. *Maize Genetics Conference*.
65. D Banan, M Holmes, H Schlake, RE Paul, MJ Feldman, I Baxter, **ADB Leakey** (2015) Rapid Hemispherical Photographic Phenotyping of Productivity and Canopy Dynamics in a *Setaria*. *Maize Genetics Conference*.
66. G Erice, T Tomaz, L Rios-Acosta, C Montes, A Molineaux, I Resano, CA Sorgini, C yendrek, A Morse, L Young, PJ Brown, LM McIntyre, EA Ainsworth, **ADB Leakey** (2015) Variation in sensitivity yield loss to ozone of diverse inbred and hybrid maize lines. *American Society for Plant Biology Annual Meeting*.
67. M Holmes, D Banan, RE Paul, M Feldman, H Schlake, I Baxter, **ADB Leakey** (2015) Quantitative genetic analysis of tiller angle as a target for improved crop radiation interception efficiency in the model C4 grass *Setaria*. *American Society for Plant Biology Annual Meeting*.
68. Phenotyping Leaf Biochemical and Physiological Responses to Ozone in Diverse Field-Grown Maize Using Hyperspectral Leaf Reflectance (2016) C Yendrek, C Montes, T Tomaz, G Erice, PJ Brown, LM McIntyre, **ADB Leakey**, EA Ainsworth. *Plant and Animal Genome Conference*.
69. E Ainsworth, C Burroughs, G Erice, C Montes, S-I Shim, J Wedow, C Yendrek, P Brown, **ADB Leakey**, L McIntyre (2016) Phenotyping genetic diversity in acceleration of maize leaf senescence under elevated ozone. *Plant and Animal Genome Conference*.
70. L Rios-Acosta, G Erice, M Kendzior, M Lewis, J Mulcrone, I Resano-Goizueta, B Thompson, T Tomaz, I Barrios-Perez, E Campbell, C Ilunga, M Kmet, C Sorgini, J Wedow, PJ Brown, LM McIntyre, EA Ainsworth, **ADB Leakey** (2016) Genotypic diversity in yield and grain quality responses to elevated ozone of diverse inbred and hybrid maize. *Plant and Animal Genome Conference*.
71. **ADB Leakey**, G Erice, N Miller, D Xie, M Feldman, M Kendzior, P Prakash, M Haus, E Ainsworth, P Brown, M Mickelbart, E Spalding, I Baxter (2016) Rapid optical profilometry and computer vision of leaf epidermal structure applied to genetic and environmental control of stomatal patterning in model C₄ species. *Plant and Animal Genome Conference*.
72. **ADB Leakey** (2016) Targets for Crop Adaptation Discovered in Free-Air CO₂ Enrichment (FACE) Field Experiments. *Adaptation Futures 2016 – practices and solutions*.
73. **ADB Leakey** (2016) Rising [CO₂] as a benefit and a challenge to improving crop photosynthesis. *International Photosynthesis Congress, Maastricht, The Netherlands*.

74. **ADB Leakey** (2016) High Fidelity Detection of QTL for Biomass Production from Rapid Imaging of a C4 grass crop in the field. *Annual Meeting of American Society for Plant Biologists, Austin, TX.*
75. C Yendrek, T Tomaz, C Montes, Y Cao, L Rios-Acosta, A Morse, PJ Brown, L McIntyre, **ADB Leakey**, EA Ainsworth (2016) High-throughput Phenotyping of Ozone Stress in Diverse Maize Genotypes. *Annual Meeting of American Society for Plant Biologists, Austin, TX.*
76. **ADB Leakey**, CJ Bernacchi, PJ Brown, E Buckler, J Burke, T Clemente, M Gore, SP Long, DR Ort, E Spalding (2017) Novel Technologies to Solve the Water Use Problem of High Yielding C4 Bioenergy and Bioproduct Feedstocks. *ARPA-E Summit, Washington DC.*
77. L Rios-Acosta, G Erice, M Kendzior, M Lewis, J Mulcrone, I Resano-Goizueta, B Thompson, T Tomaz, I Barrios-Perez, C Montes, C Sorgini, J Wedow, PJ Brown, LM McIntyre, EA Ainsworth, **ADB Leakey** (2017) Genotypic diversity in the responses of yield and yield components to elevated ozone of diverse inbred and hybrid maize. *Maize Genetics Conference, St Louis, MO.*
78. R Valluru, PJ Brown, **ADB Leakey**, MA Gore, ES Buckler (2017) Integration of physiology and genetic load with genome wide prediction for drought tolerant sorghum. *Maize Genetics Conference, St Louis, MO.*
79. D Banan, RE Paul, MJ Feldman, M Holmes, H Schlake, I Baxter, **ADB Leakey** (2017) Influence of leaf rolling on canopy light environment and yield response to drought revealed by hemispherical imaging in Setaria. *Maize Genetics Conference, St Louis, MO.*
80. CA Sorgini, Brown PJ, EA Ainsworth, **ADB Leakey** (2017) Mapping oxidative stress response QTL in B73-Mo17 NILs. *Maize Genetics Conference, St Louis, MO.*
81. P Lemonnier, JC Quebedeaux, KA Bishop, D Bush, **ADB Leakey**, EA Ainsworth (2017) *Annual Meeting of American Society for Plant Biologists, Honolulu, HI.*
82. **ADB Leakey**, CJ Bernacchi, PJ Brown, E Buckler, J Burke, T Clemente, M Gore, SP Long, DR Ort, E Spalding (2018) Novel Technologies to Solve the Water Use Problem of High Yielding C4 Bioenergy and Bioproduct Feedstocks. *ARPA-E Summit, Washington DC.*

K. Book Reviews (in print or accepted)

L. Refereed Conference Papers and Presentations

M. Other: Meeting Presentations Without Published Abstracts

1. **ADB Leakey**. Dipterocarp regeneration ecology and sustainable forest management. *Management and Environmental Education Program, Danum Valley Field Centre, Malaysia, 2001.*
2. **ADB Leakey**. How will crops in the Midwest U.S. respond to drought under future CO₂ rich atmospheres? *University of Illinois Agronomy Extension Day, 2003.*

3. **ADB Leakey**, EA Ainsworth, P Davey, SP Long. How does elevated [CO₂] affect plant performance? Photosynthetic, respiratory and growth responses from ecosystem fumigation experiments. *US Department of Energy - Terrestrial Carbon Program Investigators Meeting, Boulder, CO, 2003.*
4. C Goss, **ADB Leakey**, A Rogers. Indirect effects of elevated CO₂ on dark respiration in cottonwood. *U.S. Department of Energy, Office of Science, Summer Undergraduate Laboratory Internship program symposium, 2003.*
5. **ADB Leakey**, CJ Bernacchi, FG Dohleman, DR Ort, SP Long. Will photosynthesis of maize (*Zea mays*) in the U.S. Corn Belt increase in future [CO₂]-rich atmospheres? *US Department of Energy Terrestrial Carbon Programme Synthesis Meeting, 2003.*
6. C Goss, **ADB Leakey**, A Rogers. The effect of elevated [CO₂] and water stress on carbon and nitrogen metabolism in field-grown soybean. *U.S. Department of Energy, Office of Science, Summer Undergraduate Laboratory Internship program symposium, 2004.*
7. K Sullivan, **ADB Leakey**, SP Long & DR Ort (2004) How will drought affect photosynthesis of soybean in future CO₂-rich atmospheres? *Environmental Horizons Meeting, UIUC.*
8. C Williams, **ADB Leakey**, SP Long & Lowell (2004) Soil moisture under soybean growing at elevated CO₂ and elevated O₃. *Ohio Academy of Sciences Science Day.*
9. K Sullivan, **ADB Leakey**, SP Long & DR Ort (2004) How will drought affect photosynthesis of soybean in future CO₂-rich atmospheres? *University of Maryland Undergraduate Research Symposium.*
10. A Peterson, D Marshak, **ADB Leakey**, L Heady, J Szarejko, DR Ort & SP Long (2005) How will maize (*Zea mays*) in the U.S. Corn Belt respond to future [CO₂]-rich atmospheres? *Environmental Horizons Meeting, UIUC.*
11. L Heady, **ADB Leakey**, S Naidu & SP Long (2005) Does climate change impact the primary carboxylase of the atmosphere? *Environmental Horizons Meeting, UIUC.*
12. SP Long, EA Ainsworth, CJ Bernacchi, **ADB Leakey**, PB Morgan, DR Ort, R Nelson. The direct responses of crop photosynthesis and production to atmospheric change. *Royal Society Meeting – Food crops in a changing climate, London, UK, 2005.*
13. KM Gillespie, JM Chae, **ADB Leakey**, EA Ainsworth. How will future elevated levels of CO₂ and O₃ affect antioxidant metabolism in soybean? *American Society of Plant Biologists Midwest Meeting, Chicago, 2006.*
14. LX Lai, **ADB Leakey**, EA Ainsworth. How will future CO₂-rich atmospheres affect photosynthetic biochemistry in soybean leaves? *Midwest Section American Society of Plant Biologists, Chicago, 2006.*
15. LX Lai, **ADB Leakey** & EA Ainsworth (2006) How will future CO₂-rich atmospheres affect photosynthetic biochemistry in soybean leaves? *Environmental Horizons meeting, UIUC.*
16. **ADB Leakey**, EA Ainsworth, DR Ort, EH DeLucia. Genomic regulation of the response of an agroecosystem to elements of global change. *US Department of Energy – Program in Ecosystem Research Investigators Meeting, Rhinelander, WI, 2007.*

17. B Hapeman, AM Santos, **ADB Leakey** & DR Ort (2007) Changes in stomatal aperture, not stomatal frequency, drive reduced stomatal conductance and transpiration by corn (*Zea mays*) at elevated CO₂. *Environmental Horizons meeting, UIUC*.
18. RJC Markelz, **ADB Leakey** & DR Ort (2007) Elevated [CO₂] directly impacts leaf water potential in C₃ soybean but not C₄ maize. *Environmental Horizons meeting, UIUC*.
19. **ADB Leakey**, R Boyd, RJC Markelz. Adapting crops to global climate change (2009) *DARWIN 200: a South American Celebration, Punta del Este, Uruguay*.
20. SB Gray, RS Strellner, **ADB Leakey** (2010) Free-air CO₂ enrichment does not lessen the impact of drought on soybean photosynthesis under field conditions. *GEEB Symposium, UIUC*.
21. KJ Richter, **ADB Leakey** (2010) Stomatal acclimation to rising O₃ concentrations: an important but missing element in models of global carbon and water cycling. *GEEB Symposium, UIUC*.
22. RA Boyd, **ADB Leakey** (2010) Are there genes essential for the stimulation of respiration and growth when plants are grown at elevated CO₂ concentrations? *GEEB Symposium, UIUC*.
23. RJC Markelz, RS Strellner, **ADB Leakey** (2010) Stomatal and non-stomatal limitations to C₄ photosynthesis in maize induced by drought are relieved by elevated CO₂. *GEEB Symposium, UIUC*.
24. RA Boyd, **ADB Leakey** (2010) Are there genes essential for the stimulation of respiration and growth when plants are grown at elevated CO₂ concentrations? *DOE Global Change Education Program Summer Meeting, Knoxville, TN*.
25. L Rios, **ADB Leakey** (2010) Response of soybean agroecosystem water relations to future heatwaves. *DOE Global Change Education Program Summer Meeting, Knoxville, TN*.
26. **ADB Leakey**, F Xu, KM Gillespie, JM McGrath, EA Ainsworth, DR Ort, RA Boyd (2010) Transcriptional reprogramming of leaf respiratory metabolism in plants grown at elevated [CO₂] *New Phytologist Symposium, Oxford, UK*.
27. RA Boyd, RJC Markelz, **ADB Leakey** (2010) Are there genes essential for the stimulation of respiration and growth when plants are grown at elevated CO₂ concentrations? *New Phytologist Symposium, Oxford, UK*.
28. J Pride, S Gray, **ADB Leakey** (2011) Elevated CO₂ increases lateral root branching in *Medicago Truncatula*. *Osher Life Long Learning Institute Citizen Scientist Program meeting, Champaign, IL*.
29. **ADB Leakey** (2011) Environmental change impacts on soybean rooting, food production and ecosystem function *Environmental Change Institute Annual Symposium, UIUC*.
30. SB Gray, RS Strellner, KK Puthuval, R Shulman, MH Siebers, A Rogers, **ADB Leakey** (2012) Minirhizotron imaging reveals nodulation of field-grown soybean is enhanced by Free-Air CO₂ Enrichment only when combined with drought stress. *GEEB Symposium, UIUC*.

31. R Peery, M Segura, RJC Markelz, R Kelly, SB Gray, C Leisner, J Han, B Slattery, B Hug, **ADB Leakey** (2012) Plants iView: an outreach program in plant biology for middle school students. *UIUC Public Engagement Symposium*.
32. RJC Markelz, **ADB Leakey** (2013) Elevated CO₂ induced transcriptional reprogramming of respiration and a stimulation of dark respiration as *Arabidopsis thaliana* leaves transition from sinks to sources. *Keystone Symposia on Plant Abiotic Stress and Sustainable Agriculture: Translating Basic Understanding to Food Production*.
33. S Gray, KK Puthuval, RS Strellner, RE Paul, SP Klein, **ADB Leakey** (2013) Elevated atmospheric CO₂ alters root depth distribution, enhancing abscisic acid signaling and stomatal closure under drought in field-grown soybean. *Keystone Symposia on Plant Abiotic Stress and Sustainable Agriculture: Translating Basic Understanding to Food Production*.
34. T Wertin, K Wolz, M Adorbo, **ADB Leakey** (2013) Replacing generic parameterizations of stomatal function in temperate trees with specific-specific functions allows modeling to resolve interspecific variation in carbon and water fluxes. *Beckman Post-Doctoral Scientists Symposium, UIUC*.
35. F Ruan, D Banan, RE Paul and **ADB Leakey** (2016) Quantitative Trait Loci (QTL) analysis of the genes controlling the size of the seed head (panicle) under wet versus dry conditions in the model C4 grass, *Setaria*. *UIUC Undergraduate Research Symposium*.
36. Development and application of novel phenotyping techniques to understand the genetic control of productivity and drought traits in the model C4 grass *Setaria* (Feb 2017) *Department of Energy Genomic Sciences Annual Principal Investigator Meeting, Washington DC*.
37. N Choquette, C Topp, **ADB Leakey**, EA Ainsworth (2016) Aboveground and Belowground Responses to Elevated Ozone in Maize Lines: Mo17, B73, & B73 x Mo17. *UIUC Undergraduate Research Symposium*.
38. P Lemonnier, JC Quebedeaux, D Bush, **ADB Leakey**, EA Ainsworth (2017) Over-expressing a phloem sucrose transporter to improve soybean photosynthesis at elevated [CO₂]. *USDA-NIFA PIs meeting*.
39. J Ferguson, K Xie, P Prakash, N Miller, E Spalding, **ADB Leakey** (2017) High throughput image processing to elucidate genetic loci underlying stomatal density variation in C4 grasses. *Machine Learning: Farm-to-Table Workshop, UIUC*.
40. D Banan, RE Paul, M Feldman, I Baxter, **ADB Leakey** (2017) Influence of leaf rolling on canopy light environment and yield response to drought revealed by hemispherical imaging in *Setaria*. *Setaria Genetics Congress, Donald Danforth Plant Science Center*.
41. RE Paul, D Banan, P Elsworth, M Feldman, EA Ainsworth, I Baxter, A Cousins, **ADB Leakey** (2017) Leaf-level hyperspectral reflectance accurately detects genotype-by-environment response of leaf allometry and nitrogen content to drought in a *Setaria* mapping population. *Setaria Genetics Congress, Donald Danforth Plant Science Center*.
42. TM Wertin, N Choquette, PJ Brown, EA Ainsworth, **ADB Leakey** (2017) A high throughput leaf gas exchange method identified QTLs responsible for photosynthesis and stomatal conductance sensitivity to ozone in maize. *Phenome 2017, Tucson, AZ*.

43. JN Ferguson, VL Scaven, PJ Brown, TE Clemente, EP Spalding, ND Miller, **ADB Leakey** (2017) Water efficient sorghum technologies: increasing stomatal resistance to water loss. *Phenome 2017, Tucson, AZ.*
44. JC Quebedeaux, TM Wertin, **ADB Leakey** (2017) Potential gene targets to improve crop productivity under elevated CO₂. *Institute for Sustainability, Energy and Environment Congress, UIUC.*
45. TM Wertin, NE Choquette, F Ogut, C Montes, C Sorgini, PJ Brown, LM McIntyre, ADB Leakey, EA Ainsworth (2017) Heritability of photosynthetic traits is altered by growth at elevated ozone. *NSF Plant Genome Research Program Principal Investigators Meeting, Washington DC.*
46. ADB Leakey, KJ Wolz, TM Wertin, PPrakash, N Miller, J Ferguson, M Adorbo, D Banan, M Feldman, L Freyfogle, RE Paul, D Wang, I Baxter, TP Brutnell, E Spalding (2017) Diversity in stomatal function is integral to modeling and enhancing plant water use efficiency. *Plants In Silico Workshop, Oxford, UK.*
47. **ADB Leakey**, JN Ferguson, ND Miller, J Xie, C Pignon, G Erice, TM Wertin, N Choquette, M Feldman, F Ogut, P Prakash, P Schmuker, A Dmitrievna, D Allen, EA Ainsworth, I Baxter, TP Brutnell, ES Buckler, PJ Brown, TE Clemente, SP Long, LM McIntyre, E Spalding (2018) Phenomics of stomata and water use efficiency in model C4 crops. *Department of Energy Genomic Sciences Annual Principal Investigator Meeting, Washington DC.*

III. RESIDENT INSTRUCTION

A. Summary of Instruction

1. Descriptive Data

- Spring 2007 50% of *Plants and Global Change* (IB 440) with 29 students.
- Fall 2007 2 lectures in *Photosynthesis* (IB 421) with 15 students.
- Fall 2008 100% of *Global Warming, Biofuels & Food* (IB107) with 55 students.
- Fall 2008 Participant in LAS Reflective Teaching Seminar.
- Spring 2009 50% of *Plants and Global Change* (IB 440) with 44 students.
- Fall 2009 100% of *Global Warming, Biofuels & Food* (IB107) with 149 students.
- Fall 2010 100% of *Global Warming, Biofuels & Food* (IB107) with 112 students.
- Spring 2011 50% of *Plants and Global Change* (IB 440) with 46 students.
- Spring 2011 2 lectures and research supervision of 1 student in *Introduction to Research in Integrative Biology* (IB199).
- Spring 2012 1 lecture and research supervision of 2 students in *Biomath* (IB429).
- Fall 2012 100% of *Global Warming, Biofuels & Food* (IB107) with 66 students.
- Spring 2013 50% of *Plants and Global Change* (IB 440) with 47 students.

Spring 2013 Research supervision of 1 student completing IB 490 senior thesis

Spring 2013 100% of Plant Molecular and Physiological Biology seminar series (IB 513) with 65 students

Fall 2013 100% of *Global Warming, Biofuels & Food* (IB107) with 66 students.

Spring 2014 100% of Plant Molecular and Physiological Biology seminar series (IB 513) with 52 students

Spring 2014 Research supervision of 1 student completing IB 390 independent research

Spring 2014 Research supervision of 1 student completing CPSC 396 independent research

Fall 2014 Research supervision of 1 student completing CPSC 295 independent research

Fall 2014 Research supervision of 1 student completing IB 390 independent research

Fall 2014 Research supervision of 1 student completing IB 490 independent research

Spring 2015 50% of *Plants and Global Change* (IB 440) with 49 students.

Spring 2015 Research supervision of 1 student completing CPSC 396 independent research

Spring 2015 Research supervision of 2 student completing IB 390 independent research

Fall 2015 Research supervision of 1 student completing IB 390 independent research

Fall 2015 50% of *Ecosystem Ecology* (IB 440) with 49 students.

Fall 2015 Research supervision of 1 student completing IB 490 independent research

Spring 2016 50% of *Environmental Biology* (IB 105) with 86 students.

Spring 2016 Research supervision of 1 student completing IB 490 independent research

Fall 2017 50% of *Ecology* (IB203) with 146 students.

Fall 2017 Research supervision of 2 students completing IB 390 independent research

Spring 2018 50% of *Plants and Global Change* (IB 440) with 49 students.

Spring 2018 Research supervision of 2 students completing IB 390 independent research

Fall 2018 50% of *Ecology* (IB203) with 117 students.

Fall 2018 Research supervision of 1 students completing IB 390 independent research

Fall 2018 Research supervision of 3 students completing IB 390 independent research

Spring 2019 Research supervision of 2 students completing IB 390 independent research

Spring 2019 Research supervision of 3 students completing IB 390 independent research

Fall 2019 50% of *Ecology* (IB203) with 132 students.

Spring 2020 50% of *Plants and Global Change* (IB 440) with 44 students

2. Supervision of Graduate Students

Ph.D. candidates:

2007 – 2012	RJ Cody Markelz, NSF GRF Fellow , “ <i>Interactive effects of elevated carbon dioxide concentration with nutrient availability and leaf development on plant carbon metabolism</i> ”, now post-doctoral scientist at UC Davis.
2008 – 2013	Sharon Gray, DOE Graduate Fellow , “ <i>Interactive effects of elevated carbon dioxide concentration and water availability on field-grown soybean (Glycine max)</i> ”, became post-doctoral scientist at UC Davis, now deceased.
2011 – 2011	Lisa Lai, did not complete, now technician at USDA-ARS.
2012 – 2019	Lorena Rios Acosta, NSF IGERT Fellow, NSF GRF Fellow
2012 – 2019	Darshi Banan
2013 – 2020	Rachel Paul
2014 – 2019	Parthiban Tathapalli Prakash, Lee Foundation-IRRI Fellow
2015 – present	Jennifer Quebedeaux, GAANN Fellow
2016 – present	Jiayang “Kevin” Xie, FFAR Fellow
2017 – present	Dustin Mayfield Jones, Illinois Distinguished Fellowship
2020 – present	Grace Tan

M.Sc. students:

2008 – 2011	Katherine Richter, “ <i>Stomatal sensitivity to photosynthetic and environmental signals in Glycine max grown at elevated atmospheric concentrations of CO₂ and O₃</i> ”, now at Sears Roebuck.
2013 – 2013	Juan Quijano (non-thesis degree)

Member of preliminary examination committee:

2008	Paul Nabity, Ph.D. candidate, Plant Biology.
2010	Anna Locke, Ph.D. candidate, Plant Biology.
2010	Pimonrat Tiansawat, Ph.D. candidate, PEEC.
2010	Daniel Scholes, Ph.D. candidate, PEEC.
2011	Juan Quijano, Ph. D. candidate, Civil & Environmental Engineering.
2011	Michael Urban, Ph.D. candidate, PEEC.
2012	Venkatraman Srinivasan, Ph. D. candidate, Civil & Environmental Engineering.
2012	Katie Heineman, Ph.D. candidate, PEEC.
2014	Yi Lou, Ph. D. candidate, NRES.
2016	Charles Pignon, Ph.D. candidate, Crop Sciences.
2017	Bailey Morrison, Ph.D. candidate, Geography and GIS.
2018	Matt Candeias, Ph. D. candidate, NRES.
T.B.D.	Jiaqi (Jessie) Guo, Ph.D. candidate, Crop Sciences.
2018	Alonso Favela, Ph.D. candidate, PEEC.
2018	Kavya Kannan, Ph.D. candidate, Plant Biology.
2018.	Chuankai Zhao, Ph.D. candidate, Chemical and Biomolecular Engineering
2019	Meredith Richards, Ph.D. candidate, Civil and Environmental Engineering

2020	Daljeet Dhaliwal, Ph.D. candidate, Crop Sciences
2020	Eric Wolske, Ph.D. candidate, Crop Sciences

Member of Ph.D. or M.Sc. thesis examination committee:

2012	Paul Nabity, Ph.D. candidate, Plant Biology.
2013	Daniel Scholes, Ph.D. candidate, PEEC.
2013	Juan Quijano, Ph. D. candidate, Civil & Environmental Engineering.
2013	Pim Tiansawat, Ph. D. candidate, Plant Biology.
2013	Venkat Srinivasan, Ph. D. candidate, Civil & Environmental Engineering.
2013	Anna Locke, Ph. D. candidate, Plant Biology.
2015	Michael Urban, Ph.D. candidate, PEEC.
2015	Yi Lou, Ph. D. candidate, NRES.
2016	Katie Heineman, Ph.D. candidate, PEEC.
2016	Christopher Black, Ph.D. candidate, Plant Biology.
2019	Yinghui Xin, M.Sc. candidate, Plant Biology.
2019	Robert Twohey, M.Sc. candidate, Crop Sciences.
2020	Chuankai Zhao, Ph.D. candidate, Chemical Engineering.
2020	Kavya Kannan, Ph.D. candidate, Plant Biology
2020	Matt Candeias, Ph.D. candidate, PEEC.
2021	Alonso Favela, Ph.D. candidate, PEEC.
2021	Meredith Richards, Civil and Environmental Engineering.

Post-doctoral Scientists

2012 – 2018	Dr. Timothy Wertin
2012 – 2015	Dr. Scott Woolbright
2013 – 2016	Dr. Gorka Erice
2016 – 2019	Dr. John Ferguson
2017 – 2018	Dr. Avinash Karn
2017 – 2019	Dr. Eric Sedivy
2018 – 2020	Dr. Ashish Rajurkar
2018 – 2019	Dr. Charles Pignon
2018 – 2020	Dr. Niteen Kadam
2019 – present	Dr. Sebastian Varela
2019 – 2021	Dr. Amandine Germon
2019 – 2021	Dr. Alistair Leverett
2020 – present	Dr. James Fischer
2021 – present	Dr. Daniel Lunn

Visiting undergraduate students:

2015	Dan Xie, Fujian Agriculture and Forestry University, China
2015-2016	Jiayang (Kevin) Xie, Shanghai Jiao Tong University, China
2018-2019	Shanshan Yi, Fujian Agriculture and Forestry University, China

Visiting graduate students:

Joana Zaragoza Castells, University of York, UK

Visiting Postdoctoral Associates

Anna Armstrong, University of York, UK

Visiting Scientists

	Dr. Tiago Tomaz, Fulbright Scholar, Australia
	Dr. Hongyan Guo, Nanjing University of China
2018 – 2019	Dr. Dan Wang, Nanjing University of Information Science and Technology
2019 – 2020	Dr. Risheng Ding, China Agricultural University

3. Other Contributions to Instructional Programs

I have mentored the following undergraduate and high school students doing research projects:

- 2017 Jim Berry, Aya Bridgeland, Savvan Pflugmaker, Anna Dmitrieva, Peter Schmuker, Lincoln Taylor, Madison Murray, Matthew Dungan, Dylan Allen, Aishwarya Kammala. (all partially funded by *Student Ambassadors of System Biology for Sustainable Food and Energy*)
- 2016 Matt Kendzior, Finey Ruan (*Distinction for Honors Thesis*), Kevin Xie, Jim Berry, Aya Bridgeland, Anna Dmitrieva, Peter Schmuker, Cecilia Pigozzi, Eric Peterson.
- 2015 Mark Holmes, Matt Kendzior, Hannah Schlake, Amanda Youseff, Marshal Allston-Yeagle, Jonny Yokey, Mark Lewis, Dan Xie, Roya Banan, Jennifer Quebedeaux, Finey Ruan (*Distinction for Honors Thesis*).
- 2014 Mark Holmes (*ASPB SURF fellowship*), Matt Kendzior, Mark Lewis, Hannah Schlake, Andrew Chancellor, Amanda Youseff, Marshal Allston-Yeagle, Jonny Yokey, Finey Ruan, Shivaliben Patel, Ines Resano, Sarah Keeley, Kara Barto.
- 2013 George Gunter, Mark Holmes, Matt Kendzior, Mitch Dickey, Audrey Rouse, Matt Kmet, Andrew Chancellor, Amanda Youseff, Marshal Allston-Yeagle, Jonny Yokey, Eileen Campbell, Amanda Jacobs, Alex Hathcock, Charly Ilunga.
- 2012 Lauren Vossel, Stephanie Klein (*ASPB SURF fellowship*), Rachel Paul, Chris Ng, Kevin Wolz (*NSF Biomath fellowship*), David Haffey, Dan Berger, Mark Adorbo (*NSF Biomath fellowship*)
- 2011 Brian Zehr, Mike Suguitan, Lauren Vossel, Rodrigo Ramirez, Steven Waltersdorf, Stephanie Klein, Rachel Paul
- 2010 Geoff Boise, Ryan Boyd (*DOE Global Change Education Program fellowship*), Brian Zehr, Mike Suguitan, Lauren Vossel, Brianna Usdrowski (*Environmental Change Institute SoyFACE Ambassadors fellowship*), Lorena Rios Costa (*DOE Global Change Education Program fellowship*)
- 2009 Reid Strellner (*Environmental Change Institute SoyFACE Ambassadors fellowship*), Ryan Boyd, Mike Suguitan, Kevin Dommer, Kannan Puthaval
- 2008 Reid Strellner, Ryan Boyd, Brian Chae, Chris Kwan, Derek Haselhorst

- 2007 Chris Rudisill, Matt Nantie, Alex Cahill, Sara Sligar, Michael Boyd, Erik Connelly, Katie Richter, Grace Harriett
- 2006 Cody Markelz, Anne-Marie Santos, Brett Hapeman
- 2005 Lisa Lai (*Distinction for Honors Thesis*)
- 2004 David Marshak
- 2004 Amy Peterson (*NSF Undergraduate Mentoring in Environmental Biology fellowship*)
- 2003 Kate Sullivan (*Environmental Council Summer Undergraduate Research Experience fellowship*)
- 2003 Chalance Williams (*Minority Undergraduates Research Experience fellowship*)

B. Evaluation of Instruction

1. Student ICES Course Evaluation Results

I was on the Incomplete List of Teachers Ranked Excellent by Students for:

- IB440 *Plants & Global Change* in Spring 2007
- IB107 *Global Warming, Biofuels, Food* in Fall 2008
- IB440 *Plants & Global Change* in Spring 2009
- IB440 *Plants & Global Change* in Spring 2011
- IB440 *Plants & Global Change* in Spring 2013
- IB440 *Plants & Global Change* in Spring 2015
- IB440 *Plants & Global Change* in Spring 2018
- IB440 *Plants & Global Change* in Spring 2020

IV. SERVICE (PUBLIC ENGAGEMENT, PROFESSIONAL/DISCIPLINARY, AND UNIVERSITY)

A. Summary of Service

1. Public Engagement

I try to broadly disseminate the topics and findings of my research. For example, I have >1400 followers on Twitter. This facilitates interactions with other scientists, educators, industry, policy makers, farmers and other members of society. However, for most of my public engagement efforts I use the following targeted approach.

Improving educational attainment of minority and underrepresented groups, including women, is a key element in raising overall standards in U.S. science education (ACE, 2008; NSF, 2006). Educational research indicates that middle school is an age (11-13 years) when many students, especially girls, have experiences and make decisions that determine whether or not they later pursue Science, Technology, Engineering and Mathematics (STEM) subjects in higher education or as a career (Jensen and McMullen 1995). In addition, women obtain >50% of U.S. undergraduate degrees in biology, but <20% undergraduate degrees in computer science, engineering and physics (National Science Foundation, 2014). This is a disadvantageous pattern given the greater and greater need for interdisciplinary approaches to biological research that can solve the great societal challenges of today. I also have a very personal interest in the success of women scientists. I am lucky that both my mother and my wife are role models as female

scientists/educators. And, I have two daughters that I hope see no barriers to the educational and career paths of their choice. In response, I have developed two long-term outreach projects since 2011 that target middle school students:

1) Pollen Power (<http://pollensummercamp.illinois.edu/>) is an annual, week long summer camp that provides an opportunity for girls to study plant responses to climate change in the distant past and the coming century. Four research groups, each of 4-6 campers led by female graduate students, use confocal microscopes to image fossil pollen that has been used to reconstruct vegetation patterns in past climates. This gives the campers first-hand experience in a research environment with female mentors. They also produce video reports using our green-screen special effects stage to communicate climate change science to their families. And, they perform corn pollinations and learn about how crop reproductive processes are sensitive to climate change. There is a conscious focus on bioimaging. Bioimaging is considered a particularly valuable educational activity because the technology creates an opportunity for teaching quantitative and computer skills, along with physics concepts, in the context of a biological problem (Kelley et al., 2008). The camp is funded as a broader impacts activity on one of my NSF-funded projects and has run annually for 20-30 students each year since 2013 with support from UIUC's Institute for Genomic Biology. Education professor, Dr Barbara Hug is part of our team and performed assessments indicating positive outcomes of the camp for both the middle school students as well as graduate student teachers.

2) Plants iView (<http://plantsiview.igb.illinois.edu/>) started out as part of an after-school enrichment program at Urbana Middle School and has now transitioned into an activity that is integrated with the school curriculum at Jefferson Middle School in Champaign and La Salle Public Charter School in St Louis. Plants iView was initiated by the Plant Biology Association of Graduate Students at UIUC with my support and guidance. With \$40,000 awarded from the ASPB Educational Foundation and UIUC Office for Public Engagement, *Plants iView* initially engaged middle school students through a diverse set of interactive, plant biology-themed activities. These lesson plans included activities on DNA, soils and photosynthesis, which were disseminated through our webpage. In addition to these core activities our group offered lessons at a wide range of educational institutions in our home town of Champaign-Urbana, as well as further away in the Chicago suburbs. In 2016, in an effort to reach a larger number of students, we chose to develop a more in-depth class module on high-throughput phenotyping and crop improvement. Over the course of a month, members of our team were in Jefferson Middle School interacting with all the 7th-grade students in their science classes almost daily. They led the students through planting and caring for Arabidopsis, imposing drought treatments, setting-up the hardware of Raspberry Pi computers and cameras, coding the software to perform time-lapse photography, analyzing and interpreting the results. The middle schools students responded very positively to the class as a demonstration of how the subjects they study in theory have real-world application monitoring genotypic variation in plant responses to abiotic stress. In 2017, this activity started to be supported as a broader impacts activity on another NSF project, and my collaborators at the Donald Danforth Plant Science Center started a sister-program at La Salle Public Charter School, which serves a very under-resourced community in St Louis.

A list of my other public service activities is below:

1. Interviewed by Nature News for story *Climate change could boost cash crops* (2004)
2. Invited teacher to 45 Mexican scientists at the International Workshop on Photosynthetic Gas Exchange and Chlorophyll Fluorescence Measurements. Monterrey, Mexico (2005)
3. Lecture at Hathaway Brown School, (Shaker Heights, OH) titled *Food for thought: crop responses to climate change in the 21st century*. (2006)
4. Interviewed by Australian Broadcast Corporation for story *Rising CO₂ less of a boost to food crops*. (2006)
5. Interviewed by Chicago Tribune for story *Global Warming perk disputed* (2006)

6. Interviewed by Daily Illini for story *Crops ready for 2050 climate* (2006)
7. Invited consultant to Monsanto Fellows Climate Change Workshop, St Louis, MO. (2007)
8. Public lecture at Urbana Free Library for a National Climate Change Teach-In, titled *Food (and fuel) for thought: plant responses to climate change*. (2008)
9. Public lecture at Urbana YMCA organized by Students for Environmental Concerns for Earth Day, titled *Food (and fuel) for thought: plant responses to climate change*. (2008)
10. Lecture to Middle School Girls attending summer science camp, Girls Adventures in Math, Engineering and Science (GAMES), titled *Climate Change and Food*. (2008)
11. Lecture to visiting delegation from AAPRESID, the Argentinean No-Till Farmers Association, titled *Food (and fuel) for thought: plant responses to climate change*. (2008)
12. Mentor to a disabled high school student getting research experience in my lab as a participant in the Midwest Alliance for Science, Technology, Engineering and Mathematics Education and Careers (<http://stemmidwest.org/>). (2008)
13. Interviewed on Deutsche Radio, Germany (2009) - Kohlendioxid-Zunahme forciert Zucker-Stoffwechsel von Sojabohnen (*Carbon dioxide increase forces sugar metabolism of soybeans*). <http://www.dradio.de/dlf/sendungen/forschak/917106/>
14. Public lecture and webinar to *A New Green Revolution Meeting Global Food and Energy Demands. A Joint Area Centers Symposium*. (2009)
15. Interviewed on Sunrise on the Farm, WICD TV, Champaign.(2009)
16. Lecture to Middle School Girls attending, Girls Adventures in Math, Engineering and Science summer science camp at UIUC (July 2009), titled *Climate Change and Food*. (2009)
17. Lecture and tour of SoyFACE facility to 90 undergraduates from UIC Ecology course (2009)
18. Lecture to visiting delegation from AAPRESID, the Argentinean No-Till Farmers Association (Sept 2009), titled *Food (and fuel) for thought: plant responses to climate change*. (2009)
19. Food for thought – crop responses to climate change (October 2009) Meeting of *Students for Environmental Concerns, UIUC*. (2009)
20. Mentor in DOE *Graduate Research for the Environment Fellowship* program (2009-)
21. Mentor in DOE *Summer Undergraduate Research Experience* fellowship program (2009-)
22. Lecture and tour of SoyFACE facility to 90 undergraduates from UIC Ecology course (2010)
23. Lecture to Training Workshop for High School Teachers, titled *Modeling plant and ecosystem responses to global change*. (2010)
24. Consultant to LI-COR Biosciences company on equipment design (2011-)
25. Invited Member of International Advisory Committee to South African CO₂ and Vegetation Consortium (2011-)
26. Interviewed for **front page story in *New York Times*** (2011)
27. Mentor in Osher Life Long Learning Institute Citizen Scientist Program (2011-)

28. Lecture on “Climate Change” to Mahomet Junior High School Students (2012)
29. Chair of committee for Institute for Genomic Biology “Genome Day” at Orpheum Children’s Museum, Champaign (2012)
30. Interviewed by **Earth Sky on NPR radio** (2012)
31. Interviewed by Channel 15 news, Champaign, IL (2012)
32. Taught class on “Plant responses to Global Environmental Change” for Science Club at Mahomet Junior High (2012)
33. Interviewed on Morning Show, WICD TV, Champaign.(2014)
34. Interviewed for story in *New York Times* (2014)
35. Interviewed for story on **French TV channel TF1** (2015)
36. **Advised staffers for Senator Bill Nelson** (Ranking Member of the Senate Commerce Committee) in preparation for a hearing of U.S. Senate Committee on Commerce, Science and Transportation on impacts of climate change (<https://www.commerce.senate.gov/public/index.cfm/2015/12/data-or-dogma-promoting-open-inquiry-in-the-debate-over-the-magnitude-of-human-impact-on-earth-s-climate>)
37. Interview for Midwest Center for Investigative Reporting <http://bit.ly/2cwEq3O> (2016)
38. Interview by Sara Peach for her book on climate change impacts, “Hot Babes” <http://www.peachreport.com/> (2016)
39. Released promotional YouTube video on Water Efficient Sorghum Technologies project (2017) <https://www.youtube.com/watch?v=xYf7r9CrBk&feature=youtu.be>
40. Tour of the UIUC Energy Farm for U.S. Secretary of Energy, Jennifer Granholm (2021)
41. Testified to the U.S. Congressional *House Science, Space, and Technology Subcommittee on Energy* hearing on “Bioenergy Research and Development for the Fuels and Chemicals of Tomorrow.” (2022)
42. Tour of the UIUC Energy Farm for U.S. Under Secretary of Energy for Science, Geraldine Richmond (2021)

2. Service to Disciplinary and Professional Societies or Associations

Referee of more than 200 manuscripts for the following journals: *Agricultural and Forest Meteorology*, *Conservation Physiology*, *Crop Science*, *Current Opinion of Plant Biology*, *Ecology*, ***eLIFE***, *Environmental and Experimental Botany*, *Experimental Agriculture*, *Field Crops Research*, *Functional Ecology*, *Functional Plant Biology*, ***Global Change Biology***, *Global Ecology & Biogeography*, *Holocene*, *International Journal of Biometeorology*, *Journal of Ecology*, *Journal of Environmental Quality*, *Journal of Experimental Botany*, *Journal of Plant Physiology*, *Journal of Tropical Ecology*, *Methods in Ecology and Evolution*, ***Nature Climate Change***, ***Nature Communications***, ***Nature Plants***, *New Phytologist*, *Oecologia*, *Photosynthesis Research*, *Photosynthetica*, *Physiologia Plantarum*, *Planta*, *Plant and Soil*, *Plant Biology*, *Plant Biotechnology Journal*, ***The Plant Cell***, *Plant Cell & Environment*, *Plant Ecology*, *Plant Functional Biology*, *Plant Physiology*, *Plant Science*, *PLOS Genetics*, ***Proceedings of the***

National Academy of Sciences USA, Proceedings of the Royal Society B, Science of the Total Environment, The Plant Journal, Tree Physiology, Trees-Structure & Function

- 2001 Session Chairman of *Forest tree seedling ecology* at British Ecological Society Annual Meeting
- 2003 Judge of graduate student presentation competition at Ecological Society of America Annual Meeting
- 2003 Session Chairman of *Physiological Ecology* at Ecological Society of America Annual Meeting
- 2003 Referee of grant proposals for Binational (US-Israel) Agricultural Research and Development Fund
- 2004-2005 Editorial review board: *Tree Physiology*
- 2006 External examiner for B.A. Honors thesis defense at Knox College, Galesburg, IL
- 2006 Referee for South African National Research Foundation faculty excellence program
- 2007 Organizer of workshop on *Methods in Genomic Ecology* for scientists funded by the Department of Energy Program in Ecosystem Research Genes to Ecosystems Initiative.
- 2007 Invited contributor to European Science Foundation workshop *FACEing the future: planning the next generation of elevated CO₂ experiments on crops and ecosystems*, Rome, Italy.
- 2007 Invited contributor to Royal Society Workshop *The Impacts of Ground Level Ozone in the 21st Century*, London, UK
- 2008 Invited contributor to World Universities Network workshop *Global Challenges and Opportunities*, Pennsylvania State University.
- 2008 Invited contributor to Department of Energy workshop *Exploring science needs for the next generation of climatic change and elevated CO₂ experiments in terrestrial ecosystems*, Washington DC.
- 2008 Invited member of ASA-CSSA-SSSA Climate Change Working Group to provide comments and feedback on USDA's Climate Change Strategic Plan.
- 2008 Panel member evaluating proposals to the Midwest Region of DOE's National Institute for Climate Change Research.
- 2009 Reviewer of 2 proposals to Integrative Organismal Systems, NSF
- 2009 Panel member evaluating proposals to the European Commission's 7th Framework program on *Forest Ecosystem Genomics*.
- 2009 Invited participant in National Evolutionary Synthesis Center Catalysis meeting on *The Evolution of C4 Grasses*
- 2009 Referee for "Introduction to Ecological Genomics", Oxford University Press.

2009 Reviewer of proposal for the Midwest Region of DOE's National Institute for Climate Change Research.

2009 Reviewer of proposal for National Environmental Research Council, UK

2010 Reviewer of proposal for NSF Plant Genome

2010 Reviewer of proposal for Minnesota Agricultural Station

2010 Reviewer of proposal for DOE EPSCOR

2010 Reviewer of proposal for U.S. Civilian Research and Development Foundation

2010 Session Chair at New Phytologist Symposium on Respiration and Global Change

2011 Reviewer of proposal for NSF Plant Genome Research Program

2011 Reviewer of proposal for Murdoch Charitable Trusts

2012 Reviewer of proposal for DFG (German Research Foundation)

2012 Reviewer of proposal for Dutch Research Foundation

2012 Lecturer at SEB Plant Environmental Physiology Group Workshop on Ecophysiological Techniques, Portugal.

2013 Local Chair, International Symposium on C₄ and CAM Photosynthesis

2013 Program Committee, 16th International Congress on Photosynthesis

2013 Reviewer of proposal for Fulbright Commission

2014 Reviewer of pre-proposal for Genome BC (British Columbia), Canada

2014 Reviewer of proposals for UD Davis Genome Institute

2014 Reviewer of proposal for Gordon Research Conference

2014 Lecturer at SEB Plant Environmental Physiology Group Workshop on Ecophysiological Techniques, Portugal.

2015 Reviewer of proposal for Genome BC (British Columbia), Canada

2015 Reviewer of proposal for National Environmental Research Council, UK

2015 Reviewer of proposal for NSF Integrative Environmental Physiology

2016 External examiner for graduate thesis at Rhodes University, South Africa

2016 External examiner for graduate thesis at University of Newcastle, Australia

2016 Reviewer of proposal for National Institute of Food and Agriculture

2017-2018 External Advisory Board for International Conference on Arabidopsis Research

2018-2019 Convener of Crop Molecular Genetics interest group at the Society of Experimental Biology

2018 Reviewer of proposal for Kansas EPSCOR program

2018 Reviewer of proposal for NSF Plant Genome Research Program

2019 Reviewer of proposal for Agriculture and Agri-Food Canada

2019 - 2021 Elected to Executive Board of North American Plant Phenotyping Network

2019 - Convener of Photosynthesis interest group at the Society of Experimental Biology

2019 Invited member of the Interdrought Congress Assembly

- 2021 External examiner for graduate thesis at Western Sydney University, Australia
- 2021- Invited participant in Powell Center Working Group on *C4 Photosynthesis*
- 2021- Invited participant in *Water Use Efficiency* working group for CropBooster strategic research planning project for the European Union
- 2022- Computing Research Association's Computing Community Consortium roundtable on climate change and agriculture

3. University/Campus Service

University/Campus Service

- 2005 Member, search committee for Director of Core Facilities at the Institute for Genomic Biology
- 2007 Lead organizer, Inaugural Institute for Genomic Biology Annual Fellows Symposium, titled *The Future of Biology*.
- 2009-2010 Member, Proctor & Gamble Co. award selection committee, UIUC
- 2010-2013 Member, Steering Committee for Program in Evolution, Ecology and Conservation Biology
- 2011 Chair, Proctor & Gamble Co. award selection committee, UIUC
- 2011 Member, Interview panel for IGB Director of Communications
- 2012 Member, LAS Courses and Curriculum Committee
- 2012 Invited panel member, Visioning Future Excellence Initiative on Energy and the Environment
- 2013 Member, Plant Care Advisory Committee
- 2013 Member, LAS Courses and Curriculum Committee
- 2014 Member, Graduate College Fellowship AREA IV Committee
- 2014 Fulbright Fellowship application evaluation committee
- 2014-present Member, Plant Care Advisory Committee
- 2015 Invited presenter at LAS Admitted Students Days
- 2015 Graduate College CGS/ProQuest Award Nomination Committee
- 2015 Chair, Graduate College Fellowship AREA IV Committee
- 2015 Member, Graduate College Fellowship Executive Committee
- 2015 Invited presenter at LAS Student Recruitment Day
- 2015-present Member, UIUC Energy Farm Steering Committee
- 2017 Invited participant, University of Illinois Board of Trustees Retreat

- 2017 Member, Working Group for University of Illinois statement on Civic Engagement
- 2017- Institute for Genomic Biology, Advisory Committee
- 2018- Member, Steering Committee, Center for Digital Agriculture**
- 2018 Reviewer for proposals to limited submission program at NSF
- 2018 “Academic Highlights” presenter at September Board of Trustees meeting
- 2020- Member, University of Illinois Research Farms Operational Excellence Committee
- 2020- Member, Executive Committee, Institute for Genomic Biology
- 2021- Chair, University of Illinois Policy on Conflicts of Commitment and Interest Review Committee.
- 2021- LAS DEI Working Group

School

- 2006 Judge, Student presentations at the Graduate Students in Ecology and Evolutionary Biology Annual Symposium
- 2008 Member, Search committee for Director of the School of Integrative Biology
- 2011 Chair, SIB Courses and Curriculum Committee
- 2012 Judge, Student presentations at the Graduate Students in Ecology and Evolutionary Biology Annual Symposium
- 2012 Member, SIB Courses and Curriculum Committee
- 2013 Member of SIB Distinction Committee
- 2014 Chair of SIB Distinction Committee
- 2014 Member, Transforming the Curriculum Group
- 2017-2019 At-large Member, SIB Executive Committee
- 2019- Member of SIB Executive Committee

Departmental

- 2007-2009 Member, Instruction Committee
- 2007-present Faculty advisor, Student organized Department of Plant Biology Colloquium
- 2008-2009 Member, Advisory Committee for Department of Plant Biology
- 2009 Judge, Student poster competition at Fall Student Symposium.

2010 Member, Committee to select Outstanding TAs in Plant Biology
2011 Member, Instruction Committee
2013 Chair, Search Committee for Assistant Professor of Plant Metabolic Systems
2014 Member, Advisory Committee for Department of Plant Biology
2014 Teaching evaluation of faculty member for 3-year review
2014 Member, Search Committee for Assistant Professor of Photosynthesis
2015 Teaching evaluation of faculty member for 3-year review
2018 Member, Advisory Committee for Department of Plant Biology