

PROFESSOR STEPHEN P. LONG, FRS

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Ikenberry University Chair of Plant Biology & Crop Sciences at the University of Illinois

Born: London, UK | U.S. Citizen

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Last updated: 2020 July 30

EDUCATION:

2007

D.Sc. Environmental Science (honoris causa)

University of Lancaster, UK

1976

Ph.D. Plant Sciences

University of Leeds, UK

1972

B.Sc. Agricultural Botany (Honours, 1st class)

University of Reading, UK

PUBLICATION RECORD:

H-Index (Google Scholar) = 109; 559 journal articles/edited book sections with 50613 citations.

ACADEMIC APPOINTMENTS:

Full time (tenure/tenure-track):

2018 – present

Stanley O. Ikenberry Endowed University Chair of Crop Sciences and Plant Biology

University of Illinois at Urbana-Champaign

2008 – 2018

Edward William and Jane Marr Gutgsell Endowed University Professor

University of Illinois at Urbana-Champaign

1999 – 2008

Robert Emerson Professor of Plant Biology and Crop Sciences

University of Illinois at Urbana-Champaign

1990 – 1998

Professor

Department of Biological Sciences, University of Essex, UK

1988 – 1990

Reader

Department of Biological Sciences, University of Essex, UK

1987 – 1988

Senior Lecturer

Department of Biological Sciences, University of Essex, UK

1975 – 1987

Lecturer

Department of Biological Sciences, University of Essex, UK

Other appointments::

2016 – present

Distinguished Professor of Crop Sciences, Lancaster Environment Centre, Lancaster University, UK

2013 – present

Center for Advanced Studies Professor

University of Illinois at Urbana-Champaign

2004 – present

Faculty

Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign

2001 – present

Faculty Fellow

National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign

2017 – 2018

Newton Abraham University Visiting Professor and Fellow of Lincoln College

University of Oxford, UK

2006 - 2007

Associate Head

Department of Plant Biology, University of Illinois at Urbana-Champaign

1996 – 1998

Director of Undergraduate Programs in Biology

University of Essex

1978 – 1983

Assistant Dean of Students

University of Essex, UK

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FELLOWSHIPS & HONORS:

2019

Elected Member

National Academy of Sciences of the United States of America, Washington DC.

2005, 6, 7,19

Highly Cited Researcher

Clarivate Highly Cited and Science Citation Index, listed as one of the ca. 200 most cited authors in “Animal and Plant Biology/Cross Field.”

2013

Fellow

Royal Society (London)

2013

Innovation Award

International Society for Photosynthesis Research, St. Louis, MO

2013

Appointed Center for Advanced Studies Professor

University of Illinois at Urbana-Champaign

2012 – 2017

Elected Fellow

Rothamsted Research, Harpenden UK. One of 20 Fellows appointed to advise the director of the world’s oldest agricultural experimental research station on future directions.

2017, 2015, 2013

Invited Briefing on Engineering Photosynthesis

Bill Gates, Seattle.

2012

Marsh Award for Climate Change Research

British Ecological Society, Birmingham, UK

2012

Charles F. Kettering Award for Excellence in Photosynthesis Research

American Society of Plant Biologists (ASPB), Austin, TX

2011

Annual Trio Award for Science Research Education of Under-represented Minority Undergraduates

University of Illinois, Urbana-Champaign, IL

2009

Invited Vatican Briefing: Discussed on bioenergy in the context of genetically modified organisms with the Vatican Pontifical Academy of Sciences, at The Vatican, Rome, Italy.

2007

Invited Presidential Briefing: discussed plant feedstocks for biofuels mitigating atmospheric change with President Bush at the White House, Washington, D.C.

2009

Fellow

American Society of Plant Biologists (ASPB), elected in July

2007

Honorary Doctor of Science (D.Sc.) for Global Change Research

University of Lancaster

2007

Fellow

American Association for the Advancement of Science (AAAS)

2006

Campus Award for Excellence in Graduate Student Mentoring, Honorable Mention

University of Illinois at Urbana-Champaign

2006

Team Award for Excellence in Research, SoyFACE Global Change Research Team

College of Agricultural, Consumer and Environmental Sciences (ACES), University of Illinois at Urbana-Champaign

2006

List of Teachers Ranked as Excellent by their Students for “Plants and Global Change”

University of Illinois at Urbana-Champaign

2005

List of Teachers Ranked as Excellent by their Students for “Environmental Plant Physiology”

University of Illinois at Urbana-Champaign

2005

McNair Movement Award

University of Illinois at Urbana-Champaign, for involvement of under-represented minorities in summer research.

1998 – 2003

Personal Award

Andrew Mellon Foundation

1989

Fellowship

Smithsonian Institution

1972-1975

University Scholar

University of Leeds, UK

1972

University Prize

University of Reading, UK

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OTHER APPOINTMENTS:

2012 – present

Invited Chair and Organizer

Bill & Melinda Gates Foundation, Improving Crop Photosynthetic Productivity and Food Security, Seattle, WA

2008 – present

Hon. Professor of Biological Sciences

University of Essex, UK

2013 – 2015

Appointed Visiting Professor

Chinese Academy of Sciences, Joint Max-Planck Institute of Computational Biology, Shanghai, China

2010 – 2014

Elected Advisor for BBSRC UK, reporting to the EU Commissioner for Agriculture

Joint Programming Initiative (JPI), European Commission on “Agriculture, Food Security and Climate Change”, Brussels, Belgium

2010 – 2014

External Advisor

Wheat Yield Consortium, International Maize and Wheat Improvement Center / United States Agency for International Development (CIMMYT/USAID) (Centro Internacional de Mejoramiento de Maíz y Trigo), Greater Bellingham Running Club (GBRC), Biotechnology and Biological Sciences Research Council (BBSRC)

2010 – 2016

Special Government Employee (reporting to the Secretaries of Agriculture and of Energy)

Federal Bioenergy Technical Advisory Board, Washington DC.

2006

Associate Head, Department of Plant Biology, University of Illinois at Urbana-Champaign

2003 – 2004

Panel Manager

United States Department of Agriculture National Resources Inventory (USDA NRI) Plants and Environmental Adaptation

2001

Co-Chair

National Science Foundation, National Phytotron Review Group

1995 – 2002

Working Group Leader

EU-COST 819 European Shared Action on the Response of Pastoral Systems to Atmospheric Change

1993

Visiting Professor

Center for Primary Events in Photosynthesis, Department of Chemistry, Arizona State University, Tempe, AZ

1992 – 1999

Visiting Scientist

Brookhaven National Laboratory, Upton, NY

1989 – 1990

Gästprofessor

Biology Center, University of Vienna, Austria

1993 – 1996

Director, M.Sc. Program in Crops and Global Change, University of Essex, UK

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LEADERSHIP:

2019

Co-Organizer

Symposium on *In Silico* Plants, Society for Experimental Biology, 2019 Annual Meeting

2017 – present

Director and PI

Renewable Oil Generated with Ultra-productive Energycane (ROGUE), a five-year, \$10-million project sponsored by the Office of Biological and Environmental Research (BER) in the Office of Science at the U.S. Department of Energy (DOE).

2016 – present

Co-Director

Water Efficient Sorghum Technologies (WEST), a three-year, \$5-million project sponsored by the Advanced Research Projects

Agency-Energy (ARPA-E).

2015 – present

Director

Transportation Energy Resource from Renewable Agriculture – Mobile Energy-Crop Phenotyping Platform, a four-year, \$5-million project sponsored by the Advanced Research Projects Agency-Energy (ARPA-E).

2014-2017

Chair

Sectional Committee 9 for Ecology, Evolution and Whole Organism Biology, Royal Society of London.

2012 – present

Director

Realizing Increased Photosynthetic Efficiency (RIPE), a 10-year, \$83-million project sponsored by the Bill & Melinda Gates Foundation, the Foundation for Food & Agriculture Research, and the UK Government’s Department for International Development/UK Aid.

2012 – 2017

Director

Plants Engineered to Replace Oil in Sugarcane and Sweet Sorghum (PETROSS), a five-year, \$7-million project sponsored by the Advanced Research Projects Agency-Energy (ARPA-E).

2011 - 2017

Founding Partner

Global Change Solutions, LLC, a consultancy company designing and reporting on strategies for companies to decrease their greenhouse-gas footprint.

2010

Director

Exploiting Prokaryotic Proteins to Improve Plant Photosynthetic Efficiency (EPP), a research project led by the Illinois in partnership with the Joint Genome Institute (JGI), Cornell University, and Rothamsted Research with support from the National Science Foundation and the Biotechnology and Biological Sciences Research Council (BBSRC).

2010

Elected Advisor

Joint Programming Initiative (JPI) of the European Commission (EC) on “Agriculture, Food Security and Climate Change,” reported to the EC Commissioner of Agriculture, Brussels.

2010

External Advisor

Wheat Yield Consortium, International Maize and Wheat Improvement Center / United States Agency for International Development (CIMMYT/USAID) (Centro Internacional de Mejoramiento de Maíz y Trigo), and Biotechnology and Biological Sciences Research Council (BBSRC), reported to the Director-General CIMMYT, Mexico.

2007 – 2012

Founding Deputy Director

Energy Biosciences Institute (EBI), a 10-year, \$500-million project at the University of California at Berkeley, Lawrence Berkeley National Lab, and the University of Illinois at Urbana-Champaign supported by the energy company BP.

2007

Contributing Author

United Nations Intergovernmental Panel on Climate Change (IPCC); IPCC was awarded the 2007 Nobel Peace Prize.

2003 – 2004

Panel Manager

United States Department of Agriculture National Resources Inventory (USDA NRI) Plants and Environmental Adaptation

2001 – 2006

Principle Investigator

Soybean Free-Air Concentration Experiment (SoyFACE), a field research facility for the investigation of the direct effects of atmospheric change on crops.

2003 – 2007

Director

State (C-FAR) Special Research Initiative on biofuel crops.

2001

Co-Chair

National Phytotron Review Group, National Science Foundation

1991–1998

Director

Environmental Biology Research, University of Essex, UK

1991–1995

Coordinator

Coordinated national project on wheat and carbon dioxide that was sponsored by the Biotechnology and Biological Sciences Research Council, UK.

1992 – 1998

Consortium Coordinator (IV.1)

Terrestrial Initiative in Global Environmental Research (TIGER), Natural Environment Research Council, UK

1983 – 1993

Technical Coordinator

Outer Limits Project on the Productivity of Tropical Grassland Systems, sponsored by the United Nations Environment Programme (UNEP).

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JOURNAL EDITOR:

2018 – present

Chief and Founding Editor

in silico Plants

2007 – present

Chief and Founding Editor

Global Change Biology – Bioenergy, listed by Thompson Reuters Information Sciences Institute as the second most highly cited journal on agronomy (Impact Factor = 5.415).

2007 – 2012

Editorial Board

Proceedings of the Royal Society B

1994 – present

Chief and Founding Editor

Global Change Biology, listed by Thompson Reuters Information Sciences Institute as the most highly cited journal on climate change after Science and Nature (Impact Factor = 8.997). Ranked second among all Environmental Science journals listed by

Thompson Reuters Information Sciences Institute based on the journal's impact factor.

1989 – 2018

Section Editor

Plant Cell & Environment

1990 – 1994; 2000-2003

Associate Editor

Photosynthesis Research

1985 – 1990

Editorial Board

Journal of Ecology

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PROFESSIONAL SOCIETIES:

2013 – present

Member

Plant Biology Sectional Committee, Society for Experimental Biology

2010 – present

Committee Member

Plant Environmental Physiology Group of the Society of Experimental Biology and British Ecological Society

2009 – present

Environmental Physiology Group Committee

Society for Experimental Biology

2013 – 2017

Section 9 Committee

Royal Society

2013

Organizer and Chair

Annual Meeting Symposium, American Society of Plant Biologists (ASPB)

2012 – 2014

Charles F. Kettering Award Committee

American Society of Plant Biologists (ASPB)

2012 – 2014

Congress Organizing Committee

International Society for Photosynthesis Research

2011 – 2017

Vice-Chair and Chair

Gordon Research Conferences (GRC) - CO₂ Assimilation in Plants

2010 – 2015

Plant Biology Committee

Society for Experimental Biology

2009 – present

Committee Member

Environmental Physiology Group Committee, Society for Experimental Biology

2014 – 2017

Chair

CO₂ Assimilation in Plants, Gordon Research Conferences (GRC)

2014 – 2016

Sectional Committee 9 Chair

Organismal biology, evolution and ecology, Royal Society of London

2011 – 2014

Vice Chair

CO₂ Assimilation in Plants, Gordon Research Conferences (GRC)

2016

Member

Nominations Committee, American Association for the Advancement of Science (AAAS)

2013 – 2016

Member

Section 9 Committee, Royal Society

2012 – 2013

Member

Congress Organizing Committee, International Society for Photosynthesis Research

2006 – 2012

Co-Organizer

Pan American Meetings on Plant and Bioenergy, American Society of Plant Biologist (ASPB)

2013

Organizer and Chair

Annual Meeting Symposium, American Society of Plant Biologist (ASPB)

2012 – 2015

Committee Member

Plant Biology Committee, Society for Experimental Biology

2012 – 2014

Committee Member

Charles F. Kettering Award Committee, American Society of Plant Biologist (ASPB)

2012 – 2013

Co-Organizer

C4-CAM Photosynthesis Meeting, University of Illinois at Urbana-Champaign

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DISTINGUISHED PUBLIC LECTURES:

2017

Newton Abraham Public Lecture

Oxford University

2015

University Lecturer

Cornell University

2013

4th Annual Riley Memorial Lecturer

World Food Prize/American Association for the Advancement of Science (AAAS), Washington, DC

2013

CeBiTec Annual Distinguished Lecturer

Centrum für Biotechnologie, Universität Bielefeld, Germany

2012

AstraZeneca Lecturer

University of Manchester Manchester, UK

2009

18th Holden Botany Lecturer

Sutton Bonnington, University of Nottingham, UK

2008

9th Annual Woolhouse Lecturer

Society for Experimental Biology, Marseilles, France

2008

Industry Summer School Lecturer

Massachusetts Institute of Technology, Cambridge, MA

2008

Carbon Mitigation Initiative (CMI) Lecturer

Princeton University, Princeton, NJ

2008

Heilborn Lecturer

Northwestern University, Evanston IL, selected along with Steven Chu, prior Secretary of Energy and Nobel Prize Winner.

2007

2nd Porter Alliance Lecturer

Imperial College, London, UK

2007

27th G.E. Blackman Lecturer

University of Oxford, UK

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ADVISORY COMMITTEES (EXCERPT):

2019 – present

Member Pro-Vice Chancellor of Research Review Group

Institute for Global Food Security, Queens University, Belfast Ireland

2019 – present

Member, Midterm Review Panel for Strategically-Funded Institutes

Biotechnology and Biological Sciences Research Council, London, UK

2016 – 2019

Elector

for the Russell R. Geiger Professorship of Crop Science, University of Cambridge, UK

2016

Visiting Committee

Plant Sciences, University of Oxford, UK

2013 – 2017

Visiting Committee

Carnegie Institution for Science, Department of Plant Biology, Stanford University, CA

2013 – 2016

Working Group on Building Resilience to Climate Change

Royal Society, London, UK

2012 – 2018

External Advisor

UK Bioenergy Potential Assessment, BBSRC/University of Southampton, UK

2012 – present

Science Advisory Board

Cluster of Excellence in Plant Sciences (CEPLAS) for Max-Planck Institute of Plant Breeding and Universities of Dusseldorf and Cologne, Germany

2012 – present

External Advisor

Max Planck Institute of Plant Breeding, Cluster of Excellence in Plant Sciences, Cologne, Germany

2011 – present

External Advisor

Bill & Melinda Gates Foundation, Improving Crop Photosynthetic Productivity, Seattle, WA

2012 – present

External Advisor

European Union Framework 7 3TO4 Crop Improvement Programme, Brussels, Belgium

2011

Chair

Drafting Group for the Energy Sustainability Challenge, integrated groups from 16 Universities across 12 countries, London, UK.

2009 – 2010

Site Visitor and Review Panel

A*STAR Programmes in Bioenergy, Government of Singapore, Singapore

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INVITED PRESENTATIONS (EXCERPT):

2020

Invited Presentation *Improving photosynthetic efficiency for sustainable productivity increase* Annual Meeting of the National Academy of Sciences (April 2020).

Invited Seminar *Engineering More per Drop by Manipulation of Crop Photosynthesis*. ARC Centre of Excellence for Translational Photosynthesis and the Division of Plant Sciences, Australian National University, Canberra, Australia (Feb., 2020).

2019

Invited Seminar/Q&A *Realizing Increased Photosynthetic Efficiency – Project Progress Update* Bill Gates Advisory Group, Bill & Melinda Gates Foundation Seattle WA (Nov. 2019) Co-presentation with Don Ort.

Invited Seminar/Q&A *Realizing Increased Photosynthetic Efficiency – Project Explanation and Progress* Agricultural Development Leadership Team, Bill & Melinda Gates Foundation, Seattle WA (Nov. 2019)

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Food Security* Bill & Melinda Gates Foundation Lunch & Learn Program, Gates Foundation, Seattle WA (Nov. 2019)

Invited Seminar *Engineering photosynthesis for global food security: From Math to Field Trials* Donald Danforth Plant Science Center, St. Louis, MO (Nov. 2019)

Opening Keynote Lecture *Engineering photosynthesis for global food security.* International Congress on Biophysics of Photosynthesis: Accademia Nazionale dei Lincei, Rome (Oct 2019)

Opening Keynote Lecture *Engineering More per Drop by Manipulation of Crop Photosynthesis* Plant Responses to Environmental Stimuli: Differences, Similarities and Crosstalk. Glasgow University, UK (Sept 2019)

Opening Session Lecture *From maths to field - Modelling to guide crop photosynthetic efficiency to sustainably increase productivity.* Annual Meeting of the Society of Experimental Biology, Seville, Spain (July, 2019)

Keynote Lecture *Engineering More per Drop by Manipulation of Crop Photosynthesis* CO₂ Assimilation in Plants - Innovations in Photosynthesis to Solve Global Challenges, Gordon Research Conference, Newry ME (June 2019).

Opening Keynote Lecture *Bioengineering of crops could sustainably double global crop production-but will society allow?* 23rd International Consortium on Applied Bioeconomy Research (ICABR) Ravello, Italy (June 2019)

Plenary Lecture *Mathematically guided improvements of photosynthetic efficiency for sustainable increase in crop productivity.* 4th Crops *in silico* Symposium. NCSA, University of Illinois (May 2019)

Invited Seminar *From Maths to Field – Modeling to Guide Crop Photosynthetic Efficiency for Higher Productivity.* ARC Centre of Excellence for Translational Photosynthesis and the Division of Plant Sciences, Australian National University, Canberra, Australia (Jan., 2019).

2018

Invited Presentation *From Math to Field - Proof of Concept in Engineering Photosynthesis for Higher Crop Yield* Discussion Meeting on Revolutionizing Agriculture with Synthetic Biology, Banbury Center, Cold Spring Harbor, NY (Dec. 2019).

Frontiers in Biology Seminar *Engineering Photosynthesis for Global Food Security. Why, How and Will You Let Me Do It?* Wake Forest University, Winston-Salem, NC (Oct. 2018).

Departmental Seminar Series *Increasing Crop Productivity Sustainably by Bioengineering Photosynthesis – From Math to Field.* Departments of Botany and Plant Pathology, Purdue University, W. Lafayette, IN (Oct. 2018).

Invited Plenary *Engineering Photosynthesis for Global Food Security. Why, How and Will You Let Me Do It?* 100 Years of Wageningen University and Research, Symposium, Wageningen, Netherlands (2018 June).

Invited Seminar *Modeling crop photosynthesis from molecular to canopy to guide bioengineering of sustainable productivity increase - success, challenges and the future.* Plant Modeling Workshop, Wageningen University, Netherlands (2018 June).

Invited Discussion Leader *Career Development.* Plant Physiology Graduate Student and Post-Doctoral Student Retreat, Grasmere, UK (2018 June).

Invited Seminar *Realizing Increased Photosynthetic Efficiency (RIPE) for Increased Crop Yield Potential and Food Security.* Department for International Development, UK Govt., Whitehall, London, UK (2018 June).

Invited Lecture *Photosynthesis - The Final Frontier in Increasing Crop Yield Potential and Future Food Security under Global Change.* Grantham Institute - Climate Change and Environment, Imperial College, University of London, UK (2018 June).

Invited Lecture *Increasing Crop Productivity Sustainably by Bioengineering Photosynthesis – From Maths to Field*. John Innes Centre and Sainsbury Laboratory, Norwich, UK (2018 May).

Invited Lecture *Increasing Crop Productivity Sustainably by Bioengineering Photosynthesis – From Maths to Field*. School of Biological Sciences, University of Essex, UK (2018 April).

Invited Lecture *Engineering Photosynthesis for Global Food Security. Why, How and Will You Let Me do it?* Institute of Plant Genetics, Polish Academy of Sciences, Poznan, Poland (2018 April).

Invited Presentation *Progress in Realizing Increased Photosynthetic Efficiency for Sustainable Crop Yield Increases*. To Bill Gates, and CEO, Advisers, Senior Program Staff and Director of Agriculture of the Bill & Melinda Gates Foundation, Seattle, WA (2018 February).

2017

Invited Lecture *Engineering Photosynthesis for Global Food Security. Why, How and Will You Let Me do it?* Joint Institutes Seminar Series, Max Planck Institutes of Molecular Plant Sciences, Potsdam, Germany (2017 December).

Invited Lecture *Bioengineering Photosynthesis. The Final Frontier in Increasing Sustainable Crop Yield Potential and Ensuring Future Global Food Security*. Institute Colloquium Series, Weizmann Institute, Rehovot, Israel (2017 November).

Plenary Lecture *Bioengineering Photosynthesis: The Final Frontier in Increasing Sustainable Crop Yield Potential and Ensuring Global Food Security*. Vienna Biocenter PhD Symposium 2017, Vienna Biocenter, Austria (2017 November).

Newton-Abraham Annual Lecture *Engineering Photosynthesis for Global Food Security. Why, How and Will You Let Me do it?* Chemistry Institute, Oxford University, Oxford, UK (2017 November).

Invited Presentation *We can improve crop photosynthesis and so yield*. Workshop: The Next Green Revolution, European Commission, Brussels, Belgium (2017 October).

Invited Short Seminar *Crops in silico*. Bill & Melinda Gates Foundation Grand Challenges Meeting, Washington, DC (2017 October).

Plenary Lecture *Engineering Crop Photosynthesis for Sustainable Global Food Security*. Thirteenth World Conference on The Future of Science – Lives to Come, Giorgio Cini Foundation, Island of San Giorgio Maggiore, Venice, Italy (2017 September).

Plenary Lecture *Increasing Crop Productivity Sustainably by Bioengineering Improved Photosynthetic Efficiency*. International Botanical Congress of the German Botanical Society, Christian Albrechts University, Kiel, Germany (2017 September).

Plenary Lecture *Bioengineering Improved Photosynthetic Efficiency to Sustainably Increase Productivity in C3 and C4 Bioenergy Crops*. Bioenergy 2017 Conference - Developing Sustainable Bioenergy Crops for Future Climates, Oriel College, Oxford University, Oxford, UK (2017 September).

Opening Seminar *Bioengineering Increased Photosynthetic Efficiency*. Post-Doctoral/Post-Graduate Summer Synthetic Biology Course, University of Copenhagen, Denmark (2017 August).

Invited Lecture *Photosynthesis. The Final Frontier in Increasing Sustainable Crop Yield Potential*. Colloquium Series, Copenhagen Plant Science Centre, University of Copenhagen, Denmark (2017 August).

Opening Lecture *Does the future rely on technology? Unlocking the secrets of what can make photosynthesis more efficient*. N8 AgriFood 2017 International Sustainable Food Production Conference, Durham University, Durham, UK (2017 July).

Chair and Keynote Lecture *Scaling from mechanistic models to field crop stands. The experience of photosynthesis*. 2nd Annual Crops *in silico* Symposium. St. Catherine's College, Oxford University, Oxford, UK (2017 June).

Keynote Lecture *Can we improve crop photosynthesis to feed the world sustainably?* The Festival of Plants, Botanic Gardens, University of Cambridge, UK (2017 May).

Invited Presentation *Realizing Increased Photosynthetic Efficiency for Sustainable Crop Yield Increases*. To Bill Gates, his Advisers, Senior Program Staff and Director of Agriculture of the Bill & Melinda Gates Foundation, Seattle, WA (2017 May).

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Sustainable Crop Yield Increases*. for the Joint Annual Meeting of the Gates Foundation CASS and RIPE Projects. Il Ciocco, Italy (2017 May).

Chair & Introduction *Engineering Increased Photosynthesis for Food Security and Bioenergy*. Gordon Research Conference (GRC) CO₂ Assimilation in Plants from Genome to Biome. Il Ciocco, Italy (2017 May).

Invited Presentation *Realizing Increased Photosynthetic Efficiency for Sustainable Crop Yield Increases*. To the Board of the Foundation for Food and Agricultural Research (FFAR), Washington, DC (2017 April).

Invited Speaker *Bioengineering Increased Photosynthetic Efficiency for Sustainable Crop Yield Increase*. The Bill & Melinda Gates Foundation, Seattle, WA (2017 March).

Invited Centre Seminar *Toward future sustainable food security by engineering increased photosynthetic efficiency in crops*. Lancaster Environment Centre, Lancaster University, Lancaster, UK (2017 March).

Invited Speaker *Opportunities to increase photosynthetic efficiency in corn for greater yield potential*. Illinois Annual Corn Breeders School, University of Illinois, Urbana, IL (2017 March).

Invited Speaker *Increasing Crop Productivity by Engineering Improved Photosynthetic Efficiency*. American Association for the Advancement of Science (AAAS) 2017 Annual Meeting, Boston, MA (2017 February).

2016

Invited Seminar *Making C4 Photosynthesis Cool*. University of Lancaster, Lancaster, UK (2016 November).

Invited Seminar *Photosynthesis: The final frontier in improvement of crop yield potential and sustainability?* School of Natural Resources, University of Nebraska, Lincoln, NE (2016 October).

Invited Seminar *Engineering Cool C4 Photosynthesis*. Plant Biology, Michigan State University, MI (2016 October).

Invited Plenary Speaker *Realizing increased photosynthetic efficiency (RIPE)*. Bill & Melinda Gates Foundation Grand Challenges Meeting, Queen Elizabeth II Hall, London, UK. (2016 October).

Invited Speaker *How to make sure your lab's innovations never make a difference (beyond your publication)*. Agriculture Research Track, Bill & Melinda Gates Foundation Grand Challenges Meeting, Queen Elizabeth II Hall, London, UK. (2016 October).

Invited Presentation Bill Gates and Senior Bill & Melinda Gates Foundation and the UK Government's Department for International Development Staff at Grand Challenges Meeting, Queen Elizabeth II Hall, London, UK. (2016 October).

Invited Seminar *Making C4 Photosynthesis Cool*. Plant Biology, Michigan State University, MI (2016 October).

Invited Seminar *Photosynthesis: the final frontier in improvement of crop yield and sustainability potential*. Plant Sciences Seminar Series, University of Nebraska, Lincoln, NB (2016 October).

Invited Lecture *Croplands and rising atmospheric CO₂*. Leverhulme Centre for Climate Change Mitigation – Opening Symposium, The Royal Society, London, UK (2016 September).

Invited Keynote: *Crop Production and Quality - Lessons from FACE and Future Needs*. FACE2FACE conference, Justus Liebig University Giessen, Germany (2016 September).

Invited Keynote: *Yields, food quality and phenotypes*. FACE2FACE conference, Justus Liebig University Giessen, Germany (2016 September).

Invited Presentation Discussed *Crops in silico* with Agricultural Development program staff and advisors at the Bill & Melinda Gates Foundation, Seattle, WA (2016 June).

Invited Presentation Discussed *Realizing Increased Photosynthetic Efficiency* for improvement of crop yield potential with Agricultural Development program staff and advisors at the Bill & Melinda Gates Foundation, Seattle, WA (2016 June).

Invited Keynote: *Photosynthesis – the final frontier in improvement of crop yield potential*. Emerging Technologies for Global Food Security Conference, Global Institute for Food Security, Saskatoon, Canada (2016 June).

Invited Speaker *Is variation in apparent sink-strength within germplasm of our major food crops sufficient to allow full realization of increased photosynthesis?* Annual Meeting, Society for Experimental Biology, Brighton, UK (2016 June).

Invited Plenary *Chilling C4 Photosynthesis* C4 Photosynthesis Conference – 50 years of Discovery and Innovation, Canberra, Australia (2016 April).

Invited Keynote Seminar *Systems Approaches to Increasing Crop Productivity of Food and Energy Crops through Photosynthesis*. Swedish Renewable Energy Symposium, Umeå, Sweden (2016 February).

Invited Seminar *Feeding and Fueling the World in 2050 – Will it be Possible from Plants in 2050*. Plant Sciences, Penn. State University, PA (2016 February).

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Increased Crop Production – A Forward Look*. UK Government Chief Scientist and UK Department for International Development, London, UK (2016 January).

2015

Invited Seminar *Feeding and Fueling the World in 2050 – Will it be Possible from Crops in 2050*. Pacific Northwest National Laboratory, WA (2015 December).

Invited Panel Presentation *Sparing not Sharing to Avoid Greenhouse Gas Emissions through Land Use Change for Feeding a Growing Population*. Climate Smart Agriculture Session, COP 21, Paris, France (2015 December).

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Increased Crop Production*. Syngenta, Raleigh, NC (2015 November).

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Increased Crop Production*. Syngenta, Jealott's Hill, UK (2015 October).

Invited Seminar *Systems and Synthetic Approaches to Adapting Crop Photosynthetic Productivity to Global Atmospheric Change*. Agronomy, Iowa State University, Ames, IA (2015 October).

Invited Seminar *Realizing Increased Photosynthetic Efficiency for Increased Crop Production*. Bill Gates and the Gates Foundation, London, UK (2015 August).

Invited Plenary *Engineering improved photosynthetic efficiency to increase crop yield potential and sustainability*. Brazilian Congress of Plant Physiology, Foz do Iguaçu, Brazil (2015 August).

Invited Seminar *Meeting the challenge of providing sufficient Food, Feed and Fuel from Crops under Global Atmospheric Change in 2030*. University of Leeds, UK (2015 March).

Invited Seminar *Can we feed and fuel the world from plants by 2050? Scientific vs. social barriers*. University of York, UK (2015 March).

Invited Keynote Lecture *Adapting Midwest Cropping to Climate Change*. Center for Climatic Research Annual Symposium, Madison, WI (2015 March).

2014

Invited Plenary *Maximizing Yield Potential in the Face of Global Atmospheric Change*. *Annals of Applied Biology* Centenary Symposium, Rothamsted, UK (2014 December).

Invited Seminar *Bioengineering in meeting the challenge of sufficient food and feed under Global atmospheric change by 2050*. China National Hybrid Rice Research and Development Center, Changsha, Hunan, China (2014 November).

Invited Plenary *Energy, Environment and Sustainability: Challenge and Prospects*. International Agri-Science Forum, Yangling, China (2014 November).

Invited Plenary *Systems and Synthetic Approaches to Adapting Crop Productivity to Global Change*. Plant Systems and Synthetic Biology Symposium, UNC Raleigh, NC (2014 October).

Invited Seminar *Can we have sufficient food and feed for 2050, while still expanding biofuels? The role of crop biotechnology and of new sustainable crops*. CAS Institute for Ecology and Plant Physiology, Shanghai, China (2014 October).

Invited Opening Seminar *Can we have sufficient food and feed for 2050, while still expanding biofuels? The role of crop biotechnology and of new sustainable crops.* Feeding 9 Billion: A Path to Sustainable Agriculture – iSEE Congress, University of Illinois, Urbana, IL (2014 October).

Invited Seminar *Increasing productivity in the face of climate change through photosynthesis – the role of modeling.* Society for Experimental Biology – Plant Environmental Physiology Workshop, Lisbon, Portugal (2014 September).

Invited Talk *The Direct Effects of Rising Carbon Dioxide and Surface Ozone on Midwest Crops, and Opportunities for Mitigation.* Workshop on Climate Change and Agriculture in the Midwest, Washington University, St. Louis, MO (2014 September).

Invited Keynote: *Food, Feed and Fuel from Crops under Global Atmospheric Change. Could we have it all in 2030?* Gatsby Foundation Summer School, York, UK (2014 June).

Invited Talk: *Computationally guided systems and synthetic biology approaches to increasing photosynthetic efficiency in crops.* University of Edinburgh, UK (2014 June).

Invited Plenary: *Meeting the Challenge of 70% More Food and Feed Production by 2050; With Particular Reference to Progress in Bioengineering of Crop Photosynthesis.* Plant Biology Europe. FESPB/EPSO 2014. Dublin, Ireland (2014 June).

Invited Chair and Introduction: *Photosynthesis and Global Atmospheric Change.* Gordon Research Conference - CO₂ Assimilation in Plants: from Genome to Biome. Waterville Valley, NH (2014 June).

Invited Talk: *Toward the in silico Plant.* Future Perspective in Plant Biology, Plant, Cell & Environment meeting, Oxford, UK (2014 June).

Invited Keynote: *Sustainably delivering sufficient Food, Feed and Fuel by 2050 in the context of Global Change. What does “new biology” have to offer?* Sustainability and the Environment Research Showcase, University of Western Ontario, London, ON (2014 March).

Invited Talk: *Toward the Virtual Plant.* DOE-BER Workshop - Computational Challenges for Mechanistic Modeling of Terrestrial Environments, Department of Energy, Germantown, MD (2014 March).

Invited Talk: *RIPE Realizing Increased Photosynthetic Efficiency for Improvement of Crop Yield Potential. An Overview.* Increasing Sink Strength in Cassava Convening Meeting, Bill & Melinda Gates Foundation, Munich, Germany (2014 February).

Invited Seminar: *Bioengineering in Meeting the Challenge of Providing Sufficient Food, Feed and Fuel from Crops under Global Atmospheric Change in 2030.* Department of Bioengineering, University of Illinois, Seminar Series. Urbana, IL (2014 February).

Invited Talk: *ARPA-E PETROSS: Bioengineering more productive, cold-tolerant and oil forming sugarcane and sweet sorghum to improve the viability of US biodiesel without conflict to food production.* Federal Biomass Research & Development Technical Advisory Committee of the USDA and US-DOE. Washington, DC (2014 February).

2013

Invited Briefing: Discussed PETROSS project sponsored by the Advanced Research Projects Agency-Energy (ARPA-E) with U.S. Energy Secretary Steven Chu and ARPA-E Deputy Director Cheryl Martin, Washington, D.C.

Invited Speaker: *Toward Cool C4 Crops.* Carnegie Institution, Stanford University, Palo Alto, CA (2013 December).

Plenary Speaker: *Engineering greater crop efficiency in CO₂ use. A key factor for acceptable land use in bioenergy production.* International Symposium – Toward the Use of Atmospheric CO₂ – from Photosynthesis to Biorefinery, University of Tokyo, Japan (2013 November).

Invited Speaker: *A unified mechanistically rich framework for model prediction of the yields and ecosystem services of second-generation bioenergy crops.* The Global Sustainable Bioenergy Project - GSB/FAPESP Collaborative Meeting, - Atibaia/SP, Brazil (2013 November).

Invited Speaker: *Improved Photosynthetic Efficiency to Increase Crop Yield Potential.* Share the Vision 2013, Conference Center,

University of Illinois, Urbana, IL (2013 October).

Keynote Speaker: *Food, Feed and Fuel from Crops under Global Atmospheric Change. Could we have it all in 2030?* DOE ARPA-E PETRO Program Industry Meeting, Danforth Plant Science Center, St. Louis, MO (2013 September).

Plenary Speaker: *Toward Cool C4 Crops. C4+CAM Plant Biology Conference, i-Hotel & Conference Center, University of Illinois, Champaign, IL (2013 August).*

Invited Plenary *Increasing crop photosynthesis to address global food security.* International Photosynthesis Congress, St. Louis, MO (2013 August).

Invited Speaker: *Improving photosynthesis in crops, a means to food and energy security under climate change: Theory and evidence.* The Royal Society, London, UK (2013 July).

4th Annual Riley Memorial Lecture: *Food, Feed and Fuel from Crops under Global Atmospheric Change: Could we have it all in 2030?* AAAS Headquarters, Washington, D.C. (2013 June).

Invited Briefing. *Discussed Realizing Increased Photosynthetic Efficiency (RIPE) and the global competitiveness of U.S. research in photosynthesis productivity improvement.* Met with U.S. Department of Agriculture Under-Secretary for Research Education and Economics and Head of NIFA at the Riley Foundation, Washington, D.C. (2013 June).

Distinguished Annual Lecturer: *Food, Feed and Fuel from Crops under Global Atmospheric Change. Could we have it all in 2030?* Center for Biotechnology, Bielefeld University, Germany (2013 June).

Keynote Speaker: *Increasing photosynthesis will increase crop yields. Is there evidence and are there means?* Cluster of Excellence on Plant Sciences (CEPLAS), Max-Planck Institute for Plant Breeding, Cologne, Germany (2013 May).

Invited Overview Lecture: *Identifying Limitations to Crop Photosynthesis.* Redesigning Photosynthesis Meeting, Banbury Center, Cold Spring Harbor Laboratories, NY (2013 May).

Invited Session Speaker/Panelist: *Engineering Novel high productivity oil crops – PETROSS.* BIO International Convention, Chicago, IL (2013 April).

Invited Speaker: *More food, more bioenergy and fewer greenhouse gas emissions (GHGe) – is it possible?* American Chemical Society (ACS) Annual Meeting, New Orleans, LA (2013 April).

Invited Speaker: *PETROSS - Advantaged Oil-Producing Sugarcane and Sweet Sorghum.* Department of Energy ARPA-E Energy Innovation Summit, Washington D.C. (2013 March).

Invited Lecturer: *Increasing Photosynthesis will Increase Crop Yields – Evidence and Means.* Rothamsted Research, Harpenden, UK (2013 January).

Invited Lecturer: *Increasing Photosynthesis will Increase Crop Yields – Evidence and Means.* Biological Sciences, University of Essex, UK (2013 January).

Invited Speaker: *More food, more bioenergy and fewer greenhouse gas emissions.* British Ecological Society, Annual Meeting, Birmingham, UK (2013 December).

2012

Invited Expert: Discussed food security with the President's Council of Advisors on Science Technology (P-CAST), Washington, D.C.

Invited Speaker: *(GHGe) – is it possible?* American Geophysical Union (AGU), Annual Meeting, San Francisco, CA (2012 December).

Invited Opening Speaker: *Increasing Photosynthesis will Increase Crop Yields – Evidence and Means.* Rank Prize Funds Symposium, Grasmere, UK (2012 October)

Invited Lecturer: *Leaf gas exchange 2012, what does it tell us and what are the problems.* Plant Environmental Physiology Group

Workshop, Lisbon, Portugal (2012 September)..

Invited Briefing: Discussed opportunities to engineer photosynthesis for increased crop yields with the Bill & Melinda Gates Foundation, Seattle, WA (2012 July).

Invited Presentation: *Realizing Increased Photosynthetic Efficiency for sustainable increases in crop yield.* Bill Gates and the Bill & Melinda Gates Foundation, Seattle, WA (2012 July).

Session Chair: Pan American Congress on Plants and Bioenergy, Champaign, IL (2012 July).

2011

Invited Expert: Discussed food security with the President's Council of Advisors on Science Technology (P-CAST), Washington, D.C.

Invited Plenary: Bioenergy Science and Technology, Sao Paulo, Brazil.

2010

Invited Plenary: Annual Systems and Synthetic Biology Symposium, London, UK.

Invited Plenary: Pan American Congress on Plants and Bioenergy, Saõ Paulo, Brazil.

Invited Plenary: 20th Anniversary Meeting of the EU-US Task Force on Biotechnology, Barcelona, Spain.

Invited Plenary: International Photosynthesis Congress, Beijing, China.

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TEAM:

Staff

Bruce Barnes, *Office Manager*

Claire Benjamin, *Communications Coordinator*

Rhea Bruno, *Executive Editor*, Global Change Biology-Bioenergy

Joshua Capili, *Assistant Project Manager*, Realizing Increased Photosynthetic Efficiency (RIPE)

Lisa Emerson, *Project Manager*, Realizing Increased Photosynthetic Efficiency (RIPE)

Melissa Geese, *Office Manager*

Yun Li, *Program Manager*, Transportation Energy Resources from Renewable Agriculture – Mobile Energy-Crop Phenotyping Platform (TERRA MEP)/A Modeling Framework to Couple Food, Energy, & Water/ Renewable Oil Generated with Ultra-Productive Energycane (ROGUE)

Rachel Shekar, *Executive Editor*, Global Change Biology and *Managing Editor*, *in silico* Plants

Traci Quigg Thomas, *Program Manager*, Crops in silico

Postdoctoral Researchers

Steven J. Burgess, *Visiting Scholar*

Cindy Chan, *Visiting Scholar*

Amanda de Souza, *Postdoctoral Research Associate*

Bethany Holland, Postdoctoral Research

Nikhil Jaikumar, *Postdoctoral Research Associate*

Deepak Jaiswal, *Visiting Scholar*

Edward Lochocki, Postdoctoral Researcher

Megan Matthews, Postdoctoral Researcher

Karolina Sobanska, Postdoctoral Researcher

Yu Wang, *Postdoctoral Research Associate*

Graduate Students

Ph.D. Candidate, **Liana Acevedo-Siaca**, *Department of Crop Sciences*

Ph.D. Candidate, **Sarah Hutchinson**, *Department of Plant Biology*

M.Sc. Candidate, **Benjamin Haas**, *University of Natural Resources and Life Sciences, Vienna, Austria*

Field Trials Team

David Drag, Field Trials Manager

Benjamin Harbaugh, Greenhouse Manager

Ben Thompson, Field and Greenhouse Technician

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ALUMNI(Graduate Students* and Postdoctoral Fellows):

2013 – 2019 **Justin McGrath**, *Scientist, Global Change and Photosynthesis Research Unit, USDA-ARS, IL*

2013 – 2018, **Johannes (Wanne) Kromdijk**, *University Lecturer, Plant Sciences, Cambridge University, Cambridge, UK*

2011 – 2018, **Katarzyna (Kasia) Glowacka**, *Assistant Professor, Biochemistry, University of Nebraska, Lincoln, NE*

2013 – 2017, **Venkatraman Srinivasan**, *Assistant Professor, Indian Institute of Technology, Madras, India*

2011 – 2016, **Deepak Jaiswal**, *Visiting Researcher, University of Illinois, Champaign-Urbana, IL*

2013, **Dan Wang**, *International Center for Ecology, Meteorology and Environment, School of Applied Meteorology, Nanjing University of Information Science and Technology, China*

2009, **Frank Dohleman***, *External Stakeholder Lead, The Climate Corporation, San Francisco, CA*

2007 – 2009, **Fernando Miguez**, *Assistant Professor, Agronomy, Iowa State University, Ames, IA*

2006 – 2008, **Dafu Wang**, *Research Scientist, Biotechnology, at Monsanto Company, Chesterfield, MO*

2004 – 2008, **Xinguang Zhu***, *Head and Professor, Plant Systems Biology Group, Chinese Academy of Sciences, Institute for Computational Biology, Shanghai, China*

2000 – 2005, **Shawna Naidu**, *Molecular and Cellular Biology Honors Program Coordinator, University of Illinois, Champaign-Urbana, IL*

2002 – 2004, **Andrew Leakey**, Professor, Department of Plant Biology, University of Illinois, Champaign-Urbana, IL

1999 – 2001, **Phil Davey**, Research Scientist, Biological Sciences, University of Essex, Essex, UK

2017 M.Sc., **Lynnicia Massenburg***, Graduate Student, Pennsylvania State University, University Park, PA

2017 Ph.D., **Charles Pignon***, Postdoctoral Research Associate, Danforth Center, St. Louis, MO

2015 M.Sc., **Idan Spitz***, Chief Cultivation Officer and Director Research and Development, Kind Love, Denver, Colorado

2014 Ph.D., **Yu Iwahashi***, Visiting Graduate Student, Kyoto University, Japan

2012 Ph.D., **Will Hay***, Research Plant Physiologist, National Center for Agricultural Utilization Research (NCAUR), United States Department of Agriculture-Agricultural Research Service (USDA-ARS), Peoria, IL

2012 Ph.D., **Ashley (Spence) Kuhn***, Senior Scientist – Global Sustainability, Procter & Gamble, Cincinnati, OH

2012 Ph.D., **Becky (Arundale) Keating***, International Field Trials Research Manager at Indigo, Chicago, IL

2012 Ph.D., **Adebosola Oladeinde***, Deputy Project Director of Cassava: Adding Value for Africa, Abeokuta, Nigeria

2009 Ph.D., **Frank Doleman***, External Stakeholder Lead, The Climate Corporation, San Francisco, CA

2009 Ph.D., **Amanda de Souza***, Postdoctoral Researcher, University of Illinois, Champaign-Urbana, IL

2008 Ph.D., **Charles Chen***, Associate Professor, Department of Biology and Chemistry, Azusa Pacific University, Azusa CA

2008 Ph.D., **Victoria Wittig***, Project Coordinator, Save the Dunes, Michigan City, IN

2006 Ph.D., **Emily Heaton***, Associate Professor, Department of Agronomy, Iowa State University, Ames IA

2004 Ph.D., **Richard Webster***, Lecturer Plant Physiology, Natural Sciences and Psychology, Liverpool John Moores University, Liverpool, UK

2004 Ph.D., **Patrick Morgan***, Crop Physiology Lead, Bayer Crop Science, Chesterfield, MO

2004 Ph.D., **Xinguang Zhu***, Head and Professor, Plant Systems Biology Group, Institute for Computational Biology, Chinese Academy of Sciences, Shanghai, China

2003 Ph.D., **Elizabeth Ainsworth***, Professor, Plant Biology, University of Illinois & Head, Global Change and Photosynthesis USDA-ARS Research Unit, Urbana, IL

2002 Ph.D., **Carl Bernacchi***, Associate Professor, Plant Biology, University of Illinois/ & Scientist Global Change and Photosynthesis USDA-ARS Research Unit, Urbana, IL

1998 Ph.D., **Graham Hymus***, Senior Scientist, Plant Physiology BioConsortia, Inc., Davis, CA

1998 Ph.D., **Alistair Rogers***, Biologist, Environmental and Climate Sciences Department, Brookhaven National Laboratory, Upton, NY

1996 Ph.D., **Colin Osborne***, Professor, Plant Biology, and Associate Director, Grantham Centre for Sustainable Futures, University of Sheffield, UK

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OUTREACH (EXCERPT):

Greenhouse Management Magazine “Plant science on a screen” <https://www.greenhousemag.com/article/growing-edge-plant-science-on-screen-in-silico-illinois-university/>, 2018 November 30

Phys.org “Scientists debunk potential link to crop cold tolerance” <https://phys.org/news/2018-11-scientists-debunk-potential-link-crop.html>, 2018 November 12

Daily Mail “Scientists engineer drought-resistant crops that require 25% less water and could help feed the world”

<https://www.dailymail.co.uk/sciencetech/article-5464625/Scientists-engineer-drought-resistant-crops-requiring-25-water.html>, 2018 March 6

Science Daily “Farming crops with rocks to reduce CO₂ and improve global food security”

<https://www.sciencedaily.com/releases/2018/02/180219115252.htm>, 2018 February 19

Farming UK “UK involved in \$45m project to eradicate world hunger by increasing crop yields”

https://www.farminguk.com/news/UK-involved-in-45m-project-to-eradicate-world-hunger-by-increasing-crop-yields_47431.html, 2017 September 18

Scientific American “Growing Virtual Plants Could Help Farmers Boost Their Crops”

<https://www.scientificamerican.com/article/growing-virtual-plants-could-help-farmers-boost-their-crops/>, 2017 August 18

Midwest Center for Investigative Reporting “On President Trump’s decision to pull out of accord”

<https://investigatemitwest.org/2017/06/05/paris-climate-conference-speaker-weighs-in-on-president-trumps-decision-to-pull-out-of-accord/>, 2017 June 5

Illinois Public Media News “University of Illinois Expert: Trump Climate Decision Could Reduce Midwest Food

Productivity” <https://will.illinois.edu/news/story/university-of-illinois-expert-trump-climate-decision-could-reduce-midwest-f>, 2017 June 2

People Behind the Science “Shedding light on how optimizing photosynthesis could increase plant productivity”

<http://www.peoplebehindthescience.com/dr-stephen-long/>, 2014 August 7

American Association for the Advancement of Science (AAAS)/World Food Prize/Riley Foundation, Panel

Discussion on Challenges and the Future of Agricultural Research. Long was one of four panelists, the others were Pam Johnson, President, National Corn Growers Association; Sonny Ramaswamy, Director, National Institute of Food and Agriculture; Richard Bonanno, President, Massachusetts Farm Bureau Federation. AAAS HQ, Washington, DC.

<https://www.aaas.org/news/worlds-growing-population-will-need-crops-engineered-produce-more-and-tolerate-climate-change>, 2013 June 25

New York Times. Front Page Article: “A Warming Planet Struggles to Feed Itself”

<https://www.nytimes.com/2011/06/05/science/earth/05harvest.html>, 2011 June 4

Herald Tribune. Front Page Article: “A Warming Planet Struggles to Feed Itself”

<https://www.heraldtribune.com/article/LK/20110605/News/605200122/SH/>, 2011 June 5

Newsweek International Forum on Energy, hosted by Fareed Zakaria, Long was one of three panelists, the others were former Senator Gingrich and Congressman Peterson at the Press Club, Washington D.C.

Voice of America News “Scientists find Global Warming Hurts Crops” <https://www.voanews.com/a/a-13-2006-06-30-voa64/315409.html>, 2009 October 31

BBC Radio 4 Leading Edge “Crops and Climate Change”

San Francisco Chronicle, “Modern Wildcatters See Gushers of Green” <https://www.sfgate.com/news/article/Modern-wildcatters-see-gushers-of-green-2587565.php#photo-2698187>, 2007 June 11

Chicago Tribune, “Illinois Great Energy Hunt” <https://www.chicagotribune.com/news/ct-xpm-2007-06-17-0706170024-story.html>, 2007 June 17

BBC World Service – Science in Action Program “Crops, Climate Change and Food Supply”

<http://www.bbc.co.uk/radio4/science/leadingedge.shtml>, 2006 June

BBC World Service – 30-minute program in series “One World Too Hot to Feed” devoted to the SoyFACE experiment and the implications of its findings <https://www.bbc.co.uk/programmes/p002vsnb>, 2006 June

The Irish Times, “Elephant grass could meet some electricity needs” <https://www.irishtimes.com/news/elephant-grass-could-meet-30-of-electricity-needs-1.489102>, 2005 September 7

Nature, News & Views “Hikes in surface ozone could suffocate crops” <https://www.nature.com/articles/435007a>, 2005 May 4

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EXTERNALLY AWARDED COMPETITIVE FUNDING (1999 - present):

Long, S.P.(PI) (submitted 2018; awarded 2019) **Supplementary Award to Realizing Increased Photosynthetic Efficiency for increased crop yield potential (RIPE)**. Bill & Melinda Gates Foundation \$12,986,721 over 4 years.

Marshall-Colon, A. (PI) (submitted 2018; awarded 2019) **Crops in Silico: Increasing Crop Production by Connecting Models from the Microscale to the Macroscale**. Foundation for Food and Agricultural Research (FFAR), \$5,000,000 over 5 years. Long, S.P. (co-I) \$450,000 to Long’s Lab.

Long, S.P.(PI) (submitted 2017; awarded 2017) **Realizing Increased Photosynthetic Efficiency for increased crop yield potential (RIPE) Re-investment**. Bill & Melinda Gates Foundation, Foundations for Food and Agricultural Research (FFAR), and UKaid \$45,000,000 over 5 years.

Long, S.P. (PI) (submitted 2017; awarded 2017) **Building on success in systems design of high yielding low-input energycanes for marginal lands**. Department of Energy – Biological and Environmental Research \$10,500,000 over 5 years.

DeLucia E.H. (PI) (submitted 2017; awarded 2017) **Center for Advanced Bioenergy and Bioproducts Innovation (CABBI)** Department of Energy – Biological and Environmental Research \$ 106,098,059 over 5 years. Long S.P. (co-I) \$560,000 to Long’s Lab.

Leakey, A.D.B., Long, S.P., Ort, D.R., Brown, Bernacchi, C.J., P.J., Burke, J.J., Spalding, E.P., Buckler, E.S., Gore, M., Clemente, T.E. (submitted 2015; awarded 2016). **Novel Technologies to Solve the Water Use Problem of High Yielding C4 Bioenergy and Bioproduct Feedstocks** – Department of Energy, ARPA-E OPEN \$4,995,967 through 2019

Long, S.P., Acevedo-Siaca, L. (submitted 2015; awarded 2016) **Identifying differences in photosynthetic Efficiency within the 5 Subpopulations of Oryza Sativa and Use of Candidate Gene Association Mapping for Targeted Plant Improvement** - Purdue Center for Global Food Security \$18,095 through 2017

Long, S.P., Bernacchi, C.J., Peschel, J.M. , Ort, D.R., Brown P.J., LeBauer, D.S., Zakhor, A., Buckler, E.S., Gore, M. (submitted 2015; award 2015) **Mobile Energy-Crop Phenotyping Platform (TERRA-MEPP)** – Department of Energy, ARPA-E TERRA \$5,100,000 through 2019.

Long, S.P., Ort, D.R., Marshall-Colón, A. Dalling, J.W., Bollero, G., Allen, G.D., Lipka, A.E., DeLucia, E.H., Cox, D.J. (submitted 2015; awarded 2015) **Plants In Silico: Towards Realizing the Opportunity** - University of Illinois Olga G. Nalbandov Lecture Fund \$20,000 through 2016

Long, S.P., Ort, Marshall-Colón, Seidel, H.E., Shukla, D., O’Dwyer, J., Zhu, X.G. (submitted 2015; awarded 2015) **Plants in silico: A Multiscale Modeling Platform to Predict Crop Response to Climate Change** - Illinois Institute for Sustainability, Energy and Environment at the University of Illinois at Urbana-Champaign \$350,000 through 2018

Sacks, E.J., Long, S.P., Peng, J., Yamada, T. (submitted 2014; awarded 2014) **Quantifying phenotypic and genetic diversity of Miscanthus sacchariflorus to facilitate knowledge-directed improvement of M. x giganteus (M. sinensis x M. sacchariflorus) and sugarcane**, Department of Energy, BER. \$1,496,252 over 3 years.

Long, S.P., Bernacchi, C.J., Bollero, G., DeLucia, E.H. (submitted 2013; awarded 2013) **Feedstock Production and Ecosystem Services Modeling Program**, Energy Biosciences Institute. \$1,280,000 for 2014 and 2015.

Long, S.P., Ort, D.R., Badger, M.R., Parry, M.A.J., Raines, C.A. (submitted 2012; awarded 2012) **RIPE – Realizing Increased Photosynthetic Efficiency**, Bill & Melinda Gates Foundation \$25,000,000 for the initial 5 years.

Long, S.P., Altschuler, F., Clemente, T., Moose, S.P., Ort, D.R., Sacks, E., Shanklin, J. (submitted 2011; awarded 2012; renewed

2014; renewed 2016) **Engineering Hydrocarbon Biosynthesis and Storage Together with Increased Photosynthetic Efficiency into the Saccharinae** – Department of Energy, ARPA-E PETRO \$7,056,040 through 2017.

Long, S.P. (submitted 2011, awarded 2012) **Increasing the Biomass Resource**. Danish Council for Strategic Research, Denmark \$270,118 over 4 years.

DeLucia, E.H., David, M.B., Khanna, M., Long, S.P., Teixeira-Anderson, K., Voigt, T.B. (submitted 2010, awarded 2011) **Using Second Generation Biofuel Feedstocks To Improve The Carbon Economy Of US Agriculture**, Department of Energy, Sun Grant \$644,517 over 3 years.

Sacks, E.J., Long, S.P. (submitted 2011, awarded 2011) **Quantifying Phenotypic and Genetic Diversity of Miscanthus sinensis As A Resource For Knowledge-Based Improvement Of M. X giganteus** (M. sinensis X M. sacchariflorus), Department of Energy, BES \$999,218 over 3 years.

Long, S.P. (submitted 2010, awarded 2011) **Collaborative Research: Exploiting Prokaryotic Proteins to Improve Plant Photosynthetic Efficiency**. National Science Foundation EF. \$368,728 over 3 years.

Ort, D.R., Long, S.P. (submitted 2008, awarded 2008) **SoyFACE Global Change Research**, US Department of Agriculture \$714,574 over 2 years.

Somerville, C.R., Keasling, J., Long, S.P. (submitted 2006, awarded 2007) The UC Berkeley – University of Illinois - **BP Energy Biosciences Institute (EBI)** BP plc \$500,000,000 over 10 years

Long, S.P., Leakey, A.D., DeLucia, E.H., Ort, D.R. **How will the Midwest Agroecosystem respond to drought and rising (CO₂)**, Department of Energy, National Institute for Climate Change Research \$394,000 over 3 years

Diers, B.D., Ainsworth, E.A., Long, S.P., Ort, D.R. **Toward Reducing Soybean Yield Losses Caused by Ozone**, CFAR Sentinel \$284,759 over 2 years

Long, S.P., **Soybean Disease Biotechnology Center IV-Ozone Impacts**, USDA \$250,000 over 3 years

Kumar, K., Liang, X-Z., Long, S.P., Murugesu, S. (submitted 2006, awarded 2007) **Interactions between Water, Energy and Carbon Dynamics as Predictors of Canopy to Ecosystem Scale Vegetation Pattern and Function in a Changing Environment**, National Science Foundation \$1,650,000 over 4 years

Long, S.P., Khanna, M., Letterley, G. (submitted 2005, awarded 2006) **Biomass Heat and Power in Illinois, DSystems**, Dudley Smith Foundation \$300,000 over 4 years

Mott, K., Long, S.P., Assmann, S. (submitted 2005, awarded 2006), **The Biology of Transpiration Meetings Proposal**, National Science Foundation \$16,500 over 1 year

Long, S.P., Portis, A.R., Moose, S.P. (submitted 2004, awarded 2005) **Adaptation of C4 Photosynthesis to Cold within the Miscanthus Genus**, National Science Foundation \$452,255 over 3 years

Long, S.P., de Sturler, E. (submitted 2004; awarded 2004). **Unifying Mechanistic Dynamic Models of Photosynthesis and Stomatal Movement – Collaborative Research**, National Science Foundation \$395,000 over 3 years

DeLucia, E.H., Berenbaum, M., Clough, S., Long, S.P., Ort, D.R. (submitted 2004; awarded 2004) **Genomic regulation of the response of an agroecosystem to elements of global change**, Department of Energy – Program for Ecosystems Research \$2,984,000 over 3 years

Long, S.P. (lead PI) and 12 co-PIs (submitted 2003; awarded 2003) **Biomass Energy Crops for Power and Heat Generation in Illinois, Diversifying Cropping, Improving Energy Security and Benefiting the Environment**. C-FAR-SRI \$1,195,000 over 5 years

Long, S.P., Portis, A.R., Moose, S.P. (submitted 2001; awarded 2002) **Novel cold-tolerant rhizomatous C4 grasses: A resource for transforming photosynthesis in corn at low temperatures**, USDA-NRI \$187,000 over 3 years

Ort, D.R., Long, S.P. (submitted 2002; awarded 2002) **Effects of open-air elevation of ozone and carbon dioxide on soybean transpiration**, IALC \$88,000 over 2 years

Wander, M., Long, S.P., Tracy, B., Khanna, M. (submitted 2003; awarded 2003), **Opportunities in Energy and Agriculture**, Dudley Smith Initiative \$61,000 year, renewable for 5 years

Wander, M., Long, S.P., Tracy, B., Khanna, M. (submitted 2002; awarded 2002), **Opportunities in Energy and Agriculture**, Dudley Smith Initiative \$40,000 over 1 year

Ort, D.R., Long, S.P. (submitted 2003; awarded 2003) **Effects of open-air elevation of carbon dioxide on canopy evapotranspiration of corn grown at SoyFACE**, Campus Research Board \$16,450

Long, S.P. (submitted 2001; awarded 2001) **Does an elevated CO₂ concentration decrease dark respiration in trees? A novel approach using differential oxygen analysis**, Department of Energy-OBER/TCP \$134,000 over 2 years (renewal Aug 2001-Aug 2003)

Whitmarsh, J., Long, S.P. (submitted 2001; awarded 2001) **Towards the Photosynthesis Workbench – “e-Photosynthesis,”** National Center for Supercomputer Applications \$18,500 over 1 year (Completed Aug 2002)

Long, S.P., Voigt, T., Tracy, B. (submitted 2001; awarded 2001) **Miscanthus: A geographically adapted grass biomass crop for permaculture and soil improvement**, C-FAR Internal \$70,000 over 3 years

Long, S.P., co-PIs: DeLucia, E.H., Ort, D.R. (submitted 1999; awarded 2000) **SoyFACE Research and Discovery Program to Abate the Threats and Harness the Potential of Atmosphere Change to Benefit Illinois Agriculture**, Collaborators: G. Bollero, D. Briskin, D. Bullock, D. Bush, M. David, J. Dawson, B. Diers, N. Engeseth, G. Fahey, S. Hollinger, R. Nelson, A. Portis, and M. Wander, C-FAR Sentinel \$1,700,000 total over 5 years

Long, S.P., co-PI: Moose, S.P. (submitted 1999; awarded 2000) **A Novel Source of Cold-tolerant C4 Photosynthesis for Maize**, USDA-NRI \$130,000 over 2 years

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REVIEW PANELS:

2014

Institute for Sustainability, Energy and Environment UIUC

Pre- and Full Proposal Review Panel

2013

EU Review Panel for Proposals on ERA-NET Plus on Climate Smart Agriculture

Agriculture, Food Security and Climate Change Joint Programming Initiative

2011

Site Visitor and Review Panel

A*STAR Programs in Bioenergy, Government of Singapore, Singapore

2011 – 2014

Award Review Panels

Energy Biosciences Institute

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OTHER INTERESTS:

2010 – present

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PUBLICATIONS:

A. PAPERS IN REFEREED JOURNALS:

* - Featured on the front cover of that issue of the journal.

Pignon C.P. & Long S.P. (2020) Retrospective analysis of biochemical limitations to photosynthesis in 49 species: C4 crops appear still adapted to pre-industrial atmospheric [CO₂]. *Plant, Cell & Environment*. doi: 10.1111/pce.13863.

Taylor S.H., Orr D.J., Carmo-Silva E. & Long S.P. (2020) During photosynthetic induction, biochemical and stomatal limitations differ between Brassica crops. *Plant, Cell & Environment*. doi: 10.1111/pce.13862

Collison R., Raven E., Pignon C.P., Long S.P. (2020) Light, not age, underlies the maladaptation of Maize and Miscanthus photosynthesis to self-shading. *Frontiers in Plant Science* 11, 783-791

Long S.P. (2020) Bioenergy—The slope of enlightenment. *Global Change Biology. Bioenergy*, 12, 462-463.

Lipka A., Olatoye M., Clark L., Labonte N., Dong H., Dwiyanti M., Anzoua K., Brummer J., Ghimire B., Glowacka K., Heo K., Jin X., Nagano H., Peng J., Yu C., Yoo J., Zhao H., Long S.P., Yamada, T., Sacks E. (2020) Training population optimization for genomic selection in *Miscanthus*. *G3-Genes Genomes Genetics* 10, 2465-2476.

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